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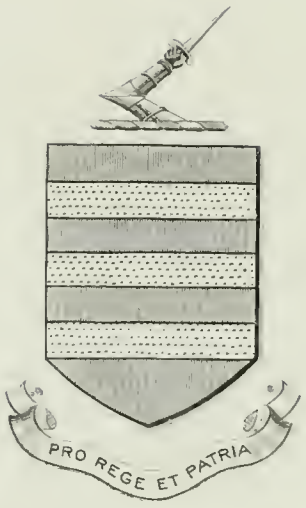

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A Weekly Journal of Medicine and Surgery

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Original Articles.

HISTORY AND ANALYSIS OF THE METHODS OF RESUSCITATION.

WITH A DESCRIPTION AND A DISCUSSION OF THE AUTHOR'S PHARYNGEAL INSUFFLATION APPARATUS FOR ARTIFICIAL RESPIRATION IN MAN.

By S. J. MELTZER, M.D., LL.D.,
NEW YORK.
(From the Department of Physiology and Pharmacology of the Rockefeller Institute for Medical Research.)

I. Historical Review.—It is quite probable that from time immemorial men tried to revive the apparently dead, and that for accomplishing this end employed all sorts of procedures; but our actual knowledge of these procedures does not reach very far back. The verifiable history of resuscitation is only about 150 years old. The society which was organized for this purpose in Amsterdam, 1767, seems to have made the first attempt to lay down definite rules for resuscitating the apparently dead; at least it was the first attempt which left a record. The rules were embodied in a little book which was translated in 1773 by a Dr. Cogan into English. That booklet stimulated the public spirited Dr. William Hawes to establish in London an organization under the name of The Humane Society, which had in view an object similar to that of the Amsterdam Society, and which is still in existence under the name of The Royal Humane Society. At the time when The Humane Society was established, England was fortunate to possess many illustrious medical men, some of whom took an active interest in the development of the subject of resuscitation. I need only mention such medical stars as John Hunter, who was a director of that society; his brother William Hunter, Cullen, Monro secundus, and Fothergill. It should be mentioned that de Haën published in 1772 results of an "experimental inquiry into the phenomenon of drowning and resuscitation as seen in dogs." De Haën was then professor of medicine in Vienna. But he came from Holland, was a pupil of Boerhaave, and it was probably the apparently dead from drowning in Dutch waters, and not in the waters of the Danube River, which made him look experimentally for developing methods of resuscitation. It was again then Holland which gave the stimulus to experimental studies of life-saving methods. At any rate, it was in the eighth decade of the eighteenth century that procedures of resuscitation assumed a scientific aspect, began to be systematized, became a medical subject, and found a permanent place in the medical literature.

The latter fact is in a great measure due to the activities of The Royal Humane Society, which from the start kept records of all cases of attempted resuscitation which came to its knowledge. At various intervals it formulated and published rules, in conformity with the views which prevailed at the time, and stimulated individuals to and formed committees for special investigations with the object of discovering reliable methods to be employed. In several interesting papers, Arthur Keith[1] made us acquainted with some historical data and with the details contained in the records of the society. At the time the mentioned societies were founded the subjects to be resuscitated were chiefly those apparently dead from drowning; hence, the special interest which Holland and England took in the matter. However, the progress made since this time in industry, science, and medicine created new victims in its train. The introduction of gas for the purpose of lighting and heating, the extensive development of mining, of the knowledge and the technical application of electricity, the discovery of ether, chloroform, and other anesthetics, the growth of the domains of surgery, the discovery and popularization of narcotic drugs; all these blessings multiplied greatly the unfortunate opportunities for the necessity of employing methods of resuscitation.

Did the methods improve with the growth in the necessities of their application? I shall try to answer by giving a brief outline of the history of resuscitation which may be justifiably divided into two periods, the year 1856 being the dividing line. In the last 60 years resuscitation consisted and still consists practically exclusively in the application of artificial respiration in one form or another. During the first period, however, besides artificial respiration many other procedures were employed which may be collectively described as stimulations. The earliest procedures consisted in the application of heat to the body, of various stimulants to the skin, the nose, etc., in blood-letting, in the production of vomiting "by the French method." An interesting procedure was that of "fumigation"; it consisted in filling the large bowel with tobacco smoke. "For nearly 40 years great importance has been attached to this curious procedure. The record of case after case bears witness to the success ascribed to this method." The disappearance of fumigation from the list of permissible means of resuscitation is characteristic for the "ups and downs" in the history of therapeutics in general. Benjamin Brody found in three experiments that the infusion of 4 ounces of tobacco, administered per rectum, would kill a dog, and one ounce a cat. The Royal Humane Society became alarmed and relegated fumigation

to the list of forbidden rules (Keith). The use of artificial respiration as a method of resuscitation had rather a variable fate during this period. Aside from the barrel method (rolling those apparently dead from drowning on a barrel), artificial respiration was performed by inflation of the lung from mouth to mouth while the nose of the victim was kept closed, a method which seemed to have been long in practice in reviving the still-born and which, in this domain, is occasionally still in use. However, about 1776, the bellows method came to the front. John Hunter constructed double chambered bellows, one chamber being used for filling the lungs and the other chamber for suction.* Hunter recommended the use of oxygen for inflation—discovered only two years previously by Priestly. Monro secundus also constructed a double-chambered apparatus; his bellows, however, were too large; the chambers had a capacity of 1500 cubic centimeters. The bellows, which were later accepted by The Royal Humane Society, were designed by Charles Kyte and had a capacity of only 500 cubic centimeters. The nozzle of the tube connected with the bellows was introduced into one nostril while the other nostril, as well as the mouth, were kept closed, and the cricoid was lightly pressed backwards to prevent the insufflated air from passing down into the esophagus. Goodwin discovered that in the apparently dead the tongue falls backwards; the insufflation of air might therefore rather assist in occluding the entrance into the larynx by pressing down the tongue upon the epiglottis. Monro overcame this difficulty "by passing the catheter into the larynx by way of the mouth."† "From 1782 onwards bellows were recommend by The Royal Humane Society as the best means for artificial respiration. . . . For 40 years no one had a word to say against them; they were used in every country." However, in the twenties of the nineteenth century Benjamin Brody began to maintain that artificial respiration was only a secondary means in the resuscitation of the apparently dead, and in 1829 Leroy d'Etiolles stated in a memoir that it was possible to kill an animal by suddenly inflating its lungs. "Leroy's experiments alarmed The Royal Humane Society . . . the bellows fell into disgrace and in 1837 it disappeared from the list of methods recommended by the society." Keith tells us that "during the period in which artificial respiration was in abeyance the chief treatment lay in the application of warmth, treatment commencing with the immersion of a patient in a bath at about 100° F." The following data, taken from one of Keith's tables, present us with a bewildering illustration. From 1795 to 1811, when warmth and inflation (bellows) were used, there were as may as 54.8 per cent. unsuccessful cases; from 1832 to 1851, when warmth and friction were used, there were only 10 per cent. unsuccessful cases. Is this striking contrast merely an outcome of the familiar unreliableness of information derived from statistical data, or is it due to the fact that inflation of the lungs by bellows is indeed a very dangerous procedure?

As stated above, the year 1856 introduced the second period in the history of resuscitation. In contrast to the foregoing decades, artificial respiration became practically the only method of resuscitation. However, the character of the artificial respiration practised nearly exclusively in the greatest part of the second period, assumed a different aspect. While in the first period inspirations were produced by *inflation*, in the new methods of artificial respiration, the inspiration was accomplished by *aspiration*, and the procedures, which are expected to bring about artificial respiration, consisted in manual handling of the victim. These methods of artificial respiration possess the undoubted advantage that no special apparatus are required for their performance, and that the manipulations can be started immediately on discovery of the victim. Some sort of movements of the chest and abdomen were undoubtedly practised ever since attempts of resuscitation were made. But the movements we are speaking of here are of an orderly, systematic character, based upon more or less well founded scientific observations.

These movements may be divided into three classes: 1. Movements which produce originally active expiration, while the inspiration is accomplished passively. 2. Movements which actively produce inspiration, while the expiration is accomplished passively. 3. Active movements producing the inspiration as well as the expiration. This last mode of respiration was the first new form which was introduced in 1856 by the celebrated physiologist Marshall Hall and which was termed by him the "postural method." The subject was first placed in the prone position and pressed upon the back, causing thereby an active expiration; it was then turned over on the side and the shoulder was raised, which brings about an active inspiration. Soon after Hall's communication was made, Sylvester introduced the method which is now known by his name. The subject is kept in the supine position and both arms are strongly raised above the head, thus stretching the pectoral muscles and causing hereby an active inspiration. The expiration is accomplished passively by returning the arms to the side of the subject. This method was recommended by the first Committee on Resuscitation appointed by The Royal Humane Society in 1861, and it is still largely in use in many parts of the world. In Germany it was adopted with a modification by Frosch: instead of returning the arms to the side of the patient, they are pressed on the cartilaginous part of the thoracic ribs, causing hereby some degree of active expiration. I wish to add that the last-mentioned procedure may possibly have the further advantage *that it is capable of producing some stimulation of the heart.* By the antagonists of the Sylvester method, it is accused that in some instances it has caused fracture of the ribs and even rupture of the liver. About 1871, Howard, a police surgeon of New York, suggested another method, namely, to place the subject in the supine posture, supported by a pillow, to apply the palms of the hands on the prominent parts under the subcostal margins, and to force the abdominal contents upward; thus pro-

*The invention of an apparatus for artificial respiration in which the inspiration is accomplished by insufflation and the expiration by suction has been in recent years usually ascribed to the noted Viennese pharmacologist, H. H. Meyer. As we see, this form of apparatus was invented and used by John Hunter at least 140 years before. See Keith[1].

† More than a hundred years later we find in the medical literature several living writers claiming priority for the inventon of this procedure.

ducing active expiration. The inspiration is produced passively by the recoil of the ribs and the return of the abdominal contents to their original place. The method did not find favor, and it even has been alleged that rupture of the liver is apt to follow a too vigorous use of the Howard method.

In 1899 the Royal Medical and Chirurgical Society instituted its fourth committee. "Professor E. A. Schäfer was a member, but ultimately became the committee, and his report, read in 1903, is one of the most important contributions ever made to the literature of resuscitation" (Keith). The method which he recommended is now known by his name or as the "prone method." The subject is placed face downwards, the chest resting directly on the floor. The operator kneels astride the prone subject and places his hands over the lower ribs and the lumbar parts on each side of the spine. To produce the expiratory movement the operator, keeping his arms outstretched, brings the weight of his body on the lower dorsal region of the patient; the abdominal viscera are hereby powerfully compressed and forced against the diaphragm and lungs, which are thus brought into a position of ultra expiration. The recoil which occurs when the operator's weight is withdrawn causes an inspiration. In principle Schäfer's method is identical with that of Howard, except that it is easier to perform and has the important advantage that, the subject being in a prone position, the tongue falls forward and thus does not interfere with the entrance of air into the larynx.*

Some eight years ago a committee appointed by The Royal Society of Medicine recommended Schäfer's method in preference to that of Marshall Hall or Sylvester. Nevertheless, The Royal Society and other life-saving associations still give, I believe, preference to the Sylvester method.

In the United States two commissions† investigated the methods of resuscitation. Both came to the conclusion that Schäfer's method is preferable to that of Sylvester.

Before mentioning other methods of artificial respiration employed in the last two or three decades in resuscitation, I wish to refer here to Laborde's method of traction of the tongue, although it can hardly be considered as a method of artificial respiration. There is no doubt that in some instances, especially in accidents from anesthesia, a few tractions of the tongue may reestablish respiration. It is evident that in most of these cases the aid is rendered by lifting the epiglottis away from the entrance into the larynx. However, it is not this effect which Laborde had in mind. He states that he succeeded by his method in resuscitating from drowning even after there was no respiration for one hour. Laborde believes that the favorable effect is due to reflex action through the glossopharyngeal and other nerves. Soon after Laborde's communication there were some favorable reports from the use of this method, especially in France. However, in recent years I have not come across any mention of this method in the medical literature.

Besides the previously mentioned manual methods in the last three decades a goodly number of procedures were proposed, and partly came into use, which collectively may be designated as mechanical methods of artificial respiration. Fell (1887)[1] was probably the first one to use successfully in human beings (in cases of poisoning) the method usually employed in the physiological laboratories (tracheotomy and bellows). Later Fell recommended the use of a mask in place of a tracheotomy tube. Northrup (1896)[2] advocated the use of a modified O'Dwyer tube connected with bellows (Fell-O'Dwyer apparatus). At about the same time several French investigators attempted to devise methods of artificial respiration by the aid of mechanical means, among whom Tuffier and Hallion, and Doyen deserve to be especially mentioned. Doyen's apparatus consisted of "duplex" bellows (for insufflation and suction) attached to an intralaryngeal cannula. R. Matas (1902)[3] constructed an apparatus in which a modified O'Dwyer tube was connected with an automatically acting pump. The pump contained originally two independent metal cylinders for inspiration and aspiration. However, the first experiment made on a dog convinced Matas that the suction force, exercised by the aspirating cylinder, does damage to the lungs, and he eliminated that part from his apparatus.* In his efforts to apply the method of intubation to all cavities and tubes of the body Franz Kuhn became also active (in Germany) in introducing the method of intralaryngeal intubation as a means of resuscitation.

To the foregoing the statement is to be added that, as is generally known, in the last seven or eight years various efforts have been made in this country to introduce mechanical resuscitating machines. But I wish to point out that most of these efforts are to be distinguished from all foregoing activities by one deplorable characteristic: while the activities in the foregoing periods were stimulated practically solely by humanitarian and scientific purposes, nearly all the apparatus and machines which are being introduced at present, and which receive a lesser or greater unscientific publicity, have one unpleasant feature in common, namely, the plain and unveiled commercialism which is evidently the

*Several years ago in a conversation which we had in London, Professor Schäfer remarked that "if he were now confrnoted with the task of resuscitation he would kneel astride over the subject and perform the simple motions of horseback riding without employing his hands and arms at all."

† On the first commission Drs. Cannon, Crile, Yandell Henderson, and Meltzer represented the American Medical Association; Dr. Spitzka and Mr. Elgin represented the National Electric Light Association, and Drs. Kennelly and Elihu Thomson represented the General Electric Company. Dr. Cannon was elected chairman and Mr. W. D. Weaver, then editor of the *Electrical World*, was elected secretary of the commission. Mr. Elgin, past president of the National Electric Light Association, deserves special credit for the creation and success of this committee. The second commission was appointed by the Bureau of Mines of the Department of the Interior and consisted of Drs. Cannon, Crile, Erlanger, Henderson, and Meltzer; the report of this commission is known as "Technical Paper No. 77."

*Courtois seems to have been the first one who as early as 1790 (*Jour. de med., chir. et pharm.*, Paris, LXXXII, p. 361) introduced the duplex metal cylinder as a means of inducing artificial respiration under the designation of "pompe apodpinque" (quoted from a pamphlet by Dr. William Harrison, Pneumatry papers No. 1, Detroit, Mich., 1916). According to Harrison, Poe's Artificial Respirator, which is now extensively advertised by the Life Saving Devices Company under the name Lungmotor, is identical with Courtois' "pompe apodpinque." Harrison himself is now introducing an apparatus under the name of "Pneumatizer" which, according to the inventor, is free from the shortcomings of the Lungmotor.

sole motive for their construction. Their introduction to the public is accomplished by the usual methods by which commercial products try to make headway, namely, by a more or less loud advertising. It is rather a sad chapter in the history of resuscitation; but I do not intend to dwell upon its details.

II. *Criteria for the Efficiency of the Methods of Treatment.*—What evidence do we possess that certain methods which are employed for resuscitation are really efficient? As far as I know there are at present only three criteria which may serve as guides for our judgment.

Statistics. For more than 100 years the character of the evidence was exclusively of a statistical nature, namely, that if a certain method, employed for resuscitation, had a high percentage of successes to its credit, it was considered as a proof that the method was indeed a useful one. But the statistics given in the above mentioned articles of Keith demonstrate at a glance the fallacies contained in this method. For instance, for many years "fumigation" (introduction of tobacco into the large bowel) seemed to be a most reliable method. Later, however, on the contrary, it was forbidden. At another period when only warmth and friction were employed for resuscitation, these procedures, judging from the statistical data, seemed to have given the best results. Then the various methods of artificial respiration had, as seen above, their "ups and downs" in the history of resuscitation. It is evident that the value of the reports of successful treatment of the apparently dead varied greatly with the character and judgment of the reporters and with the nature of a great many circumstances which were not taken into consideration. Uncritical, statistical data, as is now generally conceded, have not only no value, but are very often decidedly misleading. As to the statistical data collected for transparently unlaudable purposes, with which regrettably all branches of medicine in our country is overwhelmed, the term "misleading" is surely insufficient for their characterization.

Respiratory Volume.—"Science is measurement." quotes Schäfer in his Harvey Lecture.[5] The criterion which played and still plays a considerable rôle in the estimation of the value of the methods of manual artificial respiration consists in measuring the volume of the air inspired and expired into a spirometer. This method was, I believe, introduced by Schäfer. At first he experimented on drowned dogs; but these experiments gave no satisfactory results, because drowned dogs recover often without artificial respiration, sometimes even after having been for five minutes under water, that is, without any respiration whatsoever. On the other hand, if the heart of drowned animals stops beating, as a rule none of the manual methods of artificial respiration, no matter how early begun, is capable of resuscitating them. The experiments with measuring the volume of air on dead human bodies also gave no satisfactory results on account of the various degrees of rigidity of the thorax. The most appropriate way of testing the manual methods of artificial respiration seemed to be to study the volume of inspired and expired air of living conscious human beings. By using this method Schäfer found that his prone method of artificial respiration gave a much larger volume than the supine or Sylvester method. However, it was soon discovered that the normal individual interferes involuntarily with the inspiration and expiration either by partly closing the glottis and thus reducing the amount of the expiratory and inspiratory air, or the volume of the respiratory air is influenced by the unconscious innervation of the respiratory muscles. Ploman[6] carried out his studies on human beings who were previously trained not to participate in the respiration during the execution of any of the methods of artificial respiration. According to him, Schäfer's method gives definitely smaller volumina of respired air than the method of Sylvester and its modifications. It seemed, however, that even a previous training was not a sufficient guarantee that the individuals experimented upon do not interfere sometimes unconsciously with the course of the artificial respiration. Lilijenstrand, Wollin, and Nilsson[7] tried to overcome the difficulties by studying the effect of artificial respiration on conscious *apneic* individuals. The apnea was brought on by a small series of deep respirations, and it is generally assumed that during a state of apnea the individual is completely relaxed and has no desire for breathing. According to these authors the respired air volumina obtained under any of the manual methods of artificial respiration are much smaller than any normal respirations, but they agree with Ploman that Schäfer's method gives a still smaller volume. Loewy, one of the most active investigators in this line came out,[8] however, with the claim, based upon experimental studies, that during apnea the individual is not completely relaxed, but, on the contrary, the respiratory muscles are in a state of tonus, which may mean that in this state the individual is rather more ready to react to the stimulations produced by artificial respiration.

As mentioned before, the apnea produced in the experiments of Lilijenstrand, Wollin, and Nilsson, and probably also in those of Loewy, were brought on by a small series of respirations. Yandell Henderson[9] undertook a critical examination of Schäfer's and other methods of artificial respiration on students "who experienced after overventilating their lungs by two or three minutes of voluntary forced respiration a lack of desire to breathe (apnea), lasting from 40 to 80 seconds." He found that under these circumstances Schäfer's method gives a slightly larger volume than that of Sylvester, especially when Schäfer's method is carried out with "the arms stretched forward." But even in Henderson's investigations the respiratory volumina obtained under artificial respiration were about one-half or less than the one obtained in normal respirations.

However, no matter to which of the various claims greater weight is to be attached, it seems quite evident that the method of measuring the volumina of inspired and expired air is incapable of demonstrating that any of these methods is in a position to keep up the respiration for any length of time when the respiratory mechanism is in a state of complete failure. It seems that in the end it is not the experimental method of measuring the volumina of the respiratory air which influences the contending parties to take sides with one or the other method; it is again essentially the old method of making claims by statistical data which induces the fol-

lowers of various methods to consider one or the other method of manual artificial respiration as the more efficient procedure to employ in resuscitation of the apparent dead.

Curarized Animals.—Several years ago the writer[10] introduced a new method of testing whether a certain procedure of artificial respiration is indeed capable of keeping an individual with complete failure of the normal respiratory mechanism interminably, or at least for many hours, alive. The essential factor in this method consists in keeping the respiratory muscles of the animal completely paralyzed by means of curare for as many hours as we wish to continue our experiment. The animals are at the same time anesthetized by ether, administered by means of the method of artificial respiration which is undergoing the test. When the method of artificial respiration is inefficient the circulation comes sooner or later to a complete standstill. When, however, the method is efficient the circulation can be kept practically in a uniformly normal state for many hours, although the animal remains completely paralyzed. At the end of such a successful experiment spontaneous respiration can frequently be restored to normal by means of an injection of physostigmin.

By means of this method my procedure for artificial respiration, which I am going to describe later, has been tested on hundreds of animals. By the same method I have tested the efficiency of the Sylvester method, of the Schäfer method, and of the pulmotor which was so much in vogue at that time. Regarding the manual methods my statements can be brief, and are as follows: The longest time the circulation of a curarized and anesthetized animal could be kept up by the Sylvester method was twelve minutes, even when the tongue was kept pulled out by means of a forceps. The experiments were made on dogs. By the Schäfer method, with the anterior extremities stretched forward, the shortest period during which the circulation was kept on going amounted to about eighteen minutes. The longest period (one dog) lasted thirty-one minutes. In this dog the manipulations were carried on with great energy, and at the autopsy it was found that the liver was ruptured.

The efficiency of the pulmotor, which was loaned to us by the Bureau of Mines, I have investigated on a large number of dogs and the results deserve a more extensive statement. The pulmotor was applied by means of a mask fitted specifically for each dog; the tongue was kept withdrawn. In some instances the trachea was connected with a manometer to establish the pressures during inspiration and expiration. In some instances the thorax was split transversely and the condition of the lungs and the heart was established by ocular observation. The external part of the pulmotor consists of an ingenious mechanism which provides automatically for inspiration and expiration. The apparatus is driven by the force of a specifically adopted oxygen tank. However, according to Haldane and Henderson's analysis of the air-oxygen mixture delivered by it, it showed only 26.75 per cent. oxygen.[9] The experimental results were strikingly disappointing. In my experiments out of a large number of dogs the circulation of only one could be maintained for one hour. The balance of the experimental animals died sooner or later. In these animals the circulation stopped when they were left exclusively to the effects of the pulmotor. The manometer connected with the trachea showed, as a rule, a comparatively small pressure, the utmost 40 millimeters of water. When the thorax was kept open it was observed that practically without exception with the continuation of the use of the pulmotor the size of the lungs became gradually smaller and smaller. This could also be observed in young animals with normal thorax. When the pulmotor had been used for some time, the lungs, in many cases, presented an uneven appearance—small collapsed areas alternating with emphysematous ones. It seems that in general our experience agreed with the experience of Matas when he used an apparatus with separate chambers for inflation and suction. The success with the pulmotor was more satisfactory when it was connected directly with the trachea by means of a tracheotomy tube. The inefficiency of the pulmotor seems to be caused essentially by two elements. The first element is its automatic arrangement. While the air-oxygen passes from the nasopharynx into the trachea it seems to meet with some sort of obstacle which converts prematurely the inspiratory movement into an expiratory one. The result is an insufficient exchange of respiratory gases. The second deleterious element is the suction; an element inherent to other machines on the market. Apparently in many cases the suction closes most of the bronchioles before it succeeds in removing deleterious expiratory gases from the alveoli. In these instances the air within the dead space is caused to move, which simulates respiratory movements without producing an actual exchange of gases. As stated before, my experience in the experiments with the pulmotor (which in one case has been witnessed by Drs. Cannon and Henderson) coincides with that of Matas. In a recent paper by Yandell Henderson" he states that he is inclined to doubt "whether an active withdrawal of air with a pump of limited stroke has any very serious objections" and refers to his experiments "with two pumps arranged in a manner similar to the 'lungmotor' and worked quite violently"; he observed "no particular ill-effects of the lungs." Without entering into a discussion of the nature of Henderson's experiments which do not permit a comparison with the activities of the pulmotor and lungmotor, it is sufficient to recall the fact that in the experiments of Henderson the pumps were connected directly with the trachea, a condition which, as mentioned above, increases the value of the pulmotor.

III. *The Author's Method of Pharyngeal Insufflation.*—The most reliable method of artificial respiration is, in the author's opinion, the method of intratracheal insufflation introduced about seven years ago by Dr. Auer and the writer. The writer has kept many animals for more than 24 hours continually under ether administered by the method of intratracheal insufflation without causing any injury to them. Furthermore, in several cases of poisoned human beings without any respiration, intratracheal insufflation was kept up for more than 15 hours until the patients recovered. However, the introduction of the tube into the trachea requires some dexterity and practice, and any of the apparatus now on the market used for keeping up the

intratracheal (or as it is now called by some writers, endotracheal) insufflation is usually expensive. It is therefore highly improbable that in most emergency cases an apparatus for intratracheal insufflation as well as an expert surgeon who knows how to introduce the tube and how to handle the apparatus will be just at hand. When I was made chairman of the subcommittee of the above-mentioned commissions to study the problem of artificial respiration by means of apparatus I developed the method of pharyngeal insufflation which worked infallibly in hundreds of cases of animals under the influence of curare and ether.[12] Later, when I attempted to use such an apparatus on dead human bodies I found that the method had to undergo some changes in order to be adaptable to the human being.[13] Since the last publication I have made some advantageous changes in this apparatus and had several opportunities to test the efficiency of the apparatus in its present form on living human beings with completely paralyzed respiration. In the following I

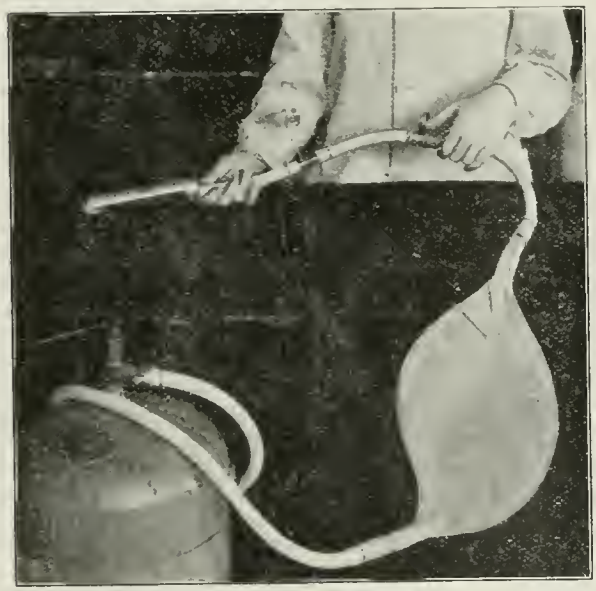

FIG. 1.—Showing an oxygen tank, the interpolated rubber bag, the respiratory valve in an inspiratory position, the T-tube, and the pharyngeal tube.

am going to describe the apparatus, its principles, and the procedure of its application.

From the data reported in the historical part it can be seen that the idea of producing artificial respiration by means of a pharyngeal or laryngeal tube conconnected with bellows is not new. Neither are the ideas new that too much pressure of the air insufflated into the lungs may do harm or that a good part of the insufflated air may enter into the stomach and the intestines. However, when I started developing my apparatus I was not yet familiar with these data. When I began to use a pharyngeal tube for artificial respiration I was confronted with several difficulties: the insufflated air is liable to escape through the nose or backward through the mouth, or the air may enter chiefly into the stomach and from there into the intestines and do more harm than good; at any rate, perhaps only little of the insufflated air will enter the lungs and may be insufficient to produce a satisfactory respiration. In the last published article[13] I described devices which should meet these difficulties; I shall discuss them again in this paper. Another serious obstacle to the use of pharyngeal insufflation was the possibility of driving air into the lungs under too much pressure so that it may injure these organs. To meet this possible danger I suggested the interpolation of a mercurial valve into the tube which connects the respiratory valve with the foot bellows, the mercurial valve being arranged for about 20 millimeters pressure. This mercurial valve, however, was found to be, for reasons which I do not need to discuss here, a cumbersome and undesirable device. Another unsatisfactory condition seemed to come from the direct connection of the bellows with the respiratory valve; the air from the foot bellows is practically not continuous and the inspiration develops only gradually to the desirable pressure. On acount of these defects two advantageous changes were introduced in the present apparatus, the entire details of which I am now going to describe.

First, *the foot bellows;* they need no special description. It is hardly necessary to state that the required inspiratory pressure could be obtained either from an oxygen tank or from a tube coming from a constant pressure somewhere in the hospital or other building. The bellows are merely recommended on account of their comparative cheapness and the convenience with which they can be transported to any place where they may be needed. Second, *the respiratory valve.* It is a small tube which may be conveniently kept in the hand when using it; the tube has a protruding movable ring into which the thumb fits. When the thumb moves the ring to the right side the driven air or oxygen pass through the respiratory valve, and, as will be seen later, pass further into the pharynx and into the lungs. When the ring is moved to the left side the escape from the respiratory valve is prevented and the air or oxygen accumulate meanwhile in the large bag interpolated between the source of pressure and the respiratory valve, while an aperture appears above the ring for the escape of the expiratory air from the lungs. (See Fig. 1.) In the tubing connecting the bellows with the respiratory valve a large rubber bag is interpolated. The presence of the bag offers the advantage that during the expiratory phase the air or oxygen may accumulate in that bag and be ready for a full inspiratory blast as soon as the thumb moves the ring to the right side. Third, *the pharyngeal tube.* This tube has a flat surface at its lower side which rests on the tongue and a curved surface on its upper side. At the pharyngeal end of the tube the upper surface is longer than the lower one. The external end of the tube has a protrusion with a neck for connection with the respiratory valve and an opening through which a stomach tube may be pushed down through the esophagus into the stomach. When no tube is in use this opening is closed with a movable plate. (See Fig. 2.) Fourth, a *T-tube* which is interpolated between the respiratory valve and the pharyngeal tube. The T-tube carries on its rubber end a clamp screw, which, when not screwed down, permits most of the air to escape through the tube, while, on the other hand, by *gradually* screwing down the clamp upon the rubber tube the amount of air entering the pharyngeal tube will gradually increase. (See Figs. 1 and

3.) This T-tube arrangement supplants, as it will be shown later, the mercury valve of the earlier form of apparatus and is used with great advantage for the same purpose, namely, to prevent the harm of an excessive pressure. Fifth, *a padded wooden*

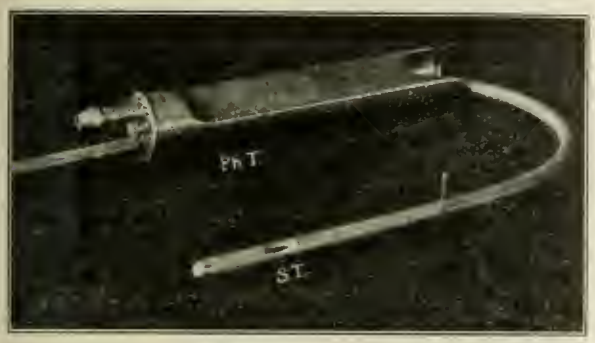

Fig. 2.—Showing an enlarged pharyngeal tube (Ph.T.) with its various particulars, and a stomach tube (S.T.) in it.

board, to be used for compressing the abdomen by means of belts. (See Fig. 4.)

The rubber tubing used in this apparatus must have thick walls, so that it should not kink; metal and no glass tubes ought to be used for all other connections—they should not break when the apparatus is used in a great hurry and without special care. All these parts *ought to be kept connected and kept in readiness* in a handy small bag. In addition to the described apparatus the bag ought to contain, (1) a stomach tube which fits into the external opening of the pharyngeal tube; (2) an appropriate tongue forceps; (3) a roll of tape, and (4) a pair of scissors. Bellows, rubber tubing, etc., should be frequently examined for their efficient activity, in order that the apparatus should not fail when its application is needed in an emergency.*

When coming to a victim who requires immediate artificial respiration the order of the procedure should be as follows: First the application of the abdominal board—in order to prevent the entrance of the insufflated air into the stomach and the intestines. Second, to pull out the tongue as far as possible by means of the forceps. Third, to insert the pharyngeal tube of the readily connected apparatus as deep into the pharynx as possible with the flat side of the tube on the tongue. The tongue should now be tied to the tube by means of tape—not too tight. The tying of the tongue has two purposes: (1) It prevents the falling back of the posterior end of the tongue and of the glottis, and (2) it keeps the pharyngeal tube in place. The working of the bellows with one foot, and the moving of the ring of the respiratory valve with the thumb of the right hand should be started immediately on tying the tongue to the pharyngeal tube. At the beginning of the procedure the T-tube should be kept open; it should soon be gradually screwed down until the thorax shows a distinct raising when turning the ring to the right and falling, when turning to the left. The heaving of the chest need not be too strong. The degree of the heaving can be readily controlled by means of the screw, which should be turned down gradually, and which will then be capable of accomplishing all the care which may be obtained from the use of a mercurial valve. Moving of the ring thirteen to fifteen times per minute will give a satisfactory respiration; or the operator may time the moving of the thumb by the rhythm of his own respirations. In case of need one individual who had some training may accomplish all three procedures and start the artificial respiration in less than one minute after finding the victim.

Should the respiratory failure take place while the abdomen is open, a condition in which the abdominal board cannot be applied, the plate at the outer end of the pharyngeal tube should be opened and the stomach tube pushed through the opening into the stomach: any surplus of air which may enter into the stomach will thus promptly escape through the stomach tube. This device has been tested on many paralyzed animals and it was found thoroughly capable of properly supporting the function of respiration. The insertion of the stomach tube may be used even where the abdominal board is being applied; in fact, it may be saving time by introducing the stomach tube immediately on inserting the pharyngeal tube; the application of the abdominal board may be carried out later with greater leisure. On the other hand, the application of the abdominal board has the further advantage that it drives a part of the blood contained in the splanchnic region into the heart and thus supports

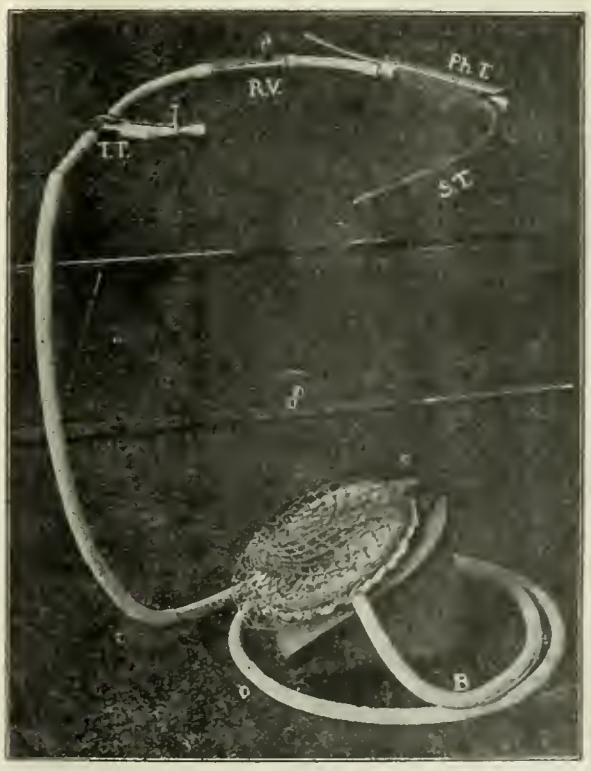

Fig. 3.—Showing an earlier arrangement of the apparatus. B, bellows; T.T. T-tube inserted between the bellows and the respiratory valves; R.V., respiratory valve; Ph.T., pharyngeal tube; S.T., stomach tube.

to a degree the failing circulation. (See Fig. 1 in my previous article.[2])

The size of the pharyngeal tube which goes with the apparatus is generally sufficient to prevent too much of an escape of the insufflated air through the

*The apparatus ("Meltzer's pharyngeal insufflation apparatus" for artificial respiration in cases of emergency in man) can be obtained from George Tiemann & Co., 107 Park Row, New York City. It is not patented. Its cost is probably less than one-fifth of the patented apparatuses.

mouth; furthermore, the prolongation of the curved side of the tube raises the soft palate and thus prevents the escape of air through the nose. However, we need not care about slight escapes of air, since the amount of insufflated air can be easily controlled by means of the T-tube and the clamp screw. In my experience, which extends to many hundreds of animals and a few human beings, a single trained individual is capable of working the bellows with one foot and using the respiratory valve with one hand, while the other hand controls the insufflated pressure by means of the T-tube. On various occasions (at the Army Medical School, Washington, at the Johns Hopkins Medical School, in various hospitals, etc.) this method of artificial respiration was demonstrated on curarized animals with the thorax wide open, the administration lasting, as a rule, for several hours. The pharyngeal tube was often removed for a long time, so that the heart practically stopped beating, and it then took only a very short time to start the artificial respiration and bring the heart to its previous normal beat. *At least in four instances the respiration was in complete abeyance in human beings for ten minutes or longer while the here described apparatus kept the heart going at a*

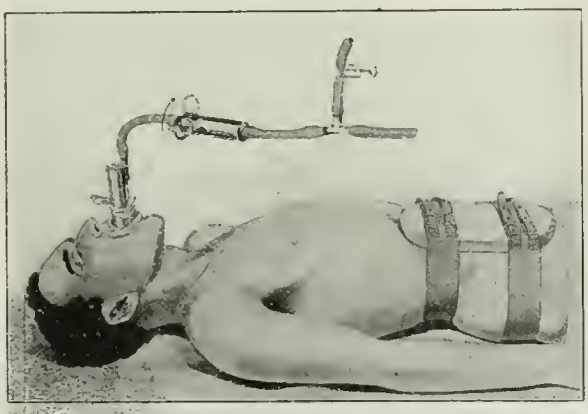

Fig. 4.—Showing the apparatus in position, except the bellows and an oxygen tank.

*normal rate and the entire circulation in good condition.**

I wish, however, to state expressly that our test by which we gauge the value of apparatus or of manual methods of artificial respiration is a severe one. It presupposes that we always have to deal with victims whose respiratory mechanism is completely paralyzed and cannot be reached by any reflex stimulation. But there can be no doubt that the vitality of the nervous system of many victims, although they actually show no respiration, is not yet completely abolished and may therefore still be capable of recuperating sooner or later and of responding to some stimulation. In such cases even methods of artificial respiration of moderate efficiency may sometimes be capable of sustaining the life of the individual for a certain period, at least, until an efficient apparatus is procured. Furthermore surely there are cases in which the application for a few minutes only of even inefficient apparatus or methods may support the failing respiratory mechanism and thus help to restore the life of the victim. It is therefore proper to advise that in the absence of reliable and efficient apparatus for artificial respiration any type which is just at hand ought to be used—provided the apparatus does not possess the two above-mentioned dangerous elements, namely, *the automatically regulating inspiration and expiration and the special provision for expiration by means of suction.*

However, it is rather probable that in most instances no kind of apparatus for artificial respiration will be at hand when an accident has happened. It ought therefore to be the rule that in each and every case a *manual* method of artificial respiration must be instituted immediately on discovery of an individual who shows no spontaneous respiration. As we have seen above, both methods which are now in vogue, namely, that of Sylvester and of Schäfer, may prolong, to some degree, the life of curarized animals. On the other hand, it was found that the life of curarized animals was sustained longer by using the Schäfer method than by the method of Sylvester. But we must keep in mind that all these methods, simple as they may appear, require some experience for their proper execution. I shall therefore suggest that in rendering first-aid to accident cases the method of immediate choice should be the one for which there is an operator present who possesses special experience in just that method. In other words, the Sylvester method should be given the preference if the men who are to render the first-aid are more experienced in this method than in that of Schäfer; one is capable of rendering better aid with a method with which he is familiar than with one which he has never used before. However, I shall here go on record, as I did before in the report of the mentioned commissions, that *generally the Schäfer method is preferable* to that of the Sylvester method.

In using the prone or Schäfer method I wish to remind here of the remark made to me by Professor Schäfer several years ago and which I have quoted above, namely, that "if he were now confronted with the task of resuscitation he would kneel astride over the subject and perform the simple motions of horseback riding without employing his hands and arms at all." This simple manner of employing the prone method could be readily combined with the use of the author's pharyngeal insufflation apparatus, and the operator who is performing the Schäfer method could at the same time manipulate with one hand the respiratory valve and with the other hand regulate, when necessary, the T-tube. *But the operator must learn to move the ring of the valve to the left (expiration) synchronously with throwing his body downward upon the individual and to move his*

*To my mind the apparatus which is here described is practically the most efficient one for the execution of artificial respiration in cases of emergency. It is absolutely reliable; it is very easy to handle and is comparatively inexpensive. My statements which are here made are based upon personal observations. I have, of course, very few opportunities of testing it upon human beings. I hardly need to state that I have no other motive for pleading for the introduction of this apparatus into medical and Samaritan practice than a scientific and a humanitarian interest. The manufacturers are spending immense sums of money for advertising and popularization of their machines. Their agents have no other means of demonstrating the possible usefulness of their respective apparatus than by showing its action upon a rubber bag; I need not discuss here the unreliableness of any of these demonstrations; neither do I need to discuss the inefficiency of the evidence derived from testimonies of some physicians.

thumb to the right (inspiration) simultaneously with the raising of his body from the individual.

We have so far discussed the present methods of resuscitation from the point of view of artificial respiration. But life depends at least as much upon the proper circulation as it depends upon an efficient respiration, and here we must confess that for the present we have no method which would act resuscitatingly upon the circulation, at least no method which could in any way be compared with the methods at our disposal for the performance of artificial respiration. However, it is worth while mentioning the few inefficient procedures at our disposal by which we may assist in restoring the circulation.

1. We ought to keep in mind that in a great many instances the very act of performing proper artificial respiration may render a direct service to the circulation. At a certain low ebb of life the failure of the circulation and that of the respiration form together a vicious circle: when the respiration is inefficient the blood which circulates through the coronary arteries is insufficiently oxygenated, whereby the contractility and conductivity of the heart muscles become greatly reduced and the heart commences to fail. This in turn retards and lowers the circulation within the medulla oblongata, whereby the respiratory (and the vasomotor) centers become asphyxiated. Thus the deleteriousness of the circle continues to increase until both functions finally fail. If before the final failure we could cut through the vicious circle, we may succeed in reversing the process to such a degree as to restore both functions. By employing an efficient method of artificial respiration we may therefore be capable also of helping the failing circulation and thus restore the life of the sinking individual. Thus efficient artificial respiration may be considered as a contributing factor in restoring the failing circulation.

2. Massage is sometimes an invaluable procedure in restoring the heart's action. Massage of the heart is frequently executed by rhythmically striking the thorax at the region of the heart. If employing the Sylvester method for artificial respiration a heart massage can be exercised when returning the arms to the thorax. In some cases massage of the heart was performed from the abdominal cavity through the diaphragm. We shall not dwell here on further details of that method.

3. The injection of adrenalin by the intravenous or intracarotid methods (Crile) may prove as a useful remedy in restoring the heart's action. In experimental work its good effect has been frequently observed.

4. The compression of the abdomen, as we employ it in our method of artificial respiration, drives, as stated before, a part of the blood from the splanchnic region into the heart and from there into the general circulation. In experimental work we have frequently observed that this method is capable of increasing the blood pressure by 20 or 30 mm. of mercury.

The old method of employing various forms of stimulations in resuscitating the apparently dead ought not to be neglected. While it is quite probable that few of these methods, when used alone, have ever restored life, they may nevertheless render some service when used in combination with more efficient methods. The application of heat, friction, the mechanical and chemical stimulations of the mucous membrane of the nose, may sometimes render contributory service. Stimulation of the precordial or pudic regions or of the soles of the feet frequently exert an effect upon the respiration (*i.e.*, if the respiratory mechanism is not entirely paralyzed) and may at the same time affect the vasomotor centers and perhaps also the heart by the way of the accelerator nerves. While all first-aid men must be impressed with the fact that their first attention must be given to the respiration, it is not necessary to impress them that all the other means have no value. Anything which contributes to the resuscitation in the smallest degree should not be omitted, provided that the essential procedures are well taken care of.

Before concluding, I wish to add the following few brief remarks: As it will be seen in my present paper, I omitted the advice given in previous papers, namely, that in the absence of a proper pharyngeal tube to use a mask. After a long experience and a further analysis of the conditions, I came to the conclusion that a mask is liable to do a great deal of harm by driving infectious material, usually present in the nose and the pharynx, directly into the lungs and thus produce a fatal inflammation of that organ. By using the pharyngeal tube that danger is reduced to a minimum. But I wish to emphasize here that even in this method a minimal danger is present, and therefore recommend the employment of this method of artificial respiration *only in emergency cases.* When we find an individual apparently dead we pay little attention to the possibility that our attempts of resuscitation may lead later to some disease of the victim; we would rather see the individual alive, although temporarily sick, than see him dead. Nevertheless, we should reduce this possible danger to its minimum.

In connection with the foregoing remark I wish to make the following brief statement. On account of the difficulties which some anesthetists meet with the introduction of the tube into the trachea, they began to advocate what they term intrapharyngeal or endopharyngeal anesthesia. I wish to go here on record that in my opinion this is definitely a retrograd step. I am not familiar with the details of the methods which some of the advocates of endopharyngeal anesthesia employ. From a general reading of, and occasional listening to, a discussion of that subject, I am under the impression that the methods which they employ are incapable of keeping up the respiration in case this function should fail. It seems to me that anesthetists are not familiar with the facts (or, at least, pay very little attention to it) *that anesthesia reduces greatly the efficieney of the normal respiration.* That patients, nevertheless, survive the anesthetic procedure is due to the fact that the normal function is well provided with *factors of safety,* so that if nothing unusual happens life may continue even with a low degree of respiratory exchange of gases. With my method of pharyngeal insufflation, respiration can be kept up for many hours in an efficient way, but, nevertheless, I advocate its use only in cases of emergency—for the above mentioned reason. From unpublished statements I learned that post-operative pneumonias are not an infrequent occurrence after the use of pharyngeal anesthesia. The contrast between the

intrapharyngeal and intratracheal insufflation ought to be evident at a glance. In the intratracheal insufflation all foreign substances are driven backward. In pharyngeal insufflation, on the contrary, foreign substances are driven directly into the lungs. Furthermore, as a method of anesthesia, I discarded the intra-pharyngeal insufflation very early[12] on account of the profound effect which it produces upon the animal; in several instances I had to continue the insufflation without anesthesia for the purpose of administering artificial respiration for longer than half an hour before the animal started breathing spontaneously.

I wish therefore to be explicit in my statement. I recommend the use of my apparatus for pharyngeal insufflation only for artificial respiration in cases of emergency and I advise especially against its use as a routine method for the administration of anesthesia.

Finally, I wish to call the attention of authorities who are frequently confronted with the need of artificial respiration (superintendents of hospitals, health and police departments, first-aid stations, etc.) that in the method which I described here we possess a reliable and easy to handle procedure and a comparatively very cheap resuscitating apparatus. It is highly desirable that the men who may have to perform the resuscitation by means of this apparatus, should familiarize themselves with the apparatus and the mode of procedure. The apparatus and its use are very simple; but even the most simple thing requires some practice in handling it properly.

REFERENCES.

1. Arthur Keith: *Lancet*, 1909, 1, pp. 745, 825, 895. See also: Lilijenstrand: Uber künstliche Atmun, *Mitteil. a. d. Grenzgeb. d. Med. u. Chir.*, XXVI, 407, 1913.
2. Fell: *Buffalo Med. and Surg. Jour.*, November, 1887.
3. Northrup: Medical and surgical reports of the New York Presbyterian Hospital, 1896.
4. Matas: *American Medicine*, III, 97, 1902.
5. E. A. Schäfer: Harvey Lectures, 1907-08, p. 223.
6. Ploman: *Scand. Arch. f. Physiol.*, XVIII, 57, 1906.
7. Lilijenstrand, Wollin, and Nilsson: *Scand. Arch. f. Physiol.*, XXIX, 149, 1913.
8. A. Loewy: *Berl. klin. Wochensehr.*, 1914, p. 1657.
9. Yandell Henderson: Technical Paper 77, Bureau of Mines, Washington, D. C. Government Printing Office, 1914, p. 12.
10. S. J. Meltzer: *Jour. of the Amer. Med. Assoc.*, LVIII, p. 1413, 1912; LX, 1407, 1913.
11. Yandell Henderson: *Jour. of the Amer. Med. Assoc.*, LXII, p. 1, 1916.
12. S. J. Meltzer: *Jour. of the Amer. Med. Assoc.*, LVIII, 1413, 1912.
13. S. J. Meltzer: *Jour. of the Amer. Med. Assoc.*, LX, 1407, 1913.

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Acute Tuberculous Peritonitis.—Ceballos and Segura report a case of this affection in a girl of 16. The diagnosis was perforative appendicitis, and an emergency laparotomy revealed the true state of affairs—miliary tuberculosis of the intestine. The patient recovered.—*Revista de la Asociacion medica Argentina.*

Papulonecrotic Tuberculide.—Vianna reports the case in a youth of eighteen of papulonecrotic lesions about the neck and shoulders and lichen scrofulosorum on the trunk. There was a history of tuberculosis and a positive cutireaction. Treatment consisted of arsenic and codliver oil.—*Brazil-Medico.*

TREATMENT OF HAYFEVER AND ASTHMA BY PITUITRIN AND EPINEPHRIN.*

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In a former communication (Medical Record, March 3, 1917), I published favorable results obtained by treating asthma cases with pituitrin and adrenalin injections. Since then several cases of hayfever have come under my observation in which a similar treatment was applied with good results.

I need not enter upon a detailed discussion of the etiological factors which are closely related to the current conceptions of immunization and anaphylaxis. Clinical and therapeutic experiences have established the fact that certain individuals present a hypersensitiveness to the pollen of certain blooming plants. These irritating substances gaining access to the respiratory tract are considered the cause of the well-known and distressing clinical symptoms, whilst vaccination with pollen extract seems to attenuate or to prevent the occurrence of the clinical manifestations. The therapeutic results with pollen vaccination are doubtless a great achievement in the relief and removal of the abnormal clinical signs. From the clinical standpoint, cases of hayfever offer much interest, since closer examination reveals certain clinical particularities which deserve our attention, as shown in the following cases:

Case I.—Mr. W. B., age 36, teacher, negatve family history and past history. Hayfever attacks date back for the past 18 years, which manifestations are of extreme violence, attended by burning, tickling sensations in the nostrils, eyes, throat, violent sneezing, serous discharge from the mucosæ of the respiratory tract, with distressing attacks of asthma—particularly in the evening. The exciting causes of such manifestations are the following: Blooming lilac, different gramineæ, roses, dusty, heavy, damp atmosphere. Patient before coming to me had tried all kinds of treatments for nose and throat and various drugs without any success whatsoever.

The results of the physical examination are the following: Patient short built, well nourished, eyes injected, abundant mucous nasal discharge; emphysematous chest, moderate harsh breathing over right apex anteriorly; numerous sibilant râles over both upper lobes anteriorly and posteriorly. Heart, apex in left midclavicular line, fifth interspace; absolute cardiac dullness extending from fifth interspace to upper border of third rib, and slightly outside of the left sternal margin; relative cardiac dullness extends from fifth interspace towards the right and overlaps the right sternal border, reaching as far as the upper border of the second rib. Heart sounds: Over mitral area first sound roughened and distant but no murmur, second sound normal; tricuspid and pulmonary sounds weak, not accentuated; second aortic sound weak. Blood-pressure—auscultatory method—Tycos—112 systolic, 78 diastolic; 34 pulse pressure. Abdomen prominent, nothing particular. Knee-jerks accentuated. Marked dermography of the skin.

Treatment and clinical remarks: Subcutaneous injection of pituitrin, 1 c.c.; Adrenalin chloride solution 1/1000, 0.5 c.c., given on June 6, 1914. Patient reported two days later, felt very well after the injection; came down town in motor car; experienced slight tickling in the nose, dryness, and some watery feeling, but had no sneezing or any further unpleasant manifestations. Since this was my first hayfever case, as a precaution

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the patient was given one dram t.i.d. of the following prescription: Ammon. iodide, 5j ss; ammon. bromide, 5ii; tincture lobelia, 5j; syrup of tolu, fl. 5ij; peppermint water, q. s. ad. fl. 5iij. Alcohol rub for the skin every morning. June 11. Notwithstanding the hot and close weather and blooming grass, which factors always caused a severe hayfever attack, the patient experienced only a slight tickling sensation in the nose, which lasted for about 5 minutes instead of several hours as in former times. No attacks of sneezing whatsoever. Pulse 81. Blood pressure: Systolic 108, diastolic 70; pulse pressure 38. Patient received another injection of pituitrin and adrenalin in the dose mentioned above. Reported at office 3 days later that he had been feeling fine for two days after the injection. Slight sneezing and burning sensation was noticed during an exceedingly damp, moist and rainy day, but no discharge from nose, and no dyspnea. The injection was repeated without any internal medication, which was discontinued. The fourth and fifth injections were given on June 17 and 22. The weather conditions were the same unfavorable ones as mentioned all the time, but no single attack, no dryness, no sneezing and no discharge whatsoever was recorded by the patient when last seen on July 6, at which time the sixth pituitrin and adrenalin chloride injection was given. The patient was advised to report at the slightest indication of a hayfever attack but no such occurred, whilst all the previous years the severe attacks lasted for three months, with daily paroxysms.

The patient kept well throughout the summer of 1914 and only reported the next year on June 5, 1915, on account of a moderate dry sensation in his nose, with tickling, signs which were always infallible for a hayfever attack. No sneezing spells nor dyspnea were noticed so far. As the only objective signs of interest the heart examination must be recorded, namely, dilatation of the right ventricle—threshold percussion—muffled first mitral sound, relatively small pulse pressure. The extent of the absolute cardiac dullness: apex sixth, interspace, slightly outside of midclavicular line, reaching to lower border of third rib and the middle of the sternum. Relative cardiac dullness extends from the sixth interspace towards the right, overlapping for one inch the right sternal border, reaching upward to the upper border of the third rib. The diameters are for the transverse diameter 5¼ inches, oblique diameter, 5¾ inches; height, 4¼ inches; the surface area of the relative cardiac triangle measuring 11.65 square inches. Heart sounds indistinct, muffled first mitral sound, second sound very distant, accentuation of both second aortic and pulmonic sounds; first tricuspid sound split, roughened, but no murmur. Pulse weak, irregular, becomes faint during bulbous pressure, the rate 78; after pressure is relieved slows down to 66; blood-pressure systolic 106 mm., diastolic 78, pulse pressure 30 mm. Hg. pressure pro one minute 14,560 mm. Few scattered dry râles over the pulmonary hilus posteriorly and in front. Marked dermography, considerable flushing of the skin, conspicuous indicanuria being present.

Treatment and clinical remarks: On June 5, 7, and 9, subcutaneous injections of 1 c.c. pituitrin, and 0.5 c.c. of adrenalin chloride 1/1000 were given, and for 4 days 2 minims of the following solution: Atropine sulphate, gr. 1/40; peppermint water, 5ij. The therapeutic results are summarized as follows: The heart sounds became absolutely normal following the second injection, the heart showing on threshold percussion a lessened transverse diameter, 3⅜ inches—1⅞ inches less; height, 2¼ inches—2 inches less; oblique diameter, 4 inches—1¾ inches less than on the previous examination. The pulse and blood pressure figures and Imin. Hg. pressure were found on

June 7: 90 pulse, 120, systol. 92. diastol. pulse pressure 38. 19,080 mm. Hg. pressure pro. 1 minute.
June 9: pulse 90, 120 systol. 80, diastol, 40, pulse press. 18,-000 mm. Hg. pressure pro 1 minute.
June 11: pulse 80, 118, systol. 70. diastol. 48, pulse press. 15,-040 mm. Hg. pressure pro 1 minute.

Very damp and close weather prevailed. Except a very slight tendency towards sneezing, no typical hayfever attack occurred throughout the entire season and also during the next year, 1916, the patient was reported perfectly well without having experienced any of his former paroxysms.

Case II.—Miss M. K., age 53, school teacher and secretary, reveals a negative family history, mentions in her past history otitis media with remaining deafness following measles; subject to rheumatism during the past 5 years, with stiffening of the fingers and knees. The attacks of hayfever started 20 years ago, returning with great intensity in May every year, lasting for about 8 weeks. The first paroxysms were noticed 20 years ago, whilst spending a pleasant day out in the country in the season of roses. Patient mentions the following symptoms: Sneezing, redness, serous discharge from the eyes, raw feeling of the mucous membrane, cough, cold in the head, rendering nasal breathing impossible, severe attacks of asthma at rest and after exertion, occasionally occurring during the night so that the patient had to get up for relief. These attacks were daily without any change in severity and duration. All previous treatment in former years consisting in nose and throat treatment, in local application of menthol; preparations of pollantin had no result whatsoever. Substances which are thought by the patient as causative factors are roses, timothy grass, dust from the street, from old papers, books, etc., seashore climate. Change of air to the mountains has no influence at all upon the course or intensity of these attacks, which are dreaded very much by the patient at the approach of the pollen season. Digestive functions are slightly impaired, heaviness, belching of gas after meals, acidity, marked constipation. Circulatory disturbances present, dyspnea after moderate exertion, emotional palpitations, perspiration. Tendency towards headaches, dizziness. Sleep good. Frequent eruption of hives, not dependent upon the intake of any food. When getting up patient frequently complains of a thick throat. Patient flushes easily, is subject to chilly sensations without any rise of temperature.

Physical examination of the short-built patient: Conjunctivæ moderately injected, tonsils irregular, not enlarged. Chest—lack of respiratory expansion of left, depressed apex, emphysema over remainder of chest, harsh granular inspiration over left apex anteriorly, the same character of breathing existing over both apices posteriorly with numerous, scattered fine crepitant râles, vocal fremitus normal. Heart—apex impulse fifth interspace, indistinct relative dullness in fifth interspace, 4 inches to the left, 1⅛ inches to the right from the midsternal line; height 3¼ inches, oblique diameter 5½ inches, cardiac superficial dullness, triangular content 8.328 square inches. Heart sounds—mitral first sound very indistinct, weak, resembling embryocardia, second sound also weak, not to the same extent. Over the other auscultatory areas the sounds are very distant and indistinct, no murmur nor accentuation of the second pulmonic sound can be found. Pulse 96, not well sustained, weak, but regular as to rhythm. Systolic blood pressure 108, diastolic 82, pulse pressure 26, which figures were only obtainable by the palpatory, not the auscultatory method; total Hg. pressure pro one minute 18,240 mm.; Hb. 65 per cent. Talquist. Urine—spec. gravity 1,012, no albumin, marked indicanuria. Stomach—testmeal withdrawn 4 hrs. after Leube-Riegel meal 48 per cent. free HCl, total acid 60 per cent. Abdomen and extremities normal. Treatment and clinical remarks—Pituitrin 1 c.c. and adrenalin 0.5 c.c. injections were started at once. The results are recorded below.

	Tr. D.	H.	Obl. D.	Surf. J Sq. in.	P.	S.P.	D.P.	Pp.	Hg.mm. Pro. 1'	Dose Pit. c.c	Inject. Adr. c.c.
1915	"	"	"								
May 13	5¼	3¼	5½	8.328	96	108	82	26	18,240	1	1
May 15	3¾	2½	4½	4.687	81	114	64	50	11,418	1	0.5
May 17					81	112	68	44	14,580	1	0.5
May 19	4½	2½	4½	5.625	81	104	62	42	13,446	1	0.3
May 25	4¼	2½	5	5.3125	78	118	90	28	16,224		
May 28	4¼	3	4½	6.375	78	116	88	28	15,912	0.5	0.4
May 31	3¾	2	4	3.75	97	112	76	36	18,236	0.5	0.4
June 2	3¼	2	3½	3.25	69	114	72	42	12,834	0.25	0.5
June 4	4	3	4½	6.0	84	112	76	36	15,792	0.5	0.4
June 7	4¼	2½	4½	5.31	88	122	78	44	17,600	1.0	0.5

On May 15, patient reporting at my office, slight discomfort was noticed at point of injection, moderate headache was present, but no other complaint. As seen from the table, the size of the cardiac dullness had changed considerably, slower pulserate, better pulse pressure, heart-sounds, particularly the first mitral sound, were better

sustained and accentuated. On May 17, no manifestations are reported, patient feeling stronger and well stimulated, the pulmonary findings reveal less moisture. Pulse is full and strong, no more burning sensations are noticed in the nose. Heart sounds are slightly diminished in intensity, patient is advised to take 2 minims t.i.d. after meals of atropine gr. 1/40 in peppermint water 3 ij. May 25, pulse is fuller and stronger, well sustained, patient is feeling excellent notwithstanding the murky weather, a high humidity, and abundant precipitation. Patient reports to have undertaken an automobile ride in the country, with much dust, which exercise in former years always resulted in violent hayfever manifestations, but such a result was not observed this time. Notwithstanding strenuous work at the office, sustained exertions connected with preparations for closing up the house before going West, the patient feels exceedingly well, as quite distinct from former years. The heart sounds are good, embryocardia has disappeared. The same report is given on May 28 and 31, and as seen from the table an attempt was made to decrease the dose of pituitrin, whilst digalen ♏ x, t.i.d. was tried in order that the patient who intended to go West should have a cardiac stimulant whilst exposed to exertion and excitement during her long travel. On June 4, a moderate increase in the size of the heart was found, with a lower pulse pressure, on account of which the dose of pituitrin was raised to 0.8 c.c. The digalen dose was reduced to ♏ viij, t.i.d. and also the atropine to ♏j. The patient was seen on June 7 doing very well and presented at the examination of the heart well sustained heart sounds accentuation of the second pulmonic, higher systolic, a moderate diastolic, high pulse pressure, and a better Hg.mm. pressure pro minute.

The patient on her sight-seeing trip to San Francisco, notwithstanding unaccustomed exertions experienced only slight discomfort while touring in the Rocky Mountains. Some palpitation and cardiac oppression were noticed in climbing, which symptoms cleared away rapidly after rest.

The patient returned home in very good condition and was not heard of until June 5, 1916, when she was preparing to leave the city for her vacation. At that time, a few days preceding her call, irritation of the eyelids and nostrils, moderate watery mucous discharge from the mucous membranes, very moderate sneezing, but no respiratory difficulties were noticed. Again on physical examination the heart showed dilatation, muscular weakness, indistinct heart sounds, particularly both mitral sounds were found indistinct, murmurish, accentuated; split second aortic sound; low systolic, high diastolic and low pulse pressure. The figures of the diameters of the heart are given below, as well those for pulse and blood pressure readings.

	Tr. D.	H.	O. D.	Surf. Sq.In.	P.	S. P.	D. P.	Pp.	Hg. l'P.	Inject. Pit. c.c	Dose Ad. c.c.
June 5	5⅝″	4″	6½″	11 25	78	112	88	24	15,600	0 8	0.
Jun	4¼	3¾	5¾	8.43	75	110	74	36	13,800	1.0	0.2

The patient reported two days later following the first injection, feeling perfectly well, and objectively presented normal heart sounds, regression of the cardiac dilatation, lowered diastolic, increased pulse pressure, a smaller figure for the one minute mercury pressure. The results of the last injection could not be controlled by physical examination but the patient leaving the city for the South, notwithstanding very hot and damp weather, roses and other flowers in full bloom, was entirely free from symptoms suggesting her former "rose-colds." Whilst sojourning in New England during a wet summer, the patient reported that she had experienced only very slight discomfort of occasional watery discharge from her eyes and nose, but never any asthmatic attacks, which were so troublesome in former years. Since the patient was at my office only twice before starting out for her vacation, I had some doubt whether the two injections of pituitrin and adrenalin were sufficient to protect her from any further manifestations of her rose colds. If it could have been arranged to give the patient the pituitrin injections, it is my impression that even the slight manifestations mentioned above could have been averted.

Among my hay fever patients there are four more cases, two women and two men, who were treated by the pituitrin and adrenalin injections. Time, however, and space forbid me to enter into a detailed analysis of their cases. Briefly speaking, on first examination they all revealed dilatation of the heart, with weak sounds, rapid pulse, low systolic and high diastolic blood pressure, low pulse pressure, digestive disorders, particularly marked indicanuria. Under pituitrin and adrenalin injections these cases showed all at least reduction in the size of their heart, better heart sounds, improved blood-pressure findings; symptomatically the attacks did not return, or were lessened in intensity and severity. In giving my personal clinical observations on a few hay fever cases, I am fully aware that definite conclusions from the present observations should not be drawn. From the theoretical and clinical standpoint two points seem of interest, namely:

1. That the symptoms emanating from the respiratory tract are probably not the only ones present; that, at least as shown in the cases referred to above, there may be found definite signs of a cardiovascular deficiency-cardiac dilatation, weak heart sounds, abnormal blood pressure findings, vasomotor weakness, associated with indicanuria of nutritional or intestinal origin, which functional disturbances may be favoring factors for the manifestations resulting from the pollen irritation. Somewhere, somehow, the pollen floating in the air must reach the mucous membrane. Admitted the lack of a vasomotor tonus, a low circulation, and weakened heart condition, the possibilities are that the irritation of the pollen is more apt to cause the distressing clinical symptoms.

2. That from the therapeutic standpoint pituitrin administered in appropriate doses may remove the cardiovascular depression and in some instances cure, or at least alleviate, the clinical symptoms. The making of such a statement does not imply that pituitrin medication is the only substance to be used in hay fever cases, nor does it mean that the pollen vaccination is out of place. As said before, the vaccination treatment has its usefulness and is apt to secure good results. From the clinical standpoint I believe that the attendant signs of vasomotor and cardiac weakness ought to be considered in the outline of treatment for hay fever cases.

Admitting that the posterior part of the pituitary body plays a more important part in human physiology than generally supposed, especially with reference to the vagus nerve, it is at least probable that by the proper therapeutic use of pituitrin we are able to help the patient and secure him better protection from the tedious symptoms attributed to hay fever.

PRICE HILL.

Syndrome Seen in Soldiers with Intestinal Troubles.—Depéchaux describes an augmentation in volume of the abdomen, with ptosis, meteorism and depression of the cupola of the diaphragm as shown by *x*-ray examination. These phenomena appear only in predisposed subjects and are of hysterical nature. They appear through autosuggestion consecutive to colitis or dysentery.—*Le Progrès Médicale.*

RECENT LITERATURE PERTAINING TO VITAMINES; THEIR APPLICATION IN INFANT FEEDING.*

By LOUIS FISCHER, M.D.,

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THE term vitamine is used to designate the group of substances in the animal diet which are present in minute traces, whose nature and chemical constitution are unknown, and whose absence will result in a series of pathological changes which can only be overcome by addition of these essential factors. The name is simply a class designation, and is used as such (A. B. Macallum).

Since the publication of Funk's book on the vitamines in 1912, research has been stimulated, so that a large number of scientists, amongst whom Bradden, Cooper,[1] Mendel, Seidell,[2] Goldberger, Williams, and Vedder[3] should be mentioned—nearly all have confirmed the results of Funk.

During the last five years our knowledge of the metabolism of fats, proteins, and carbohydrates has been considerably enriched, and we have learnt why we have had so many feeding failures. Our knowledge of the internal secretions has enlightened us in many ways, likewise the discovery of the amino-acids and the lipoids; their rôle in the digestive process are all new and valuable factors in infant feeding, but, they have failed to solve the problem.

We have learned that just as we find some foods high or low in fat and proteins, so we find some foods high and others low in vitamine; therefore, in giving a mixed diet we give a normal amount of vitamine, although in the preparation of various foods the vitamine is frequently abstracted or destroyed.

Many cases of malnutrition are met with where large quantities of food have been consumed but poorly assimiliated. The faulty metabolism of the fat, or protein, or carbohydrate shows that something was lacking. We have learned that unless the food ingested contains sufficient vitamine there will result partial starvation.

It is a well known fact that the too exclusive use of ordinary white flour and of most carbohydrate foods such as sugar, hominy, tapioca, sago, and the starches, and certain kinds of cornmeal will produe polyneuritis in fowls, and beriberi in man. The deficiency diseases, especially scurvy, are frequently found in institutions where the above diets have been rigidly enforced and the antiscorbutic factors such as the fresh meats, fresh fruit juices, fresh milk, and especially fresh vegetables, withdrawn.

Funk experimented with autolyzed yeast and found that when 3 per cent. of yeast is added to food given to white rats, growth was stimulated.

According to McCollum, Simmonds, and Pitz,[4] when young rats are fed a mixture of 60 parts of wheat embryo and 40 of dextrin, a mixture which furnishes about 20 per cent. of protein, very slow growth takes place, and the animals may live for 4 months or more without loss of weight. The addition of calcium lactate (2 per cent.) to this food mixture will, at any period of their growth suspension, induce a noticeable increase in body weight.

Although yeast has been extensively used for feeding cattle for a number of years, its use for human consumption has been suggested only recently, during the war, owing to the scarcity of meat. As a meat substitute it was strongly recommended by Schottelius[5] who has used it in quantities of 50 to 75 gm. daily, in addition to the ordinary diet, and claims that it is well utilized in the human body.

Funk's results show that young rats can live on yeast as the sole nitrogen source for quite a long while, although it has not yet been proven whether they can subsist on it indefinitely.

According to Funk[6] a definite relationship exists between the onset of certain deficiency diseases and the amount of carbohydrates consumed. This has since been corroborated by Braddon and Cooper.[7] It has been known for some time to those who have studied beriberi from the clinical standpoint that, with an increase in the consumption of polished rice, the onset of the disease can be hastened. This was attributed to the presence of toxic substances in the rice. It was also known that the deficiency diseases occur when proprietary foods consisting chiefly of starch, make up the bulk of the dietary. By actual experiments on animals, Funk[8] was able to ascertain that "by decreasing or increasing the quantity of polished rice or even of pure starch, beriberi can be produced slowly or quickly as desired. It has also been found that in beriberi the blood sugar is increased, especially in those cases in which large percentages of starch are given in the diet. Occasionally in the literature clinical data may be found referring to the increase of blood sugar in certain deficiency diseases as in scurvy, but the matter has not been studied systematically, and no data can be found relating to blood sugar in acute beriberi or pellagra occurring in man. It appears that there is a very definite relationship between the vitamine present in the food and the amount of carbohydrates which have to undergo metabolism. Accordingly the fact must be emphasized that a certain amount of vitamine can take care only of a limited amount of carbohydrate."

Another interesting point brought out by Funk[9] is that animals fed on white rice showed very marked changes in the chemical composition of the brain. Remembering that the most characteristic feature of deficiency diseases is a group of symptoms arising from the central nervous system his findings should be regarded as very important.

The clinical aspect of vitamine therapy has been studied by M. Stark and Edelman[10] at the Post Graduate Hospital and their interesting report deserves careful consideration.

The exclusive feeding of carbohydrates such as hominy, tapioca, sago, and the starches is to be condemned, for if continued it will produce intestinal disorders.

Variety of Food.—To give the live factor or vitamine necessary to the proper assimilation of food we must give a mixed diet of fresh vegetables, such as potatoes, spinach, dandelion, carrots, beans, and peas, in addition to fruit juices, such as orange, lime, and pineapple juice, fresh milk, fresh meat, and hard boiled yolk of egg, the outer coats of

*Read before the Section on Diseases of Children, American Medical Association, June 6, 1917.

wheat, oats, and especially barley are very rich in vitamine. Natural or so-called black cod-liver oil has been extensively used, likewise butter-fat, to promote growth and stimulate metabolism because of their vitamine content. The substitution of lard has been a failure. The excellent results obtained by Kassowitz in his well-known phosphor-cod-liver oil therapy in rachitis is due, in the light of our present knowledge, to the vitamine content of the cod-liver oil.

One must not wait for definite scorbutic symptoms nor for rachitic symptoms during infantile development, but vitamine in some form should be added when the infant is several months old.

There are three symptoms which deserve emphasis as showing imperfect metabolism of food elements. They are: (1) Restlessness, irritability, loss of sleep, head sweating; (2) greenish liquid stools containing curds or mucus; (3) loss of, or stationary weight.

When vitamines are taken into the body their action is to stimulate the internal secretions. By setting free these secretions they act as hormones. These hormones again stimulate the enzymes.

To guard against deficiency diseases vitaminic foods should be given as early as the first few months of life. Infants will digest spinach and other vegetable juices, without gastric disturbance, during the early months of infancy. They appear markedly improved by this addition to the diet.

The following cases are given as examples of malnutrition and faulty metabolism in which the nutrition was improved and the infant more satisfied when the vitamine-containing food and vegetable juices were added to the dietary. The character of the stool was changed within a few days from a greenish mucous stool to one of a yellowish pasty consistency. It may be interesting to note that no medication was given.

Case I.—E. J. S., female infant, was born of healthy parents on November 3, 1916. Weight at birth, 6 pounds 2 ounces. Was breast fed from the fourth to the twelfth week, but gained only one pound. When seen by me there was a seborrhea covering most of the body, excoriated buttocks, and six to ten greenish mucus stools containing curds were passed in twenty-four hours. The infant was restless, dissatisfied, cried most of the day and night, and seemed hungry. It nursed one-half hour or longer every two to three hours. Breast feedings were alternated with a 2 per cent. modified cow's milk. Lactose, sucrose, and maltose were tried in turn, but all disagreed. After several weeks of the alternate feeding the mother's milk was discontinued, and a wet nurse's milk substituted. This also proved unsatisfactory and the infant was put on a modified cows' milk and vegetable juice diet. When ten weeks old a 2 per cent. fat mixture was given. One-half ounce of orange juice was given every morning, and a half-ounce spinach juice, made from freshly boiled spinach leaves, was given every evening. Grated zwieback (half a piece) was given with each feeding. A steady gain commenced, and this diet was assimilated. The weight at the age of thirty weeks was 16 pounds 6 ounces. The infant now at seven months of age receives cereals in addition to vegetable purées, orange juice, and one quart of milk daily.

Case II.—E. L., child of a druggist living at Jamaica, L. I., was first seen when five months old. The mother said the infant had eight to ten liquid stools containing mucus daily for the last month. The feeding consisted of forty ounces of a modified whole milk formula. The infant weighed seven pounds at birth. When seen by me at five months of age the weight was 10 pounds 9 ounces. Eleven greenish liquid stools containing stringy and jelly-like mucus were passed during the previous twenty-four hors. The whole milk formula was changed to one of skimmed milk. A half ounce of orange juice was given once daily, also a heaping teaspoonful of freshly boiled chopped spinach was given daily. Within a few days the character of the stool had changed to a more solid consistency. Crushed zwieback was added to two feedings daily. The infant began to gain at an average of five to six ounces weekly and now weighs over fourteen pounds.

The above two cases are submitted as further evidence of what has already been published in the interesting report of Stark and Edelman at the Post Graduate Hospital. When it was possible to obtain autolyzed yeast, the same was given in doses of from 10 to 60 drops each feeding. The vitamine content of the autolyzed yeast certainly stimulated the digestion and assimilation of the food to a noticeable degree, and I am convinced that it merits further use and consideration.

REFERENCES.

1. Cooper: Bio. 8, 250, 1914.
2. Seidell: U. S. Publ. Health Report, No. 235, 1916.
3. Chamberlain, Williams and Vedder: Philip. J. of Sc., 7, 39, 1912.
4. McCollum, Simmonds, and Pitz: J. of Biolo. Chem. 1916.
5. Schottelius: *Deutsche med. Woch.*, 917, 1915.
6. Casimir Funk: Proc. Physiol. Soc. London, Dec. 13, 1913. *Z. f. physiol. Ch.*, 89, 373, 378, 1914.
7. Braddon and Cooper: *Brit. Med. J.*, June 20, 1914.
8. Casimir Funk: *Amer. Medicine*, Nov., 1916.
9. ——: *J. of Physiol.*, 51, 1912.
10. M. Stark and Edelman: *Amer. Medicine*, Nov., 1916.

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INFECTIOUS ARTHRITIS.*

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MARLIN, TEXAS.

The word rheumatism is a general term which has been used to signify pain in a joint or muscle, regardless of its cause. The more practical or scientific method, of course, in all cases, is to determine, if possible, the etiological factor in every case and modify the term arthritis with an adjective indicating the specific causative agent. This, however, is not always possible to do, and hence the word toxic or infectious is used to indicate that some bacteria, bacterial or other toxin, is the cause.

Etiology.—Goldthwait, Painter, and Osgood divide arthritis into atrophic, hypertrophic, infectious, luetic, and tuberculous, and think the streptococcus, staphylococcus, pneumococcus, gonococcus and tubercle bacillus are the usual bacterial agents producing arthritis, but that the bacteria themselves often cannot be isolated from the joints, their toxins being sufficient to produce the effects. Most authorities now consider them all as infectious or toxic.

The diplococcus of Poynton and Paine has been accepted by many as the etiological agent in those acute forms of migratory arthritis with acid sweats, etc., now called rheumatic fever.

Edward C. Rosenow, by his recent experiments, has shown that the streptococci are very human in their temperament and characteristics, being changed in virulency and other properties by their

*Read at a meeting of the McLennan County Medical Association.

food and environment. Some strains are virulent and some non-virulent; some select gall bladder, some the heart tissue, some the skin, as in erysipelas or erythema nodosum, and some prefer the joints as their food and habitat. He even thinks that peptic and duodenal ulcers are caused by them. In the Mt. Sinai Hospital the *streptococcus viridans* has been isolated from the endocardium and joints of many cases of arthritis which produced similar symptoms injected into rabbits. The invetigations of Victor C. Vaughan into the parenteral digestion of foreign protein compounds, which includes bacteria as well as amino acids in the circulation, digested by the cell enzymes, have shown that fever and other serious symptoms often result therefrom, anaphylaxis being probably one such result.

The various bacteria or their toxins mentioned above and the *Spirocheta pallida* are the causative agents of most cases of arthritis, though the foreign protein compounds absorbed from the alimentary tract may act as exciting factors in many cases.

The universal enemy of mankind, constipation, now recently called intestinal stasis, which is simply imperfect alimentary drainage, causes increased bacterial proliferation. The antitoxic and bacteria-destroying functions of the liver are impaired by this overwork caused by the high protein dietary and increased bacteria, and later the thyroid, pituitary, adrenals, pancreas, and kidneys, one or all, may likewise suffer. This impairs nutrition and lowers the powers of defense, thus making the system more susceptible to the bacteria and their toxins.

Dr. Goldthwait wrote an article recently dividing people into two classes: the wolf or carnivorous type, and the ox or vegetarian type, according to their distinctive anatomical peculiarities and natural habits. The ox type, with broad joints, high cheeks, is naturally vegetarian, and if forced to live upon a high protein diet will be more readily disposed to arteriosclerosis, gout, nephritis, etc. The ox type is more susceptible to the toxic effects of certain amino acids of protein foods. The wolf type is more lithe, smooth, and has a shorter alimentary canal, and can thus metabolize proteins better, without serious consequences.

In an article printed in the March, 1902, issue of the *American Journal of Dermatology and Genito-Urinary Diseases*, the writer first reported ten cases of chronic arthritis caused by urethral stricture, or contracted meatus, all relieved by dilatation and drainage. I stated therein that most rheumatic and neuralgic conditions, I thought, were due to a violation of that well-known surgical principle—drainage. I still believe that statement is true. There is present in some mucous membrane of the body, between the nose or mouth and rectum, the kidneys and meatus, the tubes and vagina, a focus of infection characterized by (1) abnormal retention, (2) fermentation or bacterial proliferation, (3) irritation, (4) absorption. Back of every such stricture or contracted meatus in those cases I found a tender, irritated spot.

These four things are always present, it matters not what bacteria may be the causative agents. The focus of infection should be located, if possible, and drainage established. It may be imperfect drainage from an abscess at the roots of the teeth, pyorrhea, frontal sinus, antrum, tonsils (often imbedded with no soreness), the gall bladder, colon, appendix, tubes, uterus, prostrate, urethra, or rectum from a fistula or tight sphincter. I could recite many cases from our own experience to prove the above sources of infection. One patient this past summer, with an affection resembling a one-sided Jacksonian epilepsy, was relieved by a tonsillectomy, and many cases of arthritis may have been thus relieved.

I am coming more and more to recognize the great importance of a complete history of each case as to origin, onset, and first symptoms. The sore throat will always precede and often subside a few days before the arthritis begins, when the tonsils are the source of the infection.

Differential Diagnosis and Treatment.—The acute gonococcic arthritis usually begins with fever and migratory pains for 24 to 36 hours, then one or more joints become sore and diffusely swollen and remain so, other pains ceasing. A careful history will show an acute gonorrhea of 12 to 18 days' duration, in which the discharge stopped two or three days before the arthritis began. The immediate application locally to the inflamed mucous membrane, if possible, for 5 to 8 minutes two or three times daily, of a 2 per cent solution of magnesium sulphate, with 1 per cent of carbolic acid, will often reverse the osmotic action, drain the mucous membrane, start up the discharge again, and stop the arthritis which otherwise would continue for weeks.

There is also one other condition which is so often called rheumatism and treated as such with very disastrous results to the patient. It is acute osteomyelitis. The careful history will enable one to diagnose it readily. Quick onset by chill and fever, sharp boring pain in the bone near but *not in* the joint made worse by tapping, with no swelling nor visible redness the first few hours. John B. Murphy claimed that this is strictly a surgical condition and should be so treated within 24 to 36 hours. If no surgeon is present, he says, take a gimlet, boil it and bore into the region of the pain in the medullary cavity, when after a few minutes pus will exude and relief follow. If not thus treated the patient will be sick for weeks and perhaps rendered a cripple for life.

Trauma is an exciting etiological factor in these cases. With a large aspirating needle I have removed two or three drops of fluid and relieved a streptococcic periostitis. Free opening, however, is the treatment. A chronic luetic or tuberculous arthritis or osteoarthritis may closely resemble each other, requiring the luetin or Wassermann test to determine which is present. One or both of these tests should always be made in all chronic cases having pain and soreness especially when worse at night.

A Roentgenogram will often clear up the diagnosis and I have several plates showing this point. The staphylococcus infection has moderate fever and will terminate by formation of pus, as a rule.

The pneumococcus arthritis has sore muscles, diffusely swollen joints, moderate fever, and may change suddenly from all the joints to the lungs, giving an acute lobar pneumonia. The streptococ-

cus infection has more fever, red tongue, often chilly sensations, cool, moist skin, rapid pulse, and frequent heart involvement, and is hardest to cure. The *Diplococcus rheumaticus* arthritis, which I think is often aided by the colon bacillus, has red, hot swollen joints, changing from one to another joint, quickly bounding pulse, coated tongue and acid sweats. Ammonium chloride and sodium salicylate preceded by a mercurial purge, will relieve this type in a few days, as a rule. If the stomach will not bear large doses of aspirin or other salicylates, as it often will not in such cases, the salicylate and bicarbonate of soda may be given in hot water as a clyster. Or the chemically pure sodium salicylate, in 10 to 30 grain doses, may be given in 50 c.c. of sterile water intravenously as recommended by Conner.

A word of caution against giving medicines intravenously. They must be neutral or slightly alkaline. Most medicines are bacteria-free when opened unless touched by hands, and may be decomposed by boiling. I have had some very excellent results by giving the sodium salicylate intravenously, but the urine should be examined always every day to detect possible renal irritation. Doses of 200 to 300 c.c. of a 2 per cent. solution of magnesium sulphate have been given intravenously by Harrower and others for true streptococcemia with good results in puerperal cases and in erysipelas, and should be tried in streptococcal arthritis. The treatment, however, in all cases should be under four heads corresponding to the four etiological steps and to the bacteria present: (1) Drainage or removal of the focus of infection, by whatever means necessary according to its location. (2) The sterilization and healing of that focus by antiseptics, salicylates, mercurials, castor oil, or thymol and charcoal in the alimentary types, as recommended by Geronne in the case of typhoid carriers. (3) The elimination of bacteria and toxins already in the system by means of baths, purgatives, diuretics, and massage. (4) The building up of the powers of resistance to prevent or antagonize absorption and assist elimination by means of sunshine, fresh air, deep breathing, a good balanced ration with iron, arsenic, and tonics. Vaccines are useful in the chronic recurrent cases, autogenous are preferable, but the mixed polyvalent vaccines often help. All vaccines are irrational in acute conditions, with high fever, unless given at the very onset. The thyroid and thymus glands have helped much in many chronic cases, especially in patients with dry skin, thin dry hair, slow pulse, no fever.

Statistics are usually very tiresome and very one-sided, depending upon the physician's viewpoint and experience. The surgeon comes to think that the tubes, gall-bladder, and appendix are the sources of most infections. Many laryngologists have regarded the tonsils as the source of 40 per cent of all cases of rheumatism. The internist believes a one-sided or excessive dietary with constipation, intestinal stasis, or autotoxemia to be the most common trouble. The dentist accuses the teeth and alveoli as such. The genito-urinary man reports 65 per cent. due to infected vesiculæ seminales. Each partisan quotes with enthusiasm some high sounding, far-away name as his authority, then often fails to use his own eyes and gray matter as he should. All authorities are human beings, in a measure one-sided and subject to err.

Fifteen years ago I saw a bad case of rheumatism recover and gain 30 lb. after having the teeth extracted, giving drainage in pyorrhea, but I have seen many cases of pyorrhea that had no rheumatism at all. We now know, according to Hartzell and Rhien and others, that it is not pyorrhea but the *Streptococcus viridans*, from the dental granuloma of the crowned or filled tooth in which the root canals were not perfectly cleansed, sterilized, and closed, that the infection comes to form alveolar abscesses and systemic infection. Pain is often not present and a Roentgenogram is the only means of showing this condition.

I shall give you briefly a résumé of cases from all walks of life classified according to etiology so far as we could determine. Many cases are classed under two or three heads. To May 1, 1916, according to our statistics for the past four months, we treated in all 611 cases, 10 per cent. of that number being neuritis and 31 per cent. so-called rheumatism. Of these 251 cases of rheumatism and neuritis 40 per cent. lived on a high protein diet, had constipation and indican, oxalate of calcium or urobilinogen in the urine, indicating the alimentary canal as the probable source of the trouble, 21 per cent. had chronic inflammation of the nose, throat or tonsils, 16 per cent. began with fever or so-called grip, being an acute respiratory infection. 16 per cent. showed no discernible cause unless hereditary, 10 per cent had bad teeth, which does not include those that might have been shown up by the Roentgenogram as due to alveolar infection. 7 per cent. were due to gonorrhea, 3 per cent. to lues, and 1 per cent. to deficient thyroid glands.

SYPHILIS AND PREGNANCY.

By BURTON PETER THOM, M.D.,

NEW YORK.

THE influence of syphilis upon pregnancy has attracted the attention of syphilologists and obstetricians from the days of Paracelsus to the present. The knowledge gained in the past ten years has added zest to its perennial interest and has wrought great changes in our views so that the aphorisms of the teachers of a former time have been relegated to the limbo of ideas no longer held as true.

Eighty years ago Colles formulated the law which bears his name: "A child born of a mother who is without any obvious symptoms, and which, without being exposed to any infection subsequent to its birth, shows the disease when a few weeks old, this infant will infect the most healthy nurse, whether she suckle it, or merely handle and dress it, and yet this child is never known to infect its own mother, even though she suckle it while it has venereal ulcers of the lip and tongue." In 1865 Profeta made the statement which has since been known as Profeta's Law: "A healthy child born of a syphilitic mother could be suckled by her or a syphilitic wet-nurse with impunity."

For many years these oracular expressions went unchallenged. Coupled with the fact that florid syphilis in the pregnant woman was a frequent cause of abortion and still-birth they represented

practically about all we knew concerning the disease in its relation to childbearing. Since the discovery of the *Spirocheta pallida* and the introduction of the Wassermann test we know the *raison d'être* of these laws and accordingly have grave doubts as to their verity. Since 1905 the literature on the subject has been voluminous, not to say confusing. But now, out of this mass of conflicting opinions, certain facts have been established which enable us to reach conclusions resting upon a scientific basis. It is my purpose in this communication to present these facts.

The Wassermann test has allowed us to arrive at a much clearer insight as to the incidence of syphilis than heretofore. We have learned that it is present, especially in a masked form, much more frequently than was supposed. We have also been made aware that absolute dependence cannot be placed on a serological reaction in diagnosing syphilis either in the pregnant woman or her child. I have not space to go into detail why this is so; indeed, authorities are still divided as to the reasons. Only, I might add in passing, that all women, whether pregnant or not, are more or less aberrant to the Wassermann reaction. We can affirm too, which was formerly denied, that paternal infection can and does occur, although rather infrequently.

The peculiarity which the pregnant woman affects toward the Wassermann is shown in other ways that are still more puzzling. In pregnant or parturient women the milk may react positively and yet syphilis may not be present; the reaction however is not marked—one or two plus. Scarlet fever occurring during pregnancy will give rise to a positive reaction, also in carcinoma and puerperal sepsis. Patients with eclampsia always give a strongly positive reaction. The condition known as latent maternal syphilis—where syphilitic spermatozoids exist in the woman's genital tract—not only creates an immunity to the disease but also against a positive Wassermann because these women not only have antigens in their breast milk but in their blood serum as well. These women may remain in good health indefinitely and yet convey syphilis to their offspring through the ovum, decidua or placenta.

Numerous observers have found that not much reliance can be placed in blood for a Wassermann taken from the umbilical cord. While it is undoubtedly wise to do so as a matter of routine, yet the most absolute test is to search for the *Spirochæta pallida* in the cord itself. The organism should be looked for in the walls of the vein and the connective tissue stroma. In a suspected case a section of the cord should be preserved in a formalin or Ringer's solution and later examined by a bacteriologist. Examination of the placenta is not so reliable, as it not infrequently happens that the spirochetæ cannot be found in the placental tissues, although the woman is patently syphilitic. Usually, however, they can be found and when present indicate not so much the presence of syphilis in the mother as its existence in an active form in the child. As strongly presumptive evidence of this is the fact that the organisms when found are always on the fetal side of the placenta. This is especially interesting because latent syphilis in the mother is undoubtedly derived from an infected fetus. The organisms may lie dormant for an indefinite period and after the woman has borne several healthy children she may develop the disease. It can thus be assumed with almost complete certainty that infection of the mother occurs through the fetus by way of the umbilical vein or the ruptured vessels of the chorionic villi. The antigens thus formed allow the mother to nurse her syphilitic child. If these antigens cannot be found in her milk she cannot nurse her child without grave danger of becoming infected herself. Should the mother be syphilitic and the child proven to be healthy, then the child should be fed artificially.

The latter part of this last paragraph naturally brings us to the discussion of Colles' and Profeta's laws. From what has been already stated the reader can readily infer that these laws are no longer accepted. The explanation of the apparently healthy mother nursing her syphilitic child, is to be found in the latent syphilis and the antigens in her milk. The same is true of the apparently healthy child suckling from the syphilitic mother. It is a latent syphilitic. We know now that it is the fetus which conveys the disease and that no woman can give birth to a syphilitic child without herself also being syphilitic; although the disease may be, and often is, dormant for a long period of time.

A clinical diagnosis of syphilis can be made from the placenta within certain limits. Evidences of the disease are found in the placenta in 70 per cent. of all cases. This, in spite of the fact that the child may show no signs of lues. It is apparent in some cases that the disease has exhausted itself on the placenta and in consequence the fetus is but slightly affected. It is also well known that infants who have syphilis do not always show symptoms at birth nor for a considerable time thereafter in a large percentage of cases. The child may exhibit symptoms of syphilis and yet the placenta may be perfectly normal in appearance. This is the exception, however, rather than the rule; the placenta shows certain signs which if not pathognomonic of the disease are strongly suggestive of it. Almost invariably there is a marked disproportion between the size of the placenta and the size of the child. In syphilis the placenta is decidedly larger. Between a normal child and a normal placenta the proportion by weight is about 1 to 6. In syphilis this is reduced 1 to 4 or even 1 to 3. Pinard has pointed out that the amount of amniotic fluid is also increased. I desire to say in passing that the disproportion between the placenta and child is, in my opinion, more apparent than real because the syphilitic child is often under weight.

The syphilitic placenta shows deep sulci between the lobes which causes the cotyledons to appear more prominent. Its color is paler and its surface is covered with yellowish white patches. Its substance is extremely friable and on section has a mottled appearance that has been likened to sausage meat. The vessels of the cord are visibly thickened, although this is sometimes present without syphilis. When the fetus is born dead the cord is often edematous and the vessels may be plainly seen, shining through the swollen cord. Wharton's jelly may be absent. The amniotic fluid may be increased to such an extent as to constitute hydramnios. This is to be accounted for by the placental

lesions incident to the disease. It may be due to a syphilitic cirrhosis of the liver. The changes occurring in the placenta are in most instances the cause of fetal death.

The condition known as habitual death of the fetus is frequently due to syphilis. The child dies in each succeeding pregnancy, usually between the thirtieth and thirty-fourth week, and is soon thereafter expelled. It cannot be denied that syphilis tends to the formation of monsters and of children malformed to a lesser degree. It is not true, however, that recent syphilis transmits itself as congenital syphilis and tertiary syphilis causes malformations. While syphilis is undoubtedly the most frequent cause of abortion—Charpentier found that in 781 luetic pregnancies there were 302 abortions, and Miller states that 70 per cent. of luetic women abort—the consensus of opinion among modern observers is that syphilis does not cause abortion as frequently as was formerly supposed; nor does it follow that every macerated fetus is syphilitic.

In the study of syphilis and pregnancy from the standpoint of the clinician the observations of Mangiagalli are worthy of note. He recognizes four conditions: viz., both parents syphilitic when conception occurs; the mother alone infected; the father alone infected; the mother becomes infected after conception, both parents having been healthy prior to conception. His conclusions are that an apparently healthy child born of a syphilitic mother is syphilitic although the syphilis is latent. When the mother becomes infected after the seventh month the disease in the child is apt to be less severe than if the infection occurred earlier in pregnancy. He could discover no direct relation between a positive Wassermann and the clinical manifestations of syphilis. When both parents are syphilitic the child inherits the disease in about 75 per cent. of births. When the mother alone is syphilitic the child inherits in about 60 per cent. If the father alone is syphilitic the child inherits in from 10 per cent. to 20 per cent.

Syphilis is always to be regarded as a grave complication of pregnancy. It increases puerperal morbidity more than any other cause. Many cases of nephritis occurring during pregnancy can be traced to syphilis. Sepsis is more apt to occur in syphilitic women than in those who are healthy. Cicatricial stenoses of the os due to syphilitic lesions may cause undue delay and complication of labor. The same is true of edema of the cervix due to active syphilis.

Syphilis in the pregnant woman should be treated the same as when it occurs otherwise. That is, salvarsan, mercury and potassium iodid should be exhibited sufficiently and properly to cure the disease. In the treatment of pregnant women, however, there are certain refinements which should be observed in order to attain the best results for the mother and her unborn child.

In giving salvarsan it must be remembered that the drug has been known to cause premature expulsion of the fetus; but in my opinion this danger is remote. If the woman's veins are sufficiently prominent the salvarsan should be administered intravenously, unless she is suffering with myocarditis or if her blood pressure is abnormally high. If her veins are not prominent enough and for the other causes mentioned the salvarsan may be given by the rectum. A saline is given and after the bowels have moved the lower bowel is thoroughly cleaned with a normal saline enema; after which the salvarsan solution is allowed to flow into the rectum through a catheter attached to a glass funnel. This method while not much used is almost as efficacious as when the drug is injected intravenously. It has the advantage of not increasing the blood pressure, does not produce "water sickness" and is much easier to give to a nervous patient. Should the woman be threatened with eclampsia salvarsan and mercury should be withheld until the urine is free from albumin.

I do not advise intramuscular injections of insoluble mercurials, such as the salicylate or grey oil, in pregnant women—or in any woman for that matter. My reason for this is that when such a menstruum is injected into the buttocks the layer of fat prevents its absorption and painful abscesses are prone to occur. If the patient's veins will permit I prefer to inject the mercury intravenously. A solution of bichloride or mercury benzoate is prepared so that each ten minims represents 0.006 of the drug. The initial dose is ten minims in 15 c.c. of warm normal salt solution. The procedure is the same as when salvarsan is given, only that the blood is allowed to run into the syringe and mix with the solution before it is injected. By so doing the chemical combination which thus occurs renders the solution non-irritating and the danger of phlebitis is avoided. When properly done absolutely no ill effects are produced (which cannot be said when horse serum is used) and it is the most efficient and promptly acting method of introducing the medicament into the system. The patient should receive two injections a week for six weeks. Treatment should then cease for a month and then be renewed. If it is not possible to give mercury this way the next best way is by inunction. During the course of her pregnancy the woman should receive from sixty to ninety inunctions; each thirty inunctions from four to six weeks apart. In giving inunctions it is best to give one each day for six successive days and then rest the patient a day, on which a hot bath is taken. I am in the habit of giving potassium iodid during the course of mercury and for a week or two thereafter, as it assists in eliminating the mercury and as mercury acts best in a state of flux, *i. e.* while being eliminated, the maximum effect is thus obtained. Patients under mercurial treatment should rinse the mouth several times a day as a guard against stomatitis. As pregnant women sometimes have trouble with their teeth the services of the dentist should be requisitioned if necessary. Rest and a tranquil state of mind should be encouraged. The last the medical attendant can materially aid in by maintaining an optimistic outlook. The bowels should be cared for by the administration of a mild aperient as occasion requires. Sexual intercourse should be forbidden after the third month. In those cases where it is not possible to give inunctions, the mercury may be administered by means of suppositories after the manner of Lanney.

These patients require no other treatment, the mercury and salvarsan being sufficient to overcome any anemia that may be present. In some instances

a bitter tonic may be given to improve the appetite. Treatment should be persistent; careless, casual treatment is, in my opinion, almost as bad as none at all.

1632 Avenue A.

COMPLETE THROMBOSIS OF THE ABDOMINAL AORTA;

WITH THE REPORT OF A CASE.*

By ROBERT A. KEILTY, M.D.,
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Thrombosis of the abdominal aorta is relatively uncommon, though not rare. It may be divided into partial and complete. Partial mural thrombi, with and without organization, are frequently met with over plaques of advanced arteriosclerosis. Complete obstruction, however, above the bifurcation of the iliacs, aside from aneurysm, is not so common. The present case falls under this latter group.

The literature for the past several years averages about three or four cases a year. One case, that of Moschowitz, is interesting. This began as an infection at the umbilicus, a thromboangeitis in a baby shortly after delivery, and terminated in complete thrombosis of the abdominal aorta.

I am in debt to Dr. Alfred Stengel and the staff of the University Hospital for permission to use the following history:

A. G., a white male, was admitted May 12, 1913, complaining of weakness. He stated he had been well until a year ago, when he had asthma for nine weeks. Following this, and continuing to admission, he was short of breath. This was not constant and was more marked after exertion. It was now sufficient to keep him from work and accompanied by epigastric pain referred to the heart and through to the back. He stated he had done light work most of his life, except for a short time in an iron-rope factory. He has had no serious illnesses, denied venereal diseases and used alcohol daily, but moderately, except for a time when he was a watchman in a brewery. His physical examination revealed a pallid complexion, with a dilated and weak heart. The blood pressure was systolic 215, diastolic 160. Urine analysis: dark, flocculent sediment, specific gravity 1030, acid, light cloud of albumin, great many hyaline, dark and light, granular casts, some mucus and epithelium. After treatment his blood pressure became systolic 165, diastolic 130.

June 9, blood: R. B. C. 5,450,000, W. B. C. 15,200, hemoglobin 85 per cent, polymorphonuclears 75 per cent, lymphocytes 21 per cent, large mononuclears 2 per cent. June 10. Phenolsulphonephthalein test showed zero for the first hour, 13 per cent for the second. June 11. Blood pressure, systolic 155, diastolic 115. June 14. The patient complained of severe pain in both legs and this was increased upon movement. A large purpuric patch appeared on both legs, which increased in size and depth of color. This has resulted on this date in a large bleb, and it was first noted that a blue spot appeared on the right toe. Some bloody material was coughed.

June 15. Examination revealed diffuse purpura over both thighs and knees. The legs were cold, especially the feet. No pulse could be obtained. He had some power in the thigh muscles, but could not move the feet or toes. Both femoral veins were full and red. June 16. The toes were bluer and more shrivelled. June 17. The legs above the knees were warm, and the feet seemed less intensely cold than before. They were bluer and more shrivelled, and the lower legs a deeper hue. Abdomen was swollen, but tympanitic throughout. Cardiac sounds were of poor tone and sweating was profuse.

*From the McManes Laboratory of Pathology of the University of Pennsylvania. Presented to the Philadelphia Pathological Society.

June 22. Patient continued to do poorly. Sweating was profuse. Twitchings were present over the entire body. The tympanitic abdomen was very persistent and resistant to treatment. The bowels became incontinent. A large bleb and superficial ulceration appeared on the lower back. Typical Cheyne-Stokes respiration followed and the patient died.

On admission the temperature was 97.1°, respiration 20, pulse 95. The temperature rose to normal, fluctuating between 96.3 and 99.3. Respirations increased gradually to 35 and the pulse as high as 110. On June 19 the temperature had risen to 104, the pulse to 120, and respiration to 32, and remained so until death.

The following is a brief autopsy protocol: A. G., 4220-13-86. June 22, 1913. Permission was granted for an abdominal incision only, without complete autopsy. The body was that of an adult white male about forty years of age. The lower extremities were swollen, dark blue and covered with large liquid blebs. This extended to the inguinal region. The abdomen was markedly distended and upon incision contained some bloody fluid. The intestines were black and friable, so that they were easily torn upon manipulation. The abdominal organs showed a picture of advanced putrefactive changes, although the body was dead only a few hours. The kidneys were swollen, had multiple infarcts, and microscopically showed a diffuse necrosis with an underlying glomerulonephritis. The spleen was the seat of multiple older infarcts, soft and mushy.

The heart was enlarged, the musculature pallid, with a densely adherent clot in the apex of the left ventricle. This was considered grossly an acute mural endocarditis, but the microscopical sections did not bear this out. The valve leaflets were free from acute inflammation. The aorta showed a moderate degree of intimal arteriosclerosis, without large plaque formation. The abdominal portion was completely closed by a fresh currant jelly and marantic clot, which grew older as one went down and which was quite fibrinous at the bifurcation of the iliacs. This thrombus extended down the femorals as far as it was possible to dissect.

This case presents a man suffering with a cardiorenal lesion for at least the period of a year. This progressively became intensified and terminally resulted in a thromboangeitis of the femorals, or lower with extension of the thrombus, until the abdominal aorta was reached. This, in the course of about seven days, began with pain in the extremities, coldness, numbness, loss of motion, blueness, swelling, distention of abdomen, and finally death. In the absence of an acute endocardial lesion with the formation of an embolus, it must be agreed that this was probably an acute infection. Although no etiological factor was demonstrated, the patient had a leucocytosis of 15,000. While this presupposed an infection, it cannot be so stated definitely.

The loss of motion in the legs may be accounted for purely by the loss of muscular nutrition, and thus the loss of tone; but recent experiments upon the ligation of the abdominal aorta in the dog, with changes in the lower spinal segments of the cord, may have been also active in this case.

The persistent abdominal distention is easily understood from the condition of the intestine. Here, putrefactive changes advanced rapidly, probably over the last three days, until the entire intestine was so friable that one could put the finger through the wall at any point. The extension of the thrombus to the arteries of supply of the abdominal parenchymatous organs resulted, not so much in a gangrene as in a nutritional necrosis.

Conclusions.—Clinically, an adult male in the course of a cardiorenal disease developed thrombosis of both lower extremities, probably as a result of infection. This produced, over a period of six

days, a complete thrombosis of the abdominal aorta, with gangrene of the body below the diaphragm.

Pathologically, the thrombosis probably began as an infectious thromboangeitis of both lower femorals, with extension of the thrombus until the abdominal aorta and all of its branches were involved.

VARIATION IN THE CHARACTER OF THE FOOD SUPPLY AS AFFECTED BY THE WAR.

By J. M W. KITCHEN, M.D., M S.,

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It would seem as if medical attention to the issues of the war had so far been almost entirely directed to the matter of physical results of possible, and repair of, war injuries, and the influence of the septic and antiseptic conditions of camp life. There is another matter which should call for active interest and cooperative effort on the part of the medical profession; and that is the character of the food supply of the men at the front, and those who remain at home.

The present general interest in the prospective food supply of the world seems to be largely related to quantity. I imagine that the Germans more than any one else, are giving attention to quality. In this country the question of its quality should be an immediate matter of consideration to the medical world, and related conclusions be immediately formed so that educational influences can be promptly and generally diffused among consumers. Among Americans in the past, the matter of greatest interest has mostly been that of securing a supply of those food constituents that are most pleasing to the gustatory sense; but now we should consider the character of what we should eat.

In view of the world shortage of supply, perhaps the most important matter is to secure the greatest possible increase in wheat production and its distribution throughout the parts of the world where custom habitually calls for its consumption. In rendering help to the world we must consider that any radical change in dietary habits should be avoided as far as possible. This means that we Americans should be willing to give up a part of the wheat that we grow, for the benefit of others, and consume in place of what we give up, other foods.

One principle should be applied, which is that people of reduced incomes should eat less expensive foods and that food producers should produce more of the cheaper foods and not wastefully use those fundamentally valuable foods for producing high cost meat and other foods. Most people who can afford it eat too much meat with consequent autointoxicating effects from the putrefactive fermentations of proteins.

Of course our great American staple cheap food is Indian corn. It however is lacking in the same protein mysterious elements as are absent in wheat, vegetable oils and animal fats other than butter-fat. This lack in Indian corn can be made good by the addition of milk, butter-fat, eggs, and certain vegetables. Of course we know very little of the so-called vitamines other than that we know that unless present little or no animal growth can occur. Indian corn is somewhat irritating to the average alimentary structures. This trouble can be overcome by a considerable addition of rice or baked potatoes to the dietary, and to some extent by a long influence of heat and moisture in the preparation of the various food compounds in which Indian corn can be used.

Cow's milk is the cheapest source of animal food for man, and there is no better use for various pasture growths and the dried farm roughages than to turn them into butter-fat and milk. But very much more fluid milk is consumed than is good for the adult whose alimentary apparatus is in a state of development that will be benefited by a reasonable amount of work applied in digesting solid foods. The larger part of the milk produced should be turned into butter and dried skim milk powder, all of which if properly made are conservable foods. There is a considerable field for the use of beans as a dried food product, but we can learn considsiderable from the Chinese through the ways in which they utilize the soy bean by its preparation in various forms, through fermentation and otherwise, which not only improve its digestibility but also its gustatory character as a protein food. A great deal of food conservation can be done in the proper drying of garden-grown foods produced during the growing season, but to make this practical such conservation should be carried out in connection with drying plants established by communities, inasmuch as it is difficult if not impracticable to do much in drying foods by the individual domestic housekeeper. Among the dried foods of value, spinach may be mentioned because of its supposedly large content of vitamine principle. It is easily dried, and can be grown in large quantities during the coming fall, and as an undried product, throughout the winter in our Southern states.

A very important matter in the immediate future is the appointment of official experts in every county and town, whose function will be to diffuse information among the people as to what foods they should eat, and how to prepare them.

94 Prospect Street.

Uremia and Internal Secretions.—Remond and Minviele concluded as a result of special research that stimulation of the organs of internal secretion increases the normal resistance of the organism to uremic intoxication.—*La Presse Médicale.*

Syndrome of Avellis.—Laurens describes the results of a traumatism of the vagospinal nerve by shell explosion. This nerve is regarded by some anatomists as presiding over the movements of the soft palate. The result of the trauma was recurrent homonymous paralysis of the velum.—*Le Progrès Médical.*

Paroxysmal Vagotonia.—Danielopulo studied a group of young subjects who presented paroxysms of severe vertigo (occasionally with syncope), cerebral vomiting, and bradycardia. Uremia and meningitis could be excluded. The genuineness of the conception of vagotonia is shown by the fact that atropine acts favorably on the symptoms.—*La Riforma Medica.*

False Accusation of Rape and Spurious Pregnancy.—Tissier reports the case of a girl of seventeen who claimed to have been violated and impregnated. Her hymen was not only intact but formed a complete diaphragm in the vagina. A greatly enlarged uterus proved to be a hematometra with hematocolpos, the girl never having menstruated. The alleged rape consisted only of a superficial contact, evidently with the cooperation of the girl.—*La Presse Médicale.*

Military Medicine.

WAR FATIGUE.

(From Our Regular Correspondent.)

PARIS, June 11, 1917.

IN this communication I want to call to the attention of the civil practitioner certain conditions of mental and physical derangement rarely if ever met in civil practice and which will be among the earliest of his experiences if he is called to service in one of the front line hospitals. In the first place one does not have to be told that many a man carrying a gun, doing his assigned duty in the trenches and "going over the top" with a fixed bayonet at the sound of the whistle, in a charge upon the lines of the enemy, is wholly unfitted both mentally and physically to be a soldier. Mentally he is modest, shrinking, quiet, soft spoken; he may be an artist, a musician, some man's or woman's secretary. Physically he has never done any hard work in his life; he has lived in some quiet, sheltered place, from which he is suddenly called to the roughest sort of a life, often to sleep on the ground; good food but often indifferently prepared and not infrequently eaten at irregular intervals and sometimes after a long day of fatigue and waiting. One can readily understand that this man will soon break under the strain and be in the hospital; but a worse case than his is the strong man, mentally and physically, who disdains fatigue, danger, meals, and sleep; he often presents a condition of which I shall speak and which it is important that the newly arrived surgeon at the front line hospital should be prepared to meet. The manifestations presented in such a subject are all the more disquieting and pronounced for the reason that being a strong man he calls upon the last reserve of his will power to support the strain, unwilling to concede that he has arrived at, even surpassed, the limits of his strength.

Take a man (and only the best are sent there) who occupies the observation post ordinarily beyond the first line. During the twelve hours of his watch the post is under constant bombardment, and besides the unceasing alertness of his attention to his duty of watching every point where any movement of the enemy must be immediately reported by telephone, he is answering calls of the phone, noting the movement of aviators, the changing intensity of a cannonade; his nerves are at a constant tension not to be diverted from the attention to his duties by the roar of the cannon and the shells bursting around him.

Or consider a man in the advance salient of the trench watching for the expected onset of the enemy's charge, which is attempted and repulsed two or three times in succession during a few hours and he in the thick of it but unhurt. There are countless and one duties, conditions, and situations which put a man upon his mettle and call into play his every faculty, not for a moment, but for hours upon a stretch, which subject him to unusual and extraordinary mental strain which greatly accentuates his bodily fatigue. When this man reaches and surpasses the limits of his strength he often presents a condition and chain of symptoms calculated to mislead or puzzle the doctor at the *poste de secours*, but which is simply an exaggerated manifestation of fatigue.

The debut, sometimes sudden, is insidious; the subject complains of pains all over—in his head, back, legs, with frontal or occipital headache, rachialgia and myalgia, and always elevation of temperature, sometimes 101° to 102°. He has chills, coated tongue, and distaste for food, but demands drink. The headache is almost always accompanied by vertigo and roaring in the ears; the eyes may be bloodshot. The myalgia is most pronounced in the hips and legs and not infrequently the patient complains of pains in the joints. Nausea and sometimes vomiting are present.

The patient may have diarrhea, but is more often constipated. His pulse is accelerated and in keeping with the temperature, his face is haggard, and a hectic flush covers the cheeks. His eyes are brilliant and restless, or heavy, lusterless, and dead. Some give a history of or have epistaxis and sometimes vesicles appear upon the lips.

These symptoms last from three to six days. The temperature oscillates but, under the influence of a brisk purge (if constipated) and quinine, falls to normal, in the bad cases possibly to subnormal; but the pains in the bones and muscles persist and the patient is greatly fatigued or prostrated. This usually disappears, however, with rest.

The symptomatology makes the doctor think of grippe, pneumonia, typhoid, paratyphoid, rheumatism, or malaria.

Sometimes in spite of the abatement of the fever and other disquieting symptoms, the patient seems to lose strength. He complains of the continued pains in the lumbar region and legs and neuralgia all over. He complains of muscular asthenia and is without force or energy, to which may be added gastrointestinal atony.

There is no doubt but that most cases are the result of a considerable period of resistance and evolution in the course of which the continued exercise, physical, and mental fatigue have so depleted the functional vitality that the waste products are imperfectly eliminated and the subject is poisoned by autotoxins, which are doubtless active agents in the upsetting of the thermic equilibrium, producing the fever of fatigue, the professional malady of the soldier.

146 AVENUE DES CHAMPS ELYSÉES.

CASUALTIES IN THE MEDICAL SERVICE.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—As you are aware, many various and extravagant figures have been published of the casualties in the Medical Service of the British Army. To obtain authoritative information in regard to these figures, I wrote to Colonel T. H. Goodwin, of the British Army Medical Service, who has been at the Western front since the war began until very recently, when he was detailed with the British Commission to the United States. He very kindly cabled the British War Office, asking for definite information, and obtained the following figures.

"The total casualties among medical officers of the British forces on the Western front from the

commencement of the war until the present date (June 25) are as follows:

Killed	195
Died of sickness	62
Wounded	707
Total	964

Total battle casualties (964 — 62) 902."

From these figures it is seen that only about 20 per cent. of the injured die. It is hardly necessary for me to add, for the information of our own medical profession who contemplate doing their bit, that these figures show the same relation between killed and injured as in our own estimated battle casualties, as given in the "Medical Service in Campaign," by Straub.

To encourage the volunteering of a greater number of medical men, who may have been deterred by the previous and widely published extravagant figures, I trust you will see your way to use the information supplied by Colonel Goodwin.

Robert H. Halsey, M.D.,
Captain, Officers' Reserve Corps, Medical Section.

CEREBRAL HEMORRHAGE DUE TO GAS POISONING.

Of all the horrors of the present war there is none which has impressed the popular mind with more vividness than the gas attack. And rightly so. It seemed when first launched upon an unsuspecting foe to be a fetid blast from the veritable mouth of hell. It swept over an army, and men curled up and died in agony, with all the miserable impotence of insects before the squirt-gun of the gardener. Those who survived lingered on in infernal torture for a few days, every breath a stab of pain, every moment an eon of anguish, and then gave up the ghost. But ere long the ingenuity of man found means to circumvent what it had invented; gas masks were devised and now cases of "gassing" are comparatively few.

Even so, the American surgeon, called to the front, should have no feeling of security in this regard. Gas attacks, while no longer so successful as at first, are still among the possibilities of civilized warfare and a thorough knowledge of the course, complications and treatment of a case of gas poisoning is indispensable. In this connection an article by Major F. W. Mott, a surgeon in the British army, is worthy of note (*British Medical Journal*, May 19, 1917). Dr. Mott calls attention to the occurrence of punctiform hemorrhages of the brain in gas poisoning, resembling those accompanying fatal cases of shell shock with burial. Some years ago this writer described the same sort of cerebral hemorrhages occurring in carbon monoxide poisoning incurred in the manufacture of nickel. Bignami and Nazari have described punctiform hemorrhages due to hyaline thrombosis of the small vessels of the white matter in such conditions as estivoautumnal malaria, apoplexy, and the diplococcal meningitis following pneumonia and measles.

Mott, after an exhaustive study of two brains of soldiers dead from gas poisoning, reports a number of curious circumstances. The white matter was peppered over with small dark spots about the size of a pin-head: these were due to hemorrhages. The red blood corpuscles were broken up and the hemoglobin converted into dark, chocolate-colored pigment granules which filled the capillaries, arterioles and venules of the white matter. Mott considered that the anatomical peculiarities of the vascular system of the cerebrum were responsible for these punctiform hemorrhages. The arteries terminate in the white matter and have each a separate capillary system, as have the emerging veins. this easily leads to stasis when there is any failure of the heart, or respiratory failure with right heart dilatation. These two factors may act separately or in combination.

Dr. Mott's observations are not only interesting in themselves, but they are of peculiar value at this time. The American army is entering a country new to it and meeting with perils to which it has hitherto been a stranger, any light which is thrown upon its way by those who have gone before it and any guide-posts which they may have erected are doubly welcome. They will prove added strands in the ties which are binding the two great Anglo-Saxon nations together in defense against a common foe.

The Soldier's Heart.—Professor Wenckerbach, who may be characterized as the Mackenzie of German-speaking peoples, delivered an address on this subject to military surgeons during 1916 which has been abstracted in *Il Policlinico*, March 4. There are two types of cardiac disease to be considered. The first comprises affections the existence of which is hardly open to doubt—organic essential diseases in the common sense of the term, such as lesions of the valves and orifices, cardiac musculature, pericardium, aorta, etc. The second type coincides largely with functional and symptomatic conditions, such as temporary dilatation, modifications of rhythm and subjective phenomena.

Lesions of the first type are, as a rule, readily recognized and military selection eliminates them from the category of soldiers' heart. While slight degrees of aortic and mitral insufficiency are occasionally encountered in which the most strenuous exertions are well tolerated, the general rule of exclusion should tolerate no exceptions because of the danger of an aggravation of the lesion or recurrence of endocarditis. When the state of the myocardium is in question the value of the heart's action must be carefully determined, and there is no form of diagnosis in which there are more sources of fallacy. Many symptoms such as arrhythmia, tachycardia, transitory dilatation, which were once attributed to the presence of a muscular lesion, have lost much of their supposed significance, especially in regard to arrhythmia. In order not to fall into error we must regard as certifiable myocarditic subjects only those who exhibit a notable hypertrophy of the heart, angiosclerosis and disturbances of the circulation of the lungs, liver, and kidneys. When such symptoms are absent the heart status had best be regarded as doubtful, demanding a special examination. It is enough that severe myocarditis is incompatible with good heart action and military service. Of affections of the—so to speak—cardiac appendages should be mentioned pericarditis, symphysis pericardii, severe aortitis, and aortic aneurysm. The recognition of these lesions

is often very difficult and the *x*-ray must be called upon before coming to a final opinion. Needless to say, subjects with this class of affections must be excluded from the army.

The doubtful group suggest above all complex states, made up of organic lesions, functional aberrations and even artifacts. Our diagnosis of this class of affections still shows many gaps and each case must be individualized. Take for example increased volume. To what extent is it evidence of disease? Since it is a natural consequence of valvular and orificial lesions and hence in this regard compensatory, it is not *per se* a disease, but a physiological reaction. Again, dilatation may cause enlargement of the heart without any element of hypertrophy. In the radiogram the two conditions appear alike. Again, the contour of the heart depends very largely on its position in the thorax, and this in turn upon the configuration of the diaphragm. A high diaphragm shows a larger heart and aorta. With a low-placed diaphgram we have a pendulous or drop heart with its typical elongation. This condition may be remedied by a retentive abdominal pad. Of great significance is the subject of the refilling of the heart. In diastole the latter must dilate, the two factors consisting of the duration of diastole and the quantity of blood which enters the heart. This latter factor is made up of an entire series of conditions—vascular and nerve tonus, the splanchnic circulation, the respiration, etc. Cardiac insufficiency means increase in volume as a result of diminished tonus of the myocardium; but other factors come into play here, for extrasystoles may be seen on the screen to augment the volume of the organ and this is also true of auricular fibrillation.

In the interest of simplicity percussion and palpation of the cardiac area must give way to radiography. The older methods reveal only the outline of the heart. A discrete hypertrophy of the left ventricle is very common, but of 47 out of 100 soldiers who presented this alteration only five were known to have actual lesions of the heart. Such a condition must therefore be grouped under normal variation in the absence of any evidence to the contrary. Even cases of drop heart should not be straightway excluded from milltary duty for all depends on the proper functioning of the diaphgram.

Unlike palpation and percussion auscultation can supply data of the greatest significance because murmurs have an independent value. Thus while diastolic murmurs often mean organic disease systolic murmurs often are heard in sound hearts. Functional pulmonic murmurs often deceive the general practitioner into the belief that he is dealing with organic disease. The significance of murmurs perceived in accelerated heart action in respect to functional incapacity must remain undecided because such murmurs may be heard in perfectly sound hearts.

The relations of arrhythmia to insufficiency must be carefully considered. We know today that normal hearts can beat without rhythm. Respiratory arrhythmia is a normal phenomenon. Extrasystoles in as far as they interrupt the heart's action may interfere with the circulation. Cases may occur in which they disqualify for military service. Heart block and auricular fibrillation are not necessarily hopeless because they can occur exceptionally as temporary phenomena. When permanent they naturally exclude from service.

Tachycardia may be simple or paroxysmal. The latter alone is pathological. In both forms the heart is insufficiently filled and when the alteration is permanent such hearts are insufficient for violent strains. Central vascular sclerosis revealed by simple resources, as accentuation of the second aortic sound, palpation of the carotids and radioscopy of the aorta. Soldiers with such handicaps can be employed in territorial service but are not equal to the fighting line.

Wenckebach is inclined to discredit the results of palpation of arteries and measurements of blood pressure. The danger is not from the peripheral, but from the central blood vessels. Subjects with tortuous temporal arteries are usually long lived. Subjects with severe cardiac lesions often present no objective symptoms, and those with angina pectoris may present no evidence whatever of cardiac or vascular disease.

Medical Transport Arrangements of the Navy.—James Porter and A. Vavasour Elder give an account of the method used for transportation of the sick and wounded of the Navy in the *British Medical Journal*, April 28, 1917, in which they state that the removal of these men from the scenes of their activities to the seclusion of a hospital is no small factor in the general work of the Medical Department of the Navy.

To deal with this phase of medical work a special medical transport organization has been created. There is a central office at the Admiralty for the principal medical transport officer, and thus in touch with the department. Medical transport officers have been appointed at all places around the coast where wounded are likely to be landed after action. At each of these places provision has been made for establishing dressing stations and temporary hospital accommodation for a certain number of cases until such time as an ambulance train can be sent to remove them to base hospitals elsewhere. One of the difficulties is the impossibility of arranging in advance or foretelling exactly at which spot and in what numbers wounded will be landed. Certain obvious bases exist to which ships return after an action, but at the same time these bases are far apart, leaving large gaps of coast line with many ports into which any one of which rescue vessels and smaller damaged vessels might be compelled to enter and discharge their wounded. Hence the establishment of what are termed emergency medical depots, with medical transport officers in charge of each at various places along the coast. Thus a sudden inrush of wounded men can be taken care of.

Briefly, from the time a wounded man is landed from a ship until he is finally placed in hospital, he is in the charge of the Land Medical Transport branch of the Naval Medical Service. The system adopted by the Navy differs from others in so far that when a man is wounded severely enough to require immediate treatment in bed, after having received medical attention, he is put to bed in his ship in a standard naval cot and made as comfortable as circumstances will permit. The cots are

canvas stretched over a wooden frame and laced together, and so made that the sides can lap over the wounded man, affording extra protection and warmth. Each cot is provided with sufficient bedding, including a mattress, thus making a complete bed wherever situated. These cots are "slung" to a standard, and are removable, so that from the time a patient is placed in a cot on board a fighting ship until he is finally put to bed in a hospital he is never moved out of it. He and his cot travel together all the way, thus saving much of the pain and suffering involved by frequent transfers by stretchers and trains. Ambulance trains, motor ambulances, bearer parties, etc., have been specially organized in a standard and uniform manner, with regard to each individual link of the transport chain. As regards the ambulances, beyond being fitted specially to take naval cots instead of the military stretcher, they are simply a squadron of thirty motor buses which were taken over from the London General Omnibus Company early in the war, and were fitted with spring trestles on which the cots rest. The writers state that these have proved exceedingly satisfactory in every way, being just as comfortable for patients as the latest pattern specially built ambulances.

Each emergency medical depot along the coast is supplied with cot, clothing, hospital, and medical units respectively. The cot unit consists of completely equipped service cots, which can be used to form the nucleus of a temporary hospital in suitable local buildings selected in advance for this purpose. The hospital and medical units contain all the necessaries their names indicate. The clothing unit is for use of men suffering from immersion and lack of clothing. In addition to preparedness for "The Day," the Medical Transport Department takes care of the ordinary sick from the fleet at the various ports. Ambulance trains take the sick and wounded each to his home port and in close touch with friends and relatives. No stops are made except for gas and water, or railway requirements as they arise. Each patient's dietary is carried out *en route*. A full-sized naval ambulance train carries 136 cots, and a smaller-sized train 40 cots and 36 sitting cases. All the trains are self-contained, and, when in motion, self-supporting, carrying everything in the way of provisions, stores, etc.

The staff consists of two medical officers and thirty-six men, including cooks, clerks, and others, who live in the train continuously. The trains are commissioned like ships, sea watches being kept day and night. For ordinary routine journeys, nursing sisters are not carried, but a cabin is set apart for two in each train for use when required, as after a naval engagement, or when any cases calling for their presence are being transported. The nursing itself is done, as in the navy afloat, by trained male sick berth ratings.

Porter and Elder tell of one of the interesting features known as the "Day Coach." These coaches are fitted with flap tables and the non-cot cases can sit at them. Under these tables is a row of wash basins connected with water supply. At one end of each of these coaches are two padded rooms fitted up for the more violent mental cases. A small dressing station supplied with instruments and drugs is also aboard. Very little is done in the way of dressings except while the train is at rest. For the same reason no operating theater has been arranged, on the assumption that a case in need of an operation would not be traveling. If such a case were encountered, operative measures would be carried out at the cot side, or the patient would be landed at the first opportunity.

A portable electric signaling device is fitted at each end of the train and coupled up with the engine, so that speed, heating, and other matters can be controlled. The trains are lighted by electricity —dynamo while running, and accumulator when at rest. Electric fans are fitted where requisite, and portable lights are arranged for in all the ward coaches. Gas is used for cooking only, and is carried under the kitchen cars and one car adjoining, the cylinders being coupled together; thus the danger of fire is reduced to a minimum. Heating of the coaches is by steam from the engine, carried in overhead pipes suspended from the roof. While running, the internal air current circulates the heat very evenly, and at the same time the floor space is clear of any obstacle which might get in the way of a bearer party while handling a cot. Sanitary arrangements are ample—about 10 per cent. of the carrying capacity of each train—and consist of water-sealed pans. Arrangements are made for "tapping" these while trains come to a halt for any length of time. Large storage capacity for water, domestic and sanitary, is supplied to each train. For administrative purposes a small office is fitted up centrally in the train, and contains typewriter, safe, and the usual office furniture.

Public Health Surgeons Detailed for Naval Service.—Seventeen surgeons of the United States Public Health Service have been detailed for duty with the Bureau of Medicine and Surgery of the Navy Department to assist in sanitation work, and twelve have reported for duty. The transfer was made at the request of Surgeon-General Braisted, in order to afford the Navy the services of these specialists as well as to relieve the regular naval surgeons for the special duties, which have been greatly increased by war demands. These surgeons will look after the sanitary arrangements of each naval district and general health conditions of the various camps and training stations where thousands of recruits have been sent, and to advise in regard to the sanitary arrangements of camps now under construction or to be built.

Available Emergency Ward Beds in Greater New York for Government War Purposes.—The Committee on Hospital and Medical Facilities of the Mayor's Committee on National Defense announces a summary of the number of emergency ward beds available in the hospitals of greater New York for Government purposes during the war. In the public wards there are 1431 beds in the male surgical wards, 395 in the female surgical, and 215 in the children's surgical, giving a total of 2041 beds; in the male medical wards there are 500 beds, in the female medical 386, and in the children's medical 1065, giving a total of 1951 beds. In the private general wards for men there are 1423 beds, in the women's 420 and in the children's 121, giving a total of 1964; in the medical division of the same wards there are 602 beds in the men's

wards, 291 in the women's, and 145 in the children's, giving a total of 1038 beds. In the private special wards for men there are 386 beds, in the women's 164, children's 714, none being available in the medical division of these last-named wards. The total number of beds thus far available for this purpose is 7708. Some of these beds are available immediately, while others are available on twenty-four hours' notice, on one week's notice, and on one month's notice.

Shortage of Professional Nurses.—New York City is facing a shortage of professional nurses, owing to the enormous number who have left or intend to leave for the front. The Committee on Nursing of the Mayor's Committee on National Defense is taking a census of all the nursing resources of the city, with a view to establishing a bureau through which all effective readjustments of trained and volunteer service can be made. Hospitals are being urged to increase the number of pupils on their rolls and to shorten their course for college women.

Red Cross Club in London.—The American Red Cross has taken a house in Grosvenor Place as a club for American nurses passing through London. The club will have sleeping accommodations, dining rooms, and an information bureau. A nurses' rest house in the country and hospital are the ambitions which it is hoped will soon be realized.

Antitoxin for War Gangrene.—The Rockefeller Institute for Medical Research through the research work of Dr. Carroll G. Bull and Miss Ida W. Pritchett, will undertake to supply the allied armies with a serum which is believed to be an effective antitoxin for the gas bacillus producing gangrene. Cultures of the gangrene bacillus were obtained in Europe last year and these investigators have experimented upon animals and produced the hoped for results.

New York Sends Ambulance Section to Camp.—The New York contingent of the United States Army Ambulance Corps is sending a section a week to the concentration and training camp at Allentown, Pa. These individual sections will consist of thirty-six men, non-commissioned officers, twenty-four ambulance drivers, mechanics, clerks, etc. It is expected that 100 sections of the United States Army Ambulance Corps will be among the first units to take up active service in France.

French Wounded to Be Treated in United States.—Quarantine stations all over the United States are rapidly being put into condition for the reception of the French sick and wounded, according to a report from Washington.

Navy Hospital Corps Almost Complete.—A little under a thousand men are now needed to complete the complement of 6116 required in the Regular Naval Establishment. There are now approximately 5200 in the corps, about 2000 of whom are in training in Hospital Corps schools. Arrangements are being made to place 300 members of the second class of the Naval Reserve Force in training at the School of Pharmacy of Columbia University, the facilities of which have been offered for use by that institution. A fourth Hospital Corps school is to be established at the new training station at Norfolk.

Government Rehabilitation of Maimed American Soldiers.—Rehabilitation of American soldiers who may be maimed or crippled in the war will be undertaken systematically by the Government. A conference of ten surgeons has laid before the General Medical Board of the Council of National Defence in Washington a plan for proceedings with this work through the agency of a permanent committee. War cripples are to be adapted to their old work if possible, or if so incapacitated, they are to be trained for new occupations for which they are mentally suited. Also the most modern mechanical apparatus for correcting physical defects should be made available as soon as possible for all disabled soldiers needing it. The conference recommended specifically the early training of medical officers in reeducation work; arrangement for treatment of the wounded by specialists as early as possible; the establishment of widely distributed reconstruction hospitals in this country, as far as possible adapting existing institutions to the work, supplemented by convalescent homes in country districts and similar places; arrangement for occupational analysis of the wounded; keeping the wounded under military discipline until the completion of physical reconstruction and reeducation in order to prevent their assenting through enfeebled will power to becoming dependent on relatives or the State for their support. The plan was drawn up by Drs. James Boardley, Jr., Baltimore, ophthalmology; John S. Davis, Baltimore, plastic surgery; C. R. Dooley, Pittsburgh, vocational education; S. L. Franz, Washington, neurophysiology; F. B. Gilbreth, Providence, management engineer; R. W. Lovett, Boston, orthopedic surgery; Harris P. Mosher, Boston, otology; T. H. Weisenburg, Philadelphia, neurology; W. A. White, Washington, psychiatry; Edwin W. Ryerson, Chicago, orthopedic surgery.

Appropriation Asked for Naval Hospital Construction.—President Wilson has sent to Congress the recommendation of the Secretary of the Navy for an appropriation of $2,200,000 for emergency hospital construction at points not now provided with hospitals or where hospital facilities are not suitable or sufficient for the needs of the Navy. Surg.-Gen. Braisted, in urging this appropriation, pointed out that the Medical Bureau's original estimate of $3,200,000 was reduced to $1,000,000 in the urgent deficiency act, and that the additional amount is required to meet pressing needs. He said that emergency hospital construction, now under way and approaching completion, at Portsmouth, N. H.; Newport, Philadelphia, Norfolk, Charleston, S. C.; Pensacola, New Orleans, and Great Lake will cost nearly $1,000,000 without equipment, and will therefore exhaust the present appropriation. Plans are being rapidly completed for temporary emergency hospital buildings at New York, Annapolis, Jamestown, Va.; Quantico, Va.; Key West, Great Lakes, Mare Island, and Puget Sound, which will cost about $1,800,000. In addition to those mentioned, other hospital buildings are necessary at Portsmouth, N. H.; Newport, and Norfolk, which will cost several hundred thousand dollars more. All the buildings mentioned as under way and contemplated are of an emergency type of construction and of a temporary character.

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TRANSPLANTATION OF AN ECTOPIC EMBRYO.

ON May 2, 1916, the population of the United States became one greater than would have been the case without the performance of a most unusual operation about seven and one-half months previously. The operation consisted in the transplantation of an ectopic pregnancy from the Fallopian tube into the uterus, and was performed by Dr. C. J. Wallace of Duluth, Minnesota. While this feat, followed by the development and normal delivery of a healthy child at term, may have been accomplished before, we are not aware of it, and Wallace (*Surgery, Gynecology and Obstetrics*, May, 1917) was unable to learn of any similar case. As he says, heretofore it has been the advice of our best men that when ectopic pregnancy was diagnosed during the early quiescent period, or when it has been discovered during an abdominal operation, it should be removed at once. This has been the rule followed for many years, and has been accepted as the only thing to do. Discussing the development of tubal pregnancies, Wallace calls attention to the changes that take place in the uterus during the early months, the facts of especial importance being that "up to a certain point the uterus keeps pace with the tubal gestation, and actually forms a decidua, enlarges, softens, grows darker in color, and in fact takes on all the early features of pregnancy. It is playing the part of a disappointed hostess."

While stating that in some cases the removal of the tube and its contents will still be the proper thing to do, Wallace believes that sometimes, when we find an early case, when the tube is still in a healthy condition and not too distended, and all things are favorable, we should make a supreme attempt to save the life of the growing child by opening the tube carefully, dissecting out the embryonic mass intact, and transplanting it into the uterus. This, he says, can be very quickly done, does not endanger the life of the mother, and may be her only chance to bear a child.

This would seem merely a beautiful theory were it not for the fact that Wallace, in the course of an operation performed September 15, 1915, for uterine fibroid, found a tubal pregnancy, which he successfully transplanted into the cavity of the uterus through the incision employed for the removal of the fibroid. The tube was carefully opened and the mass dissected out intact, the operator being careful not to injure the sac in any way by keeping wide away and including part of the tube wall. It came out very easily, was about the size of a large olive, and was at once placed within the uterine cavity and caught by two of the sutures used in closing the deep wound in the uterus. The tube was closed by suture and left in place. Wallace felt that if the transplant failed to attach itself to the uterine wall it could easily be removed by the curette. Following this operation the patient was carefully watched for uterine hemorrhage or vaginal discharge, but no such symptoms occurred. At the end of two weeks the patient was discharged from the hospital, pregnancy went on normally to full term, and resulted in the natural birth of a fine boy, fully developed and without a scar, May 2, 1916.

Wallace expects that many such transplanted ectopic pregnancies will be reported in the future, and feels that while there may be failures in this as in other transplant operations, it is attended by little danger and is worth extreme effort in favorable cases. What constitutes the favorable case must, for the present, be left to the judgment of the individual surgeon.

OCCUPATION AND MORTALITY.

THE influence of occupation on the causation of disease and upon the rate of mortality has for long been a fruitful theme for medical writers. *Pari passu* with the progress of industrialism its ill effects on workers have increased. Perhaps, however, this is hardly a correct statement, for it must always be borne in mind that as industrialism has advanced so have methods for conserving the health of workers. There are, nevertheless, occupations in which to be engaged, despite all precautions, involves the risk of ill health.

In *Public Health Reports*, June 8, 1917, Drs. Shirley Wilmotte Wynne and William H. Guilfoy discuss the question of occupation in connection with the occurrence of certain diseases and the mortality therefrom. The conclusions drawn from the results of the investigations of the authors are, in brief, somewhat as follows: In the first place, the lack of data required for really satisfactory investigations is deplored as rendering the present method of studying the relation of occupations to mortality not really reliable.

Age, of course, has a most important bearing upon many diseases, and thus the number of persons at different ages in each occupation will affect the percentage of mortality caused by these diseases. One outstanding fact with regard to the mortality from respiratory diseases is that it is highest in those occupations which are carried on in crowded and poorly ventilated offices or shops.

and is especially high among clerks, bookkeepers, office assistants, compositors, and printers. An exception to the usual and to be expected state of affairs is the low mortality from pulmonary tuberculosis and pneumonia of garment makers. This apparently anomalous comparative immunity of these workers is attributed by the authors to a racial immunity, the majority of garment workers being Jews, who are supposed to be more or less immune, if not to pneumonia, at any rate to pulmonary tuberculosis.

There would appear to be some grounds for the belief that there is a relationship between cancer and occupation, inasmuch as the mortality from this disease is uniformly lower in the strenuous occupations and higher in the sedentary ones. This is a most interesting point, and certainly suggests further investigation in the same direction.

There seems to be an unduly high mortality from cardiac and renal diseases among cigarmakers and tobacco workers, and also among garment workers, which cannot be entirely explained by the advanced age of the workers in these occupations. Lobar pneumonia appears to be a risk in two classes of occupations; first, in those in which the workers are grouped together in shops and offices; secondly, in those occupations where the workers are exposed to continuous variations of temperature. With regard to suicide, only among cigarmakers and saloon keepers does the percentage rise above four.

The administrative measures suggested by these studiers are, in the opinion of the writers: first, a crusade against pulmonary tuberculosis and the respiratory diseases among clerks, compositors, and similar groups, and a more extensive study of the causes of the high mortality from pulmonary tuberculosis among teamsters and drivers; secondly, a widespread effort to control the incidence of heart disease among garment workers and cigarmakers, and in the third place, a campaign against the abuse of alcohol.

Although the writers of the paper confess that their method of tabulating the instances of the influence of occupation upon mortality is far from perfect, yet they feel that it is a long step in the right direction. Consequently, it is their intention to carry on their investigations, and in a subsequent report they hope to include all the principal occupations in which the people of New York City are engaged, and instead of limiting their study to the mortality of one calendar year to combine the statistics of death for a period of years in order that their tabulations may be less subject to frequent fluctuations due to the small number of deaths under observation.

INSECTS AND INFANTILE PARALYSIS.

It is somewhat extraordinary that it is only within the past twenty years or so that the conveyance of disease by means of insects has been demonstrated. It is true that in 1889, Theobald Smith found out the causative organism of Texas cattle fever, and that together with R. L. Kilbourne he showed that the organism was carried from Southern cattle to non-immune cattle by the so-called Southern cattle tick. Really, however, Manson was the pioneer in this field of research, for before the discovery made by Smith he had demonstrated the conveyance of the parasitic worm *Filaria nocturna* by mosquitos to man. The discovery that opened the eyes of scientific and medical men to the significance of insects in the transmission of disease was that of Ronald Ross and a number of the Italian investigators who found that malaria was carried by a species of mosquito.

L. O. Howard of the Bureau of Entomology, in his address as retiring president of the Washington Academy of Sciences, delivered on February 1, 1917, and published in the journal of the society, drew attention to the above facts, and in the course of his address gave his views with regard to the theory put forward by several scientific members of the medical profession that poliomyelitis was transmitted by insects. He pointed out that the entire country was interested and alarmed at the occurrence of an unusual number of cases of infantile paralysis during the past summer, and that many theories were advanced concerning its mode of transmission. He himself, when it was announced that the causative organism had been found in the intestinal passages, as well as elsewhere, and that it probably entered the body through the mucous membrane of the mouth and nose, instantly thought of the house fly and the all too frequent contamination of exposed food by this insect, frequently fresh from intestinal discharges. But second thoughts convinced him that were such a method of conveyance of the disease possible, the disease itself would be much more common.

Moreover, the not infrequent winter cases could not very well be fly-borne. Mosquitos have been suggested as carriers, and the rat flea has been laid under suspicion. But rat fleas go to human beings only in the event of epidemic disease among rats, and nothing of the sort has been observed in connection with any of the larger epidemics of poliomyelitis. Furthermore, in inoculation experiments reported by Flexner and Lewis, the virus was shown to be present in the blood in such high dilution that the infection in a normal animal was accomplished only by inoculation of 20 c.c. or more of the blood. If this holds good under normal conditions, it would be absurd to accuse any biting insect of conveying this particular disease, except in the possible event of the development of the organism in the body of the insect. While the possibility should be studied, the probabilities are against it.

The study of diseases carried by insects has opened an immense field of research, and one that has been assiduously cultivated, with results of incalculable benefit to the world. It is known that insects are responsible for the spread of many maladies, but not of all, and at the present time they are perhaps often unjustly accused.

THE PREVENTION OF MEASLES.

While the mortality from measles among the aborigines when once introduced among them is so high that whole communities are wiped out by it, the mortality among civilized communities, when complications are included, is not so far enough removed as to be creditable. Legislative enactments obliging notification and quarantine have been introduced nearly everywhere, but they have been varying in degree and enforcement in different communities. In any event it does not seem that either notification or quarantine has been effective in reducing the incidence of measles. There has been found no constant relation between legislation and the rise or fall of the epidemics. As health officers begin to awake to this fact they relax the enforcement or even the requirements of the law, but until there is more uniformity in the health laws regarding this disease no real judgment can be formed as to the value of notification and quarantine laws. What is needed is rather more uniformity in the laws than more drastic enactments. There must be a standardization fashioned after the most accepted methods.

There is no doubt that prevention of measles in epidemic proportions, at least, lies in early diagnosis and prompt isolation. The catarrhal stage is the most contagious stage because it is then that droplet infection is most likely to occur. But to be effective in prevention, diagnosis must be made in the pracatarrhal and in the preeruptive stage. Where there are large groups of children to handle, and even in the home, the only reliable means of control lies in the routine taking of temperatures, and the isolation of all children having temperatures above 99° F. When this procedure was introduced among the detained children at Ellis Island the incidence of measles, previously very large, immediately fell about one-half and has remained low ever since (Wilson, *Archives of Pediatrics*, April, 1917.) It would seem that an analogous procedure in schools, or even in homes, accomplished through the cooperation of physicians, parents, and health officers would materially reduce the morbidity from measles in a given community. Every rise in temperature in a child should mean isolation as completely as if that child were in fact afflicted with an acute contagious disease. Where home isolation is not possible hospital isolation must be carried out in the interest of the community. But here it must be admitted that the mortality from measles in hospitals is very high, higher even than in the homes, and no parent would be inclined to submit to this sacrifice in the interest of the community. This increase in the mortality, the likelihood to cross infection, and to complications is not inherent in hospital isolation, but is the result of the present faulty technique, faulty hospital construction, and careless attendants, as well as overcrowding and generally poor isolation facilities. Nevertheless, no matter how obtained, isolation is the only remedy for the measles epidemic.

The cubicle system of hospital isolation is the goal to be aimed at. Each patient should be completely walled off from the others, although the partitions can be made of glass to ameliorate somewhat the lonesomeness of the patients. In some European hospitals they believe that if infection from the droplet can be avoided measles patients can be treated in the general ward with only a wire screen between patients to remind attendants that there is a contagious case included within the screen—in short, for psychological reasons. This principle seems to be a rather radical departure in the present stage of our knowledge of the disease. But with the cubicle system other cases may also be taken into the ward without danger of infection provided technique and attendants are good.

In keeping with modern scientific aims for all disease conditions the aim in the prevention of measles would also be artificial immunization. The measles virus is contained in the blood at least twenty-four hours before the appearance of the exanthem and begins to fade about twenty-four hours thereafter. During this period monkeys have been successfully inoculated. Yet the period during which the virus can be found is very short and thus far experiments leading toward immunization have not been successful; but those are being carried on and there is hope that their success will add another triumph to preventive medicine.

THE HEALTH OF MUNITION WORKERS.

One of the mistakes made in England early in the war was in relation to the feverish energy in munition making. No effort was spared to produce a maximum output, and the ordinary laws of health for a time were disregarded. At many establishments work was continuous seven days in the week. This burning of the candle at both ends quickly resulted in a decline of output and a general deterioration of health, or rather the deterioration of health resulted in a decline of output. It became evident, as indeed it should have been evident from the first, that if the health of the workers were not guarded all resources could not be conserved, an essential point in the war of resources, and the highest level of production in the factories could not be maintained for a protracted period of time.

As Dr. J. W. Schereschewsky, Surgeon U. S. Public Health Service, writing in *Public Health Reports*, June 1, 1917, points out, it is entirely practicable to keep the health of the workers at an efficient point, and thus avoid the difficulty in which England found herself, by taking steps looking toward (1) the prevention of occupational diseases and poisonings, (2) the sanitation of work places, (3) the prevention of undue fatigue, especially important in the case of women and the young, (4)

the medical supervision of workers, and (5) the stimulation of industrial communities.

It goes without saying that the proper sanitation of work places is of vital importance. In factories in which munitions are made, or in which aeroplanes are manufactured, ventilating of a thorough character is a *sine qua non*, if health is to be preserved. Washing facilities must be provided on a wide scale, and lunch rooms on the premises with a supply of good wholesome food at a reasonable cost are desirable, and in most instances necessary, adjuncts of factories in which the handling of poisonous materials is involved. In England the supervision of the food of munition factory workers, and of women workers in particular, has been found to be absolutely necessary. If the meals of these workers are not thus supervised a large number, especially women, will eat inadequate and unnutritious food, with untoward consequences from all points of view.

The prevention of fatigue must be insisted upon, and the British experience has taught that one day's rest in seven is a necessity, and that not more than 56 hours weekly of heavy labor, 60 of moderately heavy work, and 64 of light labor can be endured for long without ill or disastrous effects.

This country can learn much with respect to the safeguarding of the health of its workers in munition factories and in establishments of a like nature, from the mistakes made by our Allies in the past.

Reestablishment of the Transparency of the Opaque Cornea.

Corneal opacity is extremely common, and often develops with great rapidity. It is very rare to see these opacities undergo involution. To see an opaque cornea clear up is an experience which makes a strong, unforgettable impression. Dr. Santos Fernandez, in the *Crónica Médico-Quirúrgica de la Habana* for June, calls attention to the fact that he has placed two such cases on record. Both occurred in children, of which the first had suffered from ordinary ophthalmia neonatorum, and the other from a purulent ophthalmia of unknown nature. Since that period his list of such cases has increased. In one adult the cornea, after total opacity, cleared up spontaneously. In six other cases the cornea, after total opacity, cleared up partially, and the establishment of an artificial pupil made a certain amount of vision possible. Much laboratory work has been done to determine the mechanism of corneal infiltration and opacity with a view of instituting some rational plan of treatment—thus far without success. Therapeutic measures can be employed only at the outset, during the stage of infiltration. Several Roumanian authors advocate the use of hot water applied directly to the cornea. There is also some reason for believing that in keratitis due to specific microorganisms some forms of antibacterial or antitoxic therapy will prove curative. A few paradoxical cases show either remarkable spontaneous involution or the occasional efficacy of simple antisepsis. The subject of preventing corneal infiltration by intensive treatment of the infection is of course quite distinct from that of treating an established condition.

Espundia and Blastomycosis.

Espundia is a special form of leishmaniasis with secondary manifestations in the nose and mouth which prevails in parts of South America and is due to the parasitism of the so-called American variety of the *Leishmania tropica*. For our knowledge of it we are indebted chiefly to Escomel of Peru (1911). The primary lesion (called chancre from analogy) is a cutaneous manifestation on some exposed portion of the body such as the dorsum pedis. The discovery was made that antimony given as tartar emetic by intravenous or intramuscular injection is a specific for the disease, suggesting the sterilizing action of its congener arsenic in spirillum and trypanosome disease. In the *Revista de la Asociación Medica Argentina* Escomel describes and illustrates cases of espundia and blastomycosis of the oronasal region. The resemblance in the photographs is considerable, enough to make diagnosis difficult in certain cases, especially since it has been learned that the two affections may coexist in the same subject. The treatment test is highly practical because antimony has no influence on blastomycosis. In a hybrid of the two affections the espundia component yields promptly to treatment, leaving the blastomycitic component intact. Escomel prefers the injection of Martindale's solution of antimonium oxide to tartar emetic as much less irritating. On the other hand, the latter is used in powder form as a dressing with great benefit.

News of the Week.

Medical Position Open.—The Municipal Civil Service Commission of New York City announces an examination for Chief Medical Examiner, open to all citizens of the United States, but persons accepting appointment must thereafter reside in the State of New York. The compensation proposed is $7,500 annually for full-time service, and candidates must be at least 30 years of age before the closing date for the receipt of applications. The incumbent of this position will be in charge of the office of the Chief Medical Examiner of New York City, and will perform the duties heretofore performed by the coroners of the various boroughs. Candidates must have a degree from an approved institution, and present evidence of having done, in an official connection, at least ten years' work in the pathological laboratory of a recognized medical school, hospital, asylum or public morgue, or in other corresponding official capacity. They must have performed at least 1000 autopsies. Special consideration will be given to administrative experience, preparation and presentation of evidence in court, and definite published contributions to the science of legal medicine. A graded examination will be given, and in the practical test an autopsy will have to be performed, with a report of findings handed in; candidates will appear before an examining board for the oral proof of personal qualifications.

Anthrax in Chinese Hair.—The source of an-

thrax cases in London has been traced by a local government board to shaving brushes made in great part of Chinese horsehair which had not been sterilized and was heavily infected with the anthrax germ. A consignment of shaving brushes from Japan was found to be heavily infected also with the same germ.

Dr. Simon Flexner of the Rockefeller Institute has been commissioned a Major of the Medical Reserve Corps, among 500 new officers of the Reserve Corps, United States Army.

Dr. Haven Emerson, Health Commissioner of New York, has been ordered to proceed to Fort Benjamin Harrison, Ind., and report to the commanding officer for a course of instruction preparatory to active duty in the Medical Reserve Corps.

Establishment of Fellowship.—The Women's Medical College of Philadelphia has established a Fellowship of $1,000 for advanced study in obstetrics for certain qualified women practising as specialists in this branch of medicine after benefit from the course.

Graduation of Doctors.—The University of Oregon graduated eleven candidates for the degree of doctor of medicine on June 10. Of these, four were graduated in absentia at the request of the Surgeon-General of the Navy, these men having been accepted as assistant surgeons in the Navy a month before graduation. The other graduates will serve as internes in hospitals, or will enter the Medical Officers' Reserve Corps of the Army or Navy.

Diazo Test Abandoned as Useless.—The New York Health Department has decided to discontinue the examinations of urine for the diazo reaction. This decision has been reached after the examinations of nearly seventeen hundred specimens of urine for this test during the past year in the Diagnostic Laboratory, of which less than 250 gave a positive reaction. The department considers that the time thus consumed with so little result can be more profitably employed, especially when, as at present, there are such heavy demands on the laboratory. No announcement has yet been made of the abandonment of the cancer-spreading biopsy examinations.

Help the Babies.—The New York Diet Kitchen Association has issued an appeal to the public for $10,000 to continue its work of saving the lives of the babies this summer. The full amount is needed, and the work is as important as any charitable work organized by the war needs. The association is now caring for over 2,500 babies by furnishing certified milk from their eight health stations, giving examination and advice through their physicians, and home care and inspection through their nurses.

Harlem Medical Association.—At a regular meeting of this association, held in New York on May 5, 1917, the following officers were elected: *President,* Dr. Sigmund Epstein; *Vice-President,* Dr. Thomas H. Cherry; *Secretary,* Dr. Louis Friedman; *Treasurer,* Dr. Gustave G. Fischlowitz; *Trustees,* Dr. Seymour Oppenheimer, Dr. Frederick P. Hammond, and Dr. John F. Connors.

Woman Honored.—Miss Grace Gasette of Chicago has been decorated with the cross of the Legion of Honor for services in the French hospitals. She has invented appliances for the treatment of difficult fractures.

Obituary Notes.—Dr. FERDINAND A. STILLINGS died at Concord, N. H., on June 22. He had practised in New Hampshire for more than forty years, and was a member of the United States board of pension examining surgeons for ten years; advisory surgeon to several hospitals, and for many years surgeon for the Boston & Maine Railroad, and medical director of the United Life and Accident Insurance Company. He served for one year as surgeon-general on the staff of Governor Hiram A. Tuttle and as a member of the State Senate. He was a fellow of the American College of Surgeons and a member of the American Medical Association, the National Society of Railway Surgeons, and the New Hampshire Medical Society.

Dr. CHARLES W. HOUGHTON died at Wynnewood, Pa., on June 5, at the age of 80 years. He was graduated from the Pennsylvania Medical College in the class of 1859, served during the Civil War as surgeon in the United States Army, was a member of the American Medical Association, the Medical Society of the State of Pennsylvania, and the Montgomery County Medical Society.

Dr. EDWARD MICHAEL MCCABE of New Haven, Conn., a graduate of Yale University, School of Medicine, New Haven, Conn., in 1887, and a member of the American Medical Association, the Connecticut State Medical Society, and the New Haven County Medical Society, died at his home on June 5, aged 53 years.

Dr. ELIZABETH LOUISE ARTOIS HILTON of Brooklyn, N. Y., a graduate of the United States Medical College of New York in 1881, died at her home on June 14, aged 77 years.

Dr. CLYDE BARTLETT of Marion, Mass., a graduate of Boston University, School of Medicine, Boston, in 1915, died in Natick, Mass., on June 11, aged 34 years.

Dr. FELIX EDGAR BALBRIDGE of Huntsville, Ala., a graduate of the Medical Department of Tulane University of Louisiana in 1894, and a member of the Medical Association of the State of Alabama, the Madison County Medical Society, and the Southern Surgical and Gynecological Association, died on June 7, aged 50 years.

Dr. BURNSIDE FOSTER of St. Paul, Minn., a graduate of the Medical School of Harvard University, Boston, in 1886, and a member of the American Medical Association, the Minnesota State Medical Association, the Ramsey County Medical Society, the American Dermatological Association, and the Minnesota Dermatological Society, died on June 13, aged 55 years.

Dr. T. E. SAWYER of Uba, Tenn., a graduate of the University of Tennessee, College of Medicine, Memphis, in 1906, and a member of the Tennessee State Medical Association and the Weakley County Medical Society, died suddenly in Greenfield, Tenn., on June 7, aged 43 years.

Dr. CHARLES E. GILBERT of New York, a graduate of the New York Homeopathic Medical College in 1870, formerly chief surgeon of the Atlantic Yacht Club, died at his home on June 18, after a long illness, aged 68 years.

Dr. DALLAS M. TAYLOR of Amsterdam, N. Y., a graduate of Long Island College Hospital, Brooklyn, in 1874, died at his home about May 30.

Dr. WALTER A. MCCLURG of Washington, D. C., a

graduate of Jefferson Medical College of Philadelphia in 1872, a member of the American Medical Association and the Medical Society of the District of Columbia, and Medical Director in the United States Navy, retired, died at his home on June 15, aged 64 years.

Dr. JAMES BOURKE of Washington, D. C., a graduate of Rush Medical College, Chicago, in 1897, a member of the American Medical Association and the Michigan State Medical Society, and captain in the Marine Corps, U. S. Army, died in the Garfield Hospital, Washington, D. C., on June 17, aged 47 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

DEVELOPMENT OF BRITISH WAR SURGERY—AMBULANCE SERVICE—CASUALTY CLEARING STATIONS

LONDON, June 12, 1917.

THE developments of British surgery during the war attract much attention and are freely discussed wherever medical men meet. But at present it is only possible to record the more salient facts concerning the work of the expedition at the front. This has been done to some extent by regimental medical officers whose contributions have been received by some of our journals which show how carefully and rapidly the wounded are transported to the field ambulance sections in the support line. At this the first-aid dressings can be supplemented by various additions, the most important perhaps being suitable splints to secure an easier transit to the tent section of the ambulance, a mile or two further back. The surgical equipment of the ambulance has been greatly improved since the outbreak of the war and I am told that it is now ready at any time for the performance of any urgent operation. Only operations of this character should be undertaken in field ambulances, but to this statement the following exceptions must be allowed: (1) Completely smashed limbs should be removed, and the patients retained for at least a day before being sent to a casualty clearing station. (2) Hemorrhage should be arrested by ligature of bleeding points whenever possible; when not possible, plugging or direct pressure on the wound itself must be employed. Patients must never be sent down with tourniquets on their limbs. (3) Abdominal wounds and all severe cases demanding early treatment at a casualty clearing station should be sent there by a special motor ambulance direct from the advanced dressing station. They should not be kept waiting for the regular convoys. There being few good roads "corps dressing stations" were arranged by joining up some members of staffs of various field ambulances, so as to supply tent accommodation for a thousand or more wounded, with a staff of about thirty medical officers. This could do the duties devolving on separate field ambulances and was very successful as well as economical in medical officers and orderlies. It has been the supply of motor ambulances only that has made it possible to deal adequately with the surgery at the front. One aspect of this subject is often overlooked, viz., the use of motor transport in saving the wounded from capture, for it is certain that had motor ambulances been at hand in large numbers there would have been very few British prisoners after Mons and Le Cateau. In getting patients rapidly to the casualty clearing stations and also in saving wounded from falling into the hands of the enemy, motor transport has been of the greatest value, in fact the ambulance is the foundation on which the surgery of the front is based. No horsed vehicles could deal with the numbers resulting from a heavy fight unless they were so numerous as to block the roads for all other transport.

The development of the casualty clearing stations has been the chief factor in creating the new school of surgery at the front and it is said that they have assuredly saved thousands of lives. They were at first called "clearing hospitals" and were intended merely to clear the field ambulances and pass on the patients to the base hospitals. So their equipment was slight and their staff of eight officers less than that of a field ambulance. They carried 200 stretchers. These stations were soon overtaxed but became a nucleus around which an efficient organization for more complete surgical treatment could be established. Bedsteads and bedding were supplied and trained nurses appointed. The next addition was surgical equipment in the way of instruments and apparatus. The election of special surgeons followed and before the close of 1914 good surgical work was being carried on at eight centers. Progress continued from this time and by the end of 1916 more than 50 casualty clearing stations were at work. They were situated behind the line of trenches on the entire front. Every one must be at or near to a railway siding so that evacuation by train is easy; further they must be where good roads connect them with the front. Moreover they must have a good water supply. There are two series; (*a*) those nearest the front at a distance of 6 to 9 miles from the front trenches; (*b*) those in the second line which are from 3 to 6 miles further back and act as a reserve during active operations, or as units for special cases.

Progress of Medical Science.

Boston Medical and Surgical Journal.

June 21, 1917.

1. Massachusetts Medical Society: The Shattuck Lecture—The Physiological Factors Concerned in Surgical Shock. Walter B. Cannon.
2. The Recognition of Pancreatic Insufficiency, with Special Reference to the Loewi Test. H. Ryerson Decker.
3. Some Unusual Conditions Observed in 245 Postmortem Examinations at Danvers State Hospital. Lawson G. Lowrey.
4. Some Conditions Leading to Incorrect Diagnosis of Adenoids in Children. Virginius Dabney.
5. A Note on Bárány's Sign in Epileptics and in School Children. Edward A. Tracy.

2. The Recognition of Pancreatic Insufficiency, with Special Reference to the Loewi Test.—H. Ryerson Decker bases his conclusions of the reaction of the Loewi test in pancreatic conditions on the results obtained in a series of 500 cases from the surgical and medical wards of the West Penn Hospital, Pittsburgh. The technique followed was that recommended by Loewi. Three drops of adrenalin chloride solution 1-1000 were instilled in one conjunctival sac, the other eye being used as control, and followed in five minutes by three more drops, the point being to fill the conjunctival sac. Dilatation of the pupil should occur within an hour if the test is positive. The amount of enlargement varies

from less than a millimeter to complete pupillary dilatation and occurs within a 15-minute period. The length of time taken for action seems to be dependent on the facility with which the adrenalin is absorbed, rather than on the amount used. Care is taken to exclude impaired or inflamed eyes. In the 500 cases, which covered a wide range of injury and diseases, there were 18 positive reactions, only 2 of which were known to have pancreatic lesion—one, a case of carcinoma of the pancreas, the other, chronic pancreatitis associated with gallstones. It might be of interest to note, on account of the etiological relationship which is thought to exist between gallbladder and pancreatic disease, that in 15 gallbladder cases there were 3 positive reactions. In only one of these was the pancreas involved. From this record it is apparent: (1) That the reaction is not pathognomonic of pancreatic disease, (2) that it is absent in cases which by other methods are proved to have pancreatic lesions. Whether or not in 6 of the 18 cases there was an associated pancreatic lesion it is impossible to tell without a doubt. At least, judging either by clinical history, physical examination, tests of the urine and stools, or intraabdominal examination at the time of operation, there was no definite evidence of pancreatic disturbance. On the basis of the present experience, then, Decker feels compelled to report the adrenalin test of doubtful diagnostic value. A test is yet to be found which will point out a pancreatic lesion early and surely enough to enable the surgeon or therapeutist to determine with a high degree of success.

New York Medical Journal.

June 23, 1917.

1. Constructive Suggestions Toward the Control of Tuberculosis in Times of Peace and in Times of War. S. Adolphus Knoff.
2. Birth Control and the Physician. B. S. Talmey.
3. Duality of Voice. James Sonnett Greene.
4. Constructive Suggestions Toward the Control of Syphilis, Gonorrhea, Pneumonia, Malaria, Typhoid, and Typhus Fever. Ira S. Wile.
5. Constructive Suggestions Toward the Control of Measles, Scarlet Fever, Diphtheria, and Whooping Cough. S Josephine Baker.
6. Sinus Thrombosis Following Fracture of the Skull, with Subsequent Acute Mastoiditis and Erysipelas. William Wesley Carter.
7. Nontuberculous Cases in a Hospital for Advanced Consumptives. Jacob Kramer.
8. Fatalities in Athletic Games and Deaths of Athletes. Robert E. Coughlin.

5. Constructive Suggestions Toward the Control of Measles, Scarlet Fever, Diphtheria, and Whooping Cough.—S. Josephine Baker points out that in New York the methods used at present in public health work show little or no change from those in vogue twenty years ago, as far as preventive work in the common diseases of childhood is concerned. The control of contagious diseases still starts with the reported case. This might be called "after the fact" work. Emphasis is placed upon limiting the spread of infection after the focus has already been discovered and represents almost the only purely corrective phase of public health work which persists at the present time. The preventive work which has been done in regard to the control of contagious diseases is mainly that which is associated with school medical inspection, and probably the avenue through which most future effort in this direction must come. Mortality, incidence and case tables in ten thousand population from 1906 to 1916 for New York City show a reduction in the incidence rate in diphtheria, scarlet fever, and measles, with a marked increase in the incidence rate of whooping cough. The mortality rate has varied but little for whooping cough, but the case fatality has decreased from 16.8 to 4.7 per cent. of reported cases. The mortality from diphtheria in ten thousand population has decreased from 4.5 to 1.8, while the case fatality from 12.9 to 7.6 per cent. of reported cases. In scarlet fever the reduction is from 1.2 to 0.2 and the case fatality percentage of reported cases has been reduced from 6.2 to 1.6. In measles the mortality reduction is from 2.75 to 0.87, but the case fatality percentage of reported cases shows but little deviation, ranging from 2.9 in 1906 to 2.2 in 1916. While it may be acknowledged that case fatality in these common infectious diseases of childhood is fairly low, still at certain age groups, notably in infancy, the mortality rate from whooping cough or from bronchopneumonia as a sequela of measles, is a serious menace to infant life. The sequelæ also must be considered. When one considers that scarlet fever is probably the most common cause of deafness, is it not significant that during 1914, of the total number of applicants for enlistment in the United States Army who were rejected for physical causes, the second highest cause of rejection, with a ratio of 89.97 per cent., was diseases of the ear, including defects of hearing, while the fourth highest cause was heart disease, with a ratio of 63.26 per cent. Surely, these two facts alone are significant. Baker considers that the same broad education of the public that has been employed in our efforts to control tuberculosis is needed in our child-welfare work. The public should be taught intelligently how to cooperate with existing authority for the control and prevention of the contagious diseases of childhood. Likewise the schools will in the future, as they have in the past, play an important rôle in the prevention of these diseases. A copy of the birth certificate is sent to every mother in New York City when the child's birth is registered; this certificate could be made to play an important part later on in life by, as Baker suggests, having recorded upon it the occurrence of any contagious disease or other important data relative to the child's physical or mental welfare. Thus isolation of the child whose certificate showed the occurrence of an infectious disease would thus be eliminated and lessen the amount of required supervision. Sanitary requirements in the home and elsewhere should be enforced. The Schick test for estimating immunization in diphtheria should be done on all school children. Since many of the most important infectious diseases are carried through nose and throat secretions personal hygiene should be taught in every community and attention given to teaching the proper use of the pocket handkerchief, and the possible danger from droplet infection from any unrestrained coughing or sneezing.

American Medical Association.

June 23, 1917.

1. The Care of Cripples as a Problem for Each Individual State. Edwin W. Ryerson.
2. Three Years' Experience in the Search for Typhoid Carriers in Minnesota. A. J. Chesley, H. A. Burns, W. P. Greene, and E. M. Wade.
3. Rapid Reduction of Intra-Ocular Tension in Glaucoma by Timed Intravenous Glucose Injections. W. D. Sansum.
4. Hookworm Control in South China, Based on a Preliminary Study of the Incidence of Hookworm Infection in Hunan Province, China. Edward H. Hume.
5. The Relation of Low Blood Pressure to a Fatal Termination in Traumatic Shock. F. H. Pike and Helen C. Coombs.
6. A Typhoid Carrier Problem. H. F. Senftner.
7. Convenient Devices for Melting Paraffin for Burns. Torald Sollmann.

4. Hookworm Control in South China, Based on a Preliminary Study of the Incidence of Hookworm Infection in Hunan Province, China.—Edward H. Hume states that the problem of the control of this condition in South China differs in so many essentials from the same problem in America and other Western countries that its solution will require long planning by specialists and a persistently carried out program of practical endeavor. Stated briefly, the solution for Hunan and for all China, according to Hume, may be summed up in three words, survey, suppression and substitution. Under survey the extent of the problem must be determined, and the effect of the disease on the human economy gaged and compared with the effect of other animal parasites and bacterial infection. All difficulties to be overcome must be frankly recognized, such as ignorance, custom, lack of capacity for sustained effort, and financial stringency. Any new proposal may be regarded by the Chinese with suspicion for fear it will deprive them of their rights or do them harm. It is both financially profitable to market nightsoil and agriculturally indispensable to use human excrement for fertilization purposes in a land where horses and cows are few. Necessity is laid on the scientist and economist to conserve whatever he can of an ancient custom, at the same time that he seeks to eliminate the dangers. Since the Chinese seem incapable of long-sustained effort and most of the wealth is, as yet, largely

potential and underground, it follows that very little public money or even private wealth can be counted on for safeguarding the health of the community. Suppression of the disease can only come through education and isolation. Hookworm disease will disappear from China only when the method of substitution succeeds—substitution not of something else for human excrement as fertilizer, but of a nightsoil freed in some way of its danger, to take the place of one full of hookworm ova carried directly from the privy to the growing crop long before any process of fermentation has destroyed the ova therein. An attempt to make any organized investigation in a vast country like China is almost alarming. And yet, at a time like this, when the traders of the West are extending their commercial interests throughout China for the sake of profit to the citizens of their respective lands, is there not a call for unselfish service as well? Given such cooperation as the International Health Board has been able to extend to other countries, the local Chinese authorities will not be behind those of other nations in working both for the eradication of the hookworm menace and for a reform gradually of the entire system of sewage disposal, that is even more fundamental than the problem of mere hookworm infection.

The Lancet.

June 2, 1917.

1. Goulstonian Lectures on Paratyphoid Infections. Charles Hewitt Miller.
2. The Leucocytes in Cases of Irritable Heart. Grace Briscoe.
3. The Influence of Maternal Oral Sepsis on the Fetus and Marasmic Children. E. Spencer Pierrepont.
4. The Vaginal Plug. E. Hastings Tweedy.

1. Goulstonian Lectures on Paratyphoid Infections.—This is the second lecture on this subject delivered by Charles Hewitt Miller before the Royal College of Physicians of London. Here the dysenteric type of infection is dealt with and Miller considers that the term dysentery is apt to be used too freely for conditions in which a painful diarrhea is the chief symptom. It should be limited clinically to those cases in which there is a frequent passage of blood and mucus accompanied by pain and tenesmus. Do the paratyphoid organisms cause dysentery? Of 310 cases from Gallipoli in Miller's series, 70 gave a history of dysentery, while in November bacillary dysentery became more common, the Shiga bacillus being more frequently found than the Flexner. Of the seventy cases of dysentery with paratyphoid stools, 58 of them began to be ill in the period of July to October—the amebic period. Amebiasis of the colon may be present without giving rise to any symptoms. It is possible that the symptoms may be begun and kept up by secondary infections such as the paratyphoids. There is no doubt, too, that the enteric organisms do attack the large intestine, and in Miller's opinion the paratyphoid organisms are even more prone to select the large intestine for attack. As a result of postmortem evidence it would seem that there can be ulceration of the colon caused by ameba or paratyphoid organisms without any symptoms of dysentery having been present; and that dysenteric ulceration may be caused either by ameba or paratyphoids A and B. Jaundice may appear early or later on in the course of the disease. It has a tendency to become recurrent, appearing after the patient has apparently been in good health for months after his illness, and may be very severe. Cholecystitis may occur and may be accompanied or not by jaundice. Acute nephritis is fairly common; it was present in 4 per cent. of Miller's cases. It was most commonly found in the period when "trench nephritis" was so prevalent. Albuminuria is usually present for a few days at the height of the fever. There is a great tendency for the paratyphoid organisms to find their way into the urinary tract. In several cases the organisms can be found in the urine both in the acute stage and afterwards for a varying length of time without there being any evidence of infection of the urinary tract. Some of the patients were admitted with the diagnosis of nephritis and the paratyphoid infection was discovered later. Cystitis is one of the commonest and most lasting troubles. The urinary tract seems to be very susceptible to the *B. paratyphosus B.* In these cases Miller has found that urotropine has decidedly beneficial action, and approves of a routine use of this drug in all paratyphoid fevers both for prevention and cure of urinary infections. Two conditions of socalled rheumatism developed, acute articular rheumatism and more commonly a condition more closely resembling the "infective" type of arthritis. A third group was classed as the "trench fever type." Diseases of the respiratory tract are common in paratyphoid conditions. Paratyphoid fever may be regarded as a great imitator of other diseases. Further, it has the quality in certain individuals of being able to call into activity diseases which were lying latent.

3. The Influence of Maternal Oral Sepsis on the Fetus and Marasmic Children.—E. Spencer Pierrepont considers that at a time like the present, when the children of the British Empire are such an imperial necessity and asset to the nation, it is the aim of every medical man to do all in his power to enable those children to be as healthy and vigorous as possible, therefore he calls attention to a condition of maternal oral sepsis and its resulting evils upon the children that has not received any attention from the medical world before the present investigations were undertaken. For the past nine years Pierrepont has kept observations upon marasmic children and their mothers, and also those children who, being breast fed, yet suffered from diarrhea and vomiting, and the conditions of the mothers' mouths carefully noted. All the cases examined, and of which notes were made, were first examined by physicians as to their condition and then referred to the author as being more or less obscure and about whom nothing definite was known. He gives detailed illustrations of some of the cases. In some cases the mother may herself acquire a certain amount of immunity by antibodies from her own toxins and that would explain the birth of certain healthy and vigorous children in spite of the maternal oral sepsis. Stress is laid upon the term oral sepsis, as certain of the mothers' mouths showed the teeth to be well formed, free from caries, and with all the teeth *in situ.* In many cases where the mother had several children there was found a progressively increasing change for the worse in the health and vigor of the younger children of a greater degree of intensity than one would expect to find as the result of repeated pregnancies, suggesting other agencies at work than the natural exhaustion of the mother, and explicable on the ground of a successively increasing toxemia. The conclusions drawn from a series of some 500 cases, from which the above 20 cases are a fair selection, are: (1) The toxins from the maternal oral sepsis have a very strong influence in a large number of cases upon the vitality of the rapidly growing fetus, so that the child is handicapped from before birth with a lowered vitality, and therefore the marasmic condition is antenatal in its inception. (2) That prematurity of birth and miscarriages, where no other cause can be discovered, are brought about by the toxic state of the mother induced by the septic condition of her mouth. (3) The diminution in the quantity, or alteration in the quality, of the mother's milk, where no other cause can be ascertained, is due to the selective affinity of certain toxins for certain secretory cells of the mammæ, and where no such diminution or alteration can be demonstrated, then the toxins, and in some cases microorganism themselves, are in the milk. (4) In the toxemias of pregnancy and the puerperium the high pressure at which the emunctory organs are working is probably adversely influenced by the toxic state produced by the mouth, and this is the deciding factor in many cases that just brings the balance down on the wrong side and results in eclampsia or the other toxemic conditions. It is interesting to observe that in two cases where the mother had had marasmic children immediately before the last-born child, after the mother's mouth had been treated the next pregnancy resulted in a healthy child and no marasmus has supervened.

British Medical Journal.

June 2, 1917.

1. The Development of British Surgery at the Front. Anthony Bowlby and Cuthbert Wallace.
2. Penetrating Wounds of the Chest at the Casualty Clearing Stations. Wilmot Herringham.

3. The Administration of Anesthetics at the Front. Geoffrey Marshall.
4. The Color Changes Seen in Skin and Muscle in Gas Gangrene. Cuthbert Wallace.
5. The Method of Spread of Gas Gangrene into Living Muscle. J. W. McNee and J. Shaw Dunn.
6. The Successful Conservative Treatment of Early Gas Gangrene in Limbs by the Resection of Infected Muscles. C. H. S. Frankau, Hamilton Drummond and G. E. Neligan.

5. The Method of Spread of Gas Gangrene into Living Muscle.—J. W. McNee and J. Shaw Dunn state that in their experience gas gangrene is essentially a muscle disease and they have never seen it commence where injury of muscle could be excluded, the primary focis in every instance being in damaged muscular tissue. No example of gas gangrene beginning in and remaining localized to the subcutaneous tissue has been met with, and a condition spreading below the skin which is met with in base hospitals would appear to merit some special investigation before a relationship to the general type of gas gangrene can be established. Clinically, the rapidity of spread of gas gangrene into living muscle, once the disease has begun, is so remarkable as to demand some definite explanation such as has been sought for by histological methods and here suggested. The earliest case of gas gangrene examined histologically showed the condition already established three and a half hours after the wound was received, and they have seen massive gas gangrene of a limb lead to a fatal issue twelve hours after a wound of the thigh. A point to be noticed is that death may occur quickly, following a comparatively slight wound, when examination postmortem shows gas gangrene involving only a small bulk of actual muscle tissue. The material elaborated by the bacilli, whether it be a true toxin or not, is a powerful systemic poison. Anthony Bowlby has pointed out that cases of this kind may very readily be mistaken for death from shock alone. Wounds involving main blood vessels allow rapid development of gas gangrene in distal segments or parts. The spread of gas gangrene into healthy, living muscle, with an intact blood supply is a less easy problem. Two factors must be brought to mind: one is the clinical observation, now well established by the microscope, that gas gangrene tends to spread in the longitudinal axis of the muscles, so that single muscles are involved from end to end while neighboring ones are untouched. Fresh material is absolutely essential for correct conclusive investigation as the organisms proliferate and produce gas rapidly in the warm body after death. Amputated limbs and stumps left after amputation afford good material for examination as anaerobic organisms are found in the healthy muscle at a considerable distance from the actual seat of the gangrene, but their presence does not constitute gas gangrene. The *Bacillus aerogenes capsulatus* (*B. perfringens*) is the commonest and most abundant organism present in this condition. By the examination of serial sections of tissue, most of the information has been obtained by the method of spread. Macroscopically this spreading margin is sometimes fairly sharp, at other times, somewhat irregular. The muscle fibers at the margin are paler and duller than the normal but the color change is little more than might be accounted for by total absence of blood in the part involved. The outer limit of the process while indefinite can be mapped out fairly closely if the healthy tissue beyond is still contractile, as this power is lost in the part becoming gangrenous. At the advancing edge the muscle is firmer to the touch than the healthy fibers beyond and the firmness is found in the gangrenous part behind. Microscopically in a section taken from as near as possible the advancing edge, various changes are found. Various normal fibers are seen, while others exhibit a striking change. The staining reaction is different, and dots indicate the individual fibrils lost. The fibers are swollen, but are well separated from the interstitial connective tissue, to leave what appears to be a clear space. The fiber still shows the uniform eosin tint indicative of degeneration. The sarcolemmal nuclei still stain brightly. What determines the advancing death of the fibers? The writers, after thorough experimentation, have decided that the spaces between the fibers and the interstitial connective tissue are filled with a toxic fluid which spreads along the interstitial tissue and the fibers, killing the latter as it advances. Once the fibers are killed the anaerobic bacilli live on them, breaking down the sugars and producing gas in abundance. With regard to the route followed by these organisms, these are, at the spreading edge, never found in the fibers themselves, but are practically confined to the reticulum. After the fibers are broken down the organisms invade them in numbers. Fewer germs are found in this completely degenerated tissue, only gas, and they travel to the spreading zone. In rapidly spreading gas gangrene leucocytes are generally absent in the involved muscular tissue. The rapidity of the spread may account for this as leucocytes take time for development. McNee and Dunn conclude that the rapidity of spread of gas gangrene into living voluntary muscle is so remarkable as to require explanation by a different process from that which governs ordinary septic invasion of tissues. It is suggested that the facts are accounted for by the peculiar anatomical structure of muscular tissue; as the sheaths inclosing the long individual fibers are so easily detachable as to form potential spaces into which toxic material can readily pass, causing necrosis of the fibers. The early selective invasion of single muscles is consistent with the above view.

La Presse Médicale.

March 29, 1917.

Prophylaxis of Infection of Projectile Wounds.—Vincent has already called attention to the practicability of the immediate disinfection of recent wounds at the front. The measures recommended by him and carried out in his own service have testified to the soundness of his views. Mere aseptic dressings favor infection, for both aerobes and unaerobes can flourish under this shelter for days or until the base is reached. Microorganisms breed with extraordinary rapidity under these conditions, the tissues being macerated and imbued with blood. When these wounds are first exposed a reddish serum is seen to exude which gives off a bad odor. The patient has temperature and the surgeon must at once proceed to excise the entire wound area. Such excision may be quite too late to prevent gas gangrene, and in the end the limb must be amputated. As is known to many, the author has long recommended primary disinfection of wounds with calcium hypochloride. This treatment is both simple and efficacious and applicable almost anywhere save in penetrating wounds of the thorax and abdomen. The author adds boric acid to the extent of one-tenth, and the mixture is especially active against the *B. perfringens* and its associates. In fighting on a huge scale when the wounded come in by thousands this application is especially adapted for wholesale use. The author recommends the dry dressing exclusively.

Results of Examination of the Blood After Wounds.—Govaert calls attention to the asthenic syndrome seen in the badly wounded with the unusual fall of blood pressure. This state is due to shock, hemorrhage and sepsis. Of the three, hemorrhage is the most readily eliminated. Injection of artificial serum also has a most favorable influence on shock. But if serum cannot bring back the tension, transfusion must be thought of. It is in this connection that blood tests may prove of value. Before tests can be made we must learn the effect on the various elements of the blood of the status of severe wounds. Research shows us that for the first 3 or 4 post-traumatic days the number of erythrocytes steadily diminishes. Equilibrium is reached and held for 2 or 3 days, after which there begins a slow increase which may transcend the normal. In other words, hyperglobulia may develop, and this even after a severe hemorrhage. In a subject who lost his arm in a shell explosion the erythrocytes fell from 4,800,000 to 2,780,000, then rose to 4,700,000 shortly before death. The increase was very sudden, and while hyperglobulia did not develop, the case was of that type. In a case of perforative appendicitis the author saw the red cells go to 6,350,000. Such a phenomenon has no good prognostic significance, and seems to signify only the development of peritonitis in the course of an injury or disease. In regard to the leucocytes most wounded develop a marked leucocytosis. It disappears rapidly, has no apparent connection with inflammation or toxin

production and may be termed simply traumatic leucocytosis. The author attempts to draw some practical conclusions from these finds but they only confirm that which was already known and which could have been learned in their absence. A sudden rise in the number of red cells or a hyperglobulia would suggest peritonitis or perhaps a transudation in one of the largest serous sacs. A marked leucocytosis after injury could suggest an internal hemorrhage, etc., etc.

La Presse Médicale.

April 2, 1917.

The Specific Serum Treatment (Prophylaxis) of Infected Wounds.—Leclainche and Vallée conceived the idea of a local serum treatment of wounds as long ago as 1912 and memorialized it before the Academy of Sciences. The matter was tested in both the clinic and laboratory, and three years later, with the war in full swing, the subject was brought up before the Academy of Medicine. It should be stated that long before the subject was agitated of a serotherapy of wounds in man, veterinaries had pursued the idea of a serotherapy or serovaccination against wounds in horses. One of the authors (Vallée) is Director of the National Veterinary College at Alfort, and experiments in this province go back to 1897. The method of the authors consists in the use of specific polyvalent sera in the form of dressings or hypodermic injections. The former stands in no relation whatever to ordinary serotherapy nor to the local use of lymphagogue substances, etc. It involves the use of a polyvalent serum which in the hands of the Bazyo, Quénu and others has given excellent results. According to the latter it checks suppuration and promotes epidermisation. But one must be eclectic in this field because in the case of some particular germ a good antiseptic does best—for example, a weak nitrate of silver solution is the best antagonist of the *Bacillus pyocyaneus*. Injections of the polyvalent serum have been used much more generally and the injections and dressing have been used in association. Thus far no anaphylaxis or other accident has been reported. But although these preparations seem to have been discussed favorably by the Academy of Medicine and the Hospital Society and have been prepared and authorized under Government control, we nowhere find any detail as to content, manufacture and standardization. The serum is, however, readily obtainable in packages accompanied by full directions.

Dehydration of the Blood and Organs in Diabetic Coma.—Chauffard, Le Conte and Dorie, as a result of actual research into diabetic coma show that progressive dehydration is in evidence The skin is flaccid, the eye hypotonic, the blood pressure low. After death the water content of the viscera is readily seen to be lessened. the kidneys and pancreas leading in this respect. The entire process is toxic, an acid intoxication or acidosis. The ketone bodies gain entrance to the cerebrospinal fluid and can act directly on the cortex. In certain autopsies the odor of acetone is very strong when the cranial vault is opened. The toxic bodies which play the chief rôle are by no means all known, and collectively must represent a considerable number of substances varying with the case. Venesection in diabetic coma shows that the blood is unduly viscous and thickened. There are, therefore, two leading indications for treatment. First, the blood must be rehydrated, and second, antitoxic substances—alkalies in this case—must be administered. The two indications can be filled together by the infusion of a solution of sodium carbonate by the intravenous route, enteroclysis and hypodermoclysis. The concentration is of vital importance—say from 15 to 20 gm. of soda for each litre of water.

Le Progrès Médical.

May 5, 1917.

Propathies of Tuberculosis.—Raymond states that when a young man begins to cough and lose flesh his mother will demand of the physician a positive or negative diagnosis by no means easily made. "Suspicious bronchitis" is often as far as he cares to go. Doubtless he could go further if he utilized all possible resources. There are not a few diseases which are known to act as forerunners of tuberculosis, and when a youth presents himself with one of these the physician should invariably examine the chest. These affections are due presumably to the toxins of tuberculosis, and represent a "cry of the organism for a richer blood." The entire subject can be studied to advantage among young soldiers. As far back as 1882 Peter called attention to sciatica as a propathy of pulmonary consumption, and his work has since been regarded as a classic of medicine. The present author has seen this association several times. In a soldier of 42 left-sided sciatica appeared and persisted for 9 months before patient developed a dry cough. The *x*-ray showed a faint shadow in the left apex, with corroborative physical signs. In a second case, in a soldier, the sciatica preceded the pulmonary symptoms over two years. In a third case the interval was very brief. Other cases are mentioned. The sciatica was in some soldiers severe enough to cause their evacuation from the ranks, and to make necessary a hospital sojourn. One patient, on the other hand, was known to be tuberculous when his sciatica appeared, and in the other cases the age of the tuberculous process could only be surmised but was evidently by no means recent. In other words, in sciatica of this type the tuberculous lesions should already coexist else there could be no place for the genesis of the toxins. Herpes zoster has been regarded as a possible propathy of consumption since 1878 (Leudet) and there exists a small literature on the subject. Whenever this disease attacks a young subject his chest should be *x*-rayed. The author has recently seen a case in a soldier. Psoriasis, usually a disease of the robust, is said by Gaucher to indicate occasionally the presence of a tuberculous focus. The relationship here is open to some doubt but several cases are given in one of which sciatica, psoriasis, and incipient pulmonary tuberculosis coexisted. The author also mentions erythema nodosum as a propathy, but this coincidence is sufficiently well known.

Correspondenz-Blatt für Schweizer Aerzte.

March 31, 1917.

Gastropexy for Gastroptosis. — Bircher writes at length on the operation originally conceived and executed by his father in 1891 for gastric dilatation. At a later period it was learned that no sharp distinction could be made between dilatation and prolapse, the actual condition for surgical intervention being gastrocoloptosis. Interventions which have been directed against this condition comprise colectomy, gastrectomy, gastroplication, gastropexy, omentopexy, and gastroenterostomy, the last named being pronounced contraindicated. The original Bircher operation was a gastroplication, an operation which has since been done freely by others, including Beyea of the United States. The end results are said by the author to be somewhat disappointing. Omentopexy or Coffey's operation gives a better outcome but is inferior to gastropexy. The last named intervention has been practiced chiefly by Rovsing of Copenhagen, Duret of Lille and the author. Duret's material is not given. Rovsing and some of his Scandinavian colleagues have performed gastropexy no less than 256 times while the author has a record of 62 operations. The percentage of cures is nearly two-thirds of the entire number, or 204 cases. The Scandinavian operative mortality is nearly 5 per cent. while the author lost but one of his 62 patients. The cases marked "improved" agree in the two series —about 20 per cent. The per cent of unimproved was 9.6 in the author's series and 12.8 in the Scandinavian series. The author gives Rovsing credit for the technique which he has somewhat modified. The fixation sutures pass around the costal arch or just beneath it through the skin. Three sutures parallel with the lesser curvature traverse the serosa and muscularis as far as the pylorus. At a distance of 3 or 4 cm. from the puncture these sutures are brought through to the left of the laparatomy wound and knotted over a glass drain. It is not, of course, to be understood that these 318 operations were all undertaken for uncomplicated gastrocolopexy. Other operative conditions were associated at times but no details are given beyond the statement that in 6 of the author's 62 cases gastric ulcer was present.

Book Reviews.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics, Materia Medica, and Diagnosis in the Jefferson Medical College, Philadelphia. Assisted by LEIGHTON F. APPLEMAN, M.D., Instructor in Therapeutics, Jefferson Medical College, Philadelphia. Price, $6.00 per annum. Philadelphia and New York: Lea & Febiger, March 1, 1917.

THIS number of Progressive Medicine contains articles on Surgery of the head and neck, by C. H. Frazier; Surgery of the thorax, excluding diseases of the breast, by G. P. Müller; Infectious diseases, including acute rheumatism, croupous pneumonia, and influenza, by J. Rühran; Diseases of children, by F. M. Crandall, and Rhinology, laryngology and otology, by G. M. Coates. Most of these articles are by old and tried contributors; but we notice one new name, that of Dr. G. M. Coates. As was to be expected, there is a lengthy article on Poliomyelitis; much that has been written on the subject is reviewed here, and perhaps in another year we may be able to read what has actually been accomplished in the early diagnosis and treatment of this disease.

STUDY OF ORGAN INFERIORITY AND ITS PSYCHICAL COMPENSATION. A Contribution to Clinical Medicine. By Dr. ALFRED ADLER of Vienna. Authorized translation by SMITH ELY JELLIFFE, M.D. Nervous and Mental Diseases Monograph Series, No. 24. Price, $1.50 net. New York: The Nervous & Mental Disease Publishing Company, 1917.

THIS book is really an introduction to the author's "Neurotic Constitution," which should be read in connection with it. His thesis is that neurotic traits of character have their origin in certain very definite defects of organs. These he has demonstrated by actual anatomical and physiological investigations. These deficiencies may be converted to an extraordinary development of the organ, *e.g.* the stuttering boy, Demosthenes, became the greatest orator of Greece. As a rule, however, the phenomenon of organ inferiority is reflected on the psyche in such a manner that its whole structure has a peculiar impression. The psychical structure thus obtained becomes a foundation for neuroses and psychoses. One little known discovery of his is that external stigmata often mean inferiority of segmentally related internal organs, a "segmental insufficiency." Adler's views are, to say the least, original and while he is of the Freudian school, he perhaps will not offend the rabid opponents of those doctrines because he finds a physical basis for psychical symptoms, even though the connection be not at once apparent. Jelliffe is to be congratulated on his very readable translation of Adler's horrible German. The book is well gotten up, except for the lack of an index and the paper binding.

A MANUAL OF PHARMACOLOGY AND ITS APPLICATIONS TO THERAPEUTICS AND TOXICOLOGY. By TORALD SOLLMANN, M.D., Professor of Pharmacology and Materia Medica in the School of Medicine of Western Reserve University, Cleveland. Illustrated. Price, $4.50. Philadelphia and London: W. B. Saunders Company, 1917.

A LABORATORY GUIDE IN PHARMACOLOGY. By TORALD SOLLMANN, M.D., Professor of Pharmacology and Materia Medica in the School of Medicine of Western Reserve University, Cleveland. Illustrated. Price, $2.50. Philadelphia and London: W. B. Saunders Company, 1917.

WHEN the first edition of this work appeared some fifteen years ago it was at once recognized as a distinct advance on the books on materia medica which had hitherto been available. For the first time the physician found himself in possession of a book in which the action of drugs was based almost entirely upon animal experimentation, and in which well directed research replaced casual and often haphazard observation. The student found, too, that the study of drugs could only be satisfactorily accomplished when it was placed on a scientific basis, and when materia medica had its laboratory and experimental work just as physiology and chemistry did.

The two handsome volumes now before us are the second edition of Doctor Sollmann's book. But the revision has been so extensive and so thorough that the result may well be considered as a new work. The author has done well to divide the book. The physician will find in the larger of the two volumes all that he needs on the action of drugs. In some respects the work is encyclopedic in its fullness of detail; but in many cases, particularly where the drugs are of slight importance, the information is of the briefest. Important features of the work are the constant reference to the labors of other writers and experimenters and the carefully selected bibliography. The laboratory manual contains a large number of exercises, carefully arranged and divided into two sections. In the first part the exercises are confined strictly to the bare essentials needed by students who intend to become general practitioners of medicine. The second part is of a more advanced character, and deals with animal experimentation; it also shows the response of animal tissues and organs to various pharmacological agents. The volumes are well printed, and the work will appeal to all who are in any way interested in the modern (or scientific) methods of practising medicine.

THE HISTORY OF THE PSYCHOANALYTIC MOVEMENT. By Prof. Dr. SIGMUND FREUD, LL.D., of Vienna. Authorized English translation by A. A. BRILL, Ph.B., M.D., Lecturer in Psychoanalysis and Abnormal Psychology, New York University; former Chief of Clinic of Psychiatry, Columbia University. Nervous and Mental Diseases Monograph Series, No. 25. Price, 60 cents net. New York: The Nervous & Mental Disease Publishing Company, 1917.

SUCH a spectacular movement as psychoanalysis had to have its historian, and who more fitted for the task than its founder, Professor Freud? In the present little volume he has faithfully traced psychoanalysis from its vague beginnings when Brever and Freud treated their patient, since become famous, up through its stages of uncertainty, apathy, hostility, and recognition. He mentions his various pupils, disciples, and opponents, and tells of the schisms which took place from time to time, on the whole quite fairly. In his accounts of Jung and Adler, for example, he exhibits commendable restraint. Both the followers and the opponents of this movement will find much of interest in this little book.

THE STARVATION TREATMENT OF DIABETES, with a Series of Graduated Diets. By LEWIS WEBB HILL, M.D., Junior Assistant Visiting Physician, Children's Hospital, Boston, and RENA S. ECKMAN, Dietitian, Massachusetts General Hospital, Boston. With an Introduction by RICHARD C. CABOT, M.D. Third Edition. Price, $1.00. Boston: W. M. Leonard, 1917.

THIS new edition of Hill and Eckman's aid to the treatment of diabetes has been somewhat enlarged by the addition of the anaylses of some of the more important diabetic foods. The series of graduated diets also has been revised, chiefly by the reduction in the amount of fat content. In other respects the volume is much the same as in the previous editions. The Allen treatment has definitely proved its worth in the difficult problem of the treatment of diabetes and the satisfactory prosecution of the treatment can be reached only when the patient is possessed of at least much of the information which is to be found in this book. It is probably not too much to say that every diabetic should own and study this book and many physicians can profit by its use.

AN INQUIRY INTO THE PRINCIPLES OF TREATMENT OF BROKEN LIMBS. A Philosophico-Surgical Essay with Surgical Notes. By WILLIAM F. FLUHRER, M.D., Consulting Surgeon to Bellevue and Mount Sinai Hospitals. Price, $3.00. New York: Rebman Company. 1917.

DR. FLUHRER has long been an authority on the subject of the treatment of fractures and has been a pioneer, so far as devising methods for rendering such treatment effective from all points of view is concerned. This volume clearly expounds the principles of treatment best calculated in the author's opinion to be productive of good results. The work is highly instructive.

Society Reports.

ASSOCIATION OF AMERICAN PHYSICIANS.

Thirty-second Annual Meeting, Held in Atlantic City, May 2 and 3, 1917.

(Special Report to the MEDICAL RECORD.)

THE PRESIDENT, DR. GEORGE DOCK OF ST. LOUIS, IN THE CHAIR.

Wednesday, May 2—First Day.

The President's Address.—Dr. GEORGE DOCK of St. Louis delivered this address. He said that many objections had been made on similar occasions regarding the size of the membership and with 50 candidates for active membership and about one-fifth as many vacancies it seemed to him that this was the time for a renewal of the discussion. Beginning with a membership limit of 100 they had now in thirty-one years reached a total of 215 members—147 active, 25 associate, 34 emeritus and 9 honorary. After considering the methods for increasing the membership he cited some of the objections to an increase, and referred to the work of the German Kongress für Innere Medicin, which had its beginning four years before this Association. With fewer medical schools in the Teutonic countries there were many more great hospitals with expert medical staffs fitted for and contributing to medical advance. In 1914, before the war, the membership was 706 and attendance 737. The suggestion was offered that the line of advance should consist in ending the associate membership by not taking on new members and dropping all now on the list who were either not active or no longer eligible; next, by withdrawing pressure on active members to become emeritus; and finally by raising the present limit of membership to the original standard of admission. There was no need for their consideration of many questions that properly came before the American Medical Association. But he asked if they could remain aloof from certain great social questions as they had in the past. With the upheaval of standards and methods in all lines of human activity with the excitement of passions and loss of calmness that activated all great political disturbances there would be the demand for the exact training and cool judgment that such a body as theirs represented. Could they refuse either as individuals, or as a body, to act or go on record when they saw or heard the call for assistance? He thought not. Very recently such a call came and at the proper time they would have the opportunity of considering what action was to be taken.

Dr. Dock then read a letter from a member of the Council of National Defense in which he asked that members of the Association offer their services to the United States Government and to inform it of the best capacity in which they could serve. Due stress was laid upon the comparatively small membership. By next year as many as possible should be prepared for service in both the Army and Navy. It was suggested that the members of the Association could render great service as consultants. The capacity of the hospitals should be increased to meet the demands.

Dr. WILLIAM H. WELSH of Baltimore said that this subject had been considered by the proper authorities and that the Surgeon General of the Army had spoken to him of the vital importance of speeding up and graduating students, for which the speaker thought at present there was practically no need. There was no necessity for such hasty action. It was not necessary either that the medical schools should take students during the summer.

Studies of Digestion.—Dr. FRANK W. WHITE of Boston read this paper, in which he considered the following:

(*A*) *Effects of Stimuli from the Lower Bowel on the Rate of Emptying the Stomach:* In some persons with partial obstruction in the ileocecal region the stomach emptied very slowly, without any lesion of the stomach being found at operation. Experiments on animals showed that when the colon was strongly irritated by injections the stomach retained food much beyond normal limits. Evidently a strong stimulus from the bowel was needed to slow the human stomach, for it was found that the stomach emptied within the normal five or six hours, in some cases with ileal stasis of two or more days' duration, and in most cases with good-sized twelve-hour residue in the ileum, and also when the colon was distended by a large enema.

(*B*) *The Effect of Massage on the Colon:* Cannon's method of direct examination of the bowel and the *x*-ray was used in studying the human colon at intervals after giving abdominal massage (especially of the colon). There was great variation in different persons in the accessibility of parts of the colon to massage. Vigorous massage usually mashed up the contents of the colon, but had little or no immediate effect in moving the contents forward. When a full cecum was apparently emptied at once it was found that gas had moved forward and solid contents merely flattened out in both directions. Massage sometimes delayed but usually hastened the passage of colon contents at the end of several hours, evidently by stimulation of slow peristalsis. The effect of this stimulus was small in comparison with the stimulus of taking food. A rapid onward "mass movement" of a large portion of colon contents was seen very rarely (twice) after massage. These large movements had no direct relation to the force of massage, but followed gentle palpation.

Dr. S. J. MELTZER of New York asked about the reflexes. The retardation might be caused in two ways. First, by inhibiting the movements of the stomach walls and, second, by increasing the contraction of the pylorus. In the first they would have an arrested progress in the gastrointestinal canal. That it might increase the contraction of the pylorus would not be surprising because they knew that by obstruction in the gastrointestinal canal the peristalsis was increased as the action of the sphincter would also be increased.

Dr. FRANKLIN W. WHITE of Boston said that it seemed to him that there was no doubt that the delay was due to spasm of the pylorus and not to any inhibitive action of the stomach.

The Importance of Duodenal Alimentation in Severe Dyspepsia Occurring after Gastroenterostomy.—Dr. MAX EINHORN of New York reported ten cases of postoperative severe dyspepsia treated by duodenal alimentation. Two were described in detail and eight in tabulated form. Of these, eight made good recoveries, while two necessitated renewed surgical intervention. These patients were thoroughly examined to ascertain if the pylorus and gastroenterostomy openings were patent. If such patients were placed on duodenal alimentation for two weeks one was apt to get good results.

Dr. JULIUS FRIEDENWALD of Baltimore believed this to be a life saving method of treatment and said he had used it in a great number of cases. After the operation of gastroenterostomy the patient was not cured, or cured only for a short time. In several instances duodenal feeding had helped him out and he recalled one case in particular. This was a man, 23 years old, with an ulcer of the stomach treated medically and the condition was relieved for a short time only. Gastroenterostomy was then done and the patient was relieved for about six months, when he had a return of his symptoms of ulcer of the stomach. Duodenal feeding was then resorted to and he had now been well for nearly two years. He thought this method should be tried further before operations were undertaken.

Dr. CHARLES G. STOCKTON of Buffalo said that his results corresponded very closely to those of Dr. Einhorn's. Some patients suffered after operation with symptoms of what he described as a "vicious circle" and the patients after operation were sometimes worse than they were before; in these patients the food passed from one opening out and back to the stomach through the other. He was convinced that he had seen at least one case relieved of symptoms after the use of the duodenal tube.

Dr. FRANKLIN W. WHITE of Boston said he had used the duodenal tube in two cases. There were some instances in which the tube did not work well.

Observations on Intestinal Bacteria in Children.—Drs. WILLIAM WEBBER FORD, K. D. BLACKFAN, and M. D. BATCHELOR of Baltimore presented this paper, which was read by Dr. Ford. He said that during the past

three years an attempt had been made to discover changes in the bacterial flora of children as a result of feeding them with artificial foods, particularly protein milk. The stools of breast-fed children reveal small Gram-negative bacilli, small Gram-positive bacilli and micrococci, and large Gram-positive bacilli. Cultures on plain and dextrose-agar gave only Gram-negative bacilli, *Bacillus coli* and *Bacillus lactis ærogenes*. The small Gram-positive cocci and bacilli could be obtained by transferring material to acid broth. They were aciduric organisms (*B. acidophilus*, etc.). The large Gram-positive bacilli were ærobic spore bearers and could be obtained only by heating material to 85° C. and incubating for twenty-four hours. Artificially fed children had shown the same types of Gram-negative organisms, the same small Gram-positive micrococci and bacilli, but in addition a great profusion of large Gram-positive bacilli. The authors believed that these organisms were definitely increased in certain conditions, particularly by the use of special articles of diet.

Observations on the Treatment of Myelocytic Leucemia by Radium. — Dr. Herbert Ziegler Giffin of Rochester, Minn., reported thirty patients with myelocytic leucemia treated by means of the direct application of radium element over the spleen. The effect of the general condition of the patient, the size of the spleen, hemorrhages, and the blood pictures was entered into, as well as the reaction and the radium burns. In the method used he made applications with 5 to 10 mgs. of radium in a tube for from three to four hours, with a total exposure of twenty-four to thirty-six hours. A belt that was used for protection against radium burns was described and presented. A combination of the proper treatment with exposures to radium seemed to him to be the best treatment for myelocytic leucemia.

Dr. Alfred Stengel of Philadelphia reported his experience with the *x*-ray treatment in leucocytic leucemia. His experience with the treatment with radium was practically nil. The number of cases he had treated with the *x*-ray was in the neighborhood of fifty and the records that were available were forty-two. In many of these cases the clinical improvement was far out of proportion to that of the blood condition. More of the cases had eventually better results clinically than those cases in which the improvement in the blood picture was noted. Leucocytic leucemia like pernicious anemia seemed to be a relapsing disease. He suggested this as a possible end result in treating cases of leucemia. They had had a number of patients who lived four or five years, perhaps six years; eight years was the maximum duration of life.

Dr. Francis W. Peabody of Cambridge, Mass., said at the Huntingdon Hospital their results had been as Dr. Giffin had described. There was a remarkable drop to the normal of the white count and a decrease in the size of the spleen. It seemed to him that these cases should be followed up with great care; they should return for examination once every week or once every month. Some only returned when the symptoms appeared again. When they returned as a rule the spleen was enlarged and the blood count was very great. At present they had one case that had been under observation for a period of four years, and he was apparently in very good condition. In every case that showed evidences of being cured they tried to keep the blood count down as nearly as possible to the normal. These cases appeared to be perfectly well if their blood count was kept between 20,000 and 30,000. So soon as the blood count rose and the spleen enlarged then further treatment was definitely indicated. He had little opportunity of comparing the effects of the *x*-ray and radium. They had had one or two cases where the treatment by the *x*-ray had no beneficial effects. He was not convinced, however, that the *x*-ray was used in a satisfactory manner.

Dr. Leonard G. Rountree of Baltimore asked what experience the members had had with the acute type of leucemia. He reported the case of a girl who gave a brief five or six weeks' history of her trouble. She was anemic and had an enlarged spleen. She was given a transfusion and applications of radium were made. She died at the end of ten days. An exposure of the radium for twenty-four hours had no effect on the spleen, probably because she did not live long enough. He asked if any present had had any experience with this combined type of therapy; also if any had had any experience with the relapses that occurred, and whether they could get the disease under control by specific treatment. Had any tried the injections of the soluble radium salts? It seemed to him that such treatment restored the bone marrow to a great extent.

Dr. Lewellys Franklin Barker of Baltimore referred to some practical studies from the theoretical side. One wondered if the mass of bone marrow cells originated in the marrow and collected in depots, or did they arise from other tissues. He rather favored the view that this condition existed all over the body. Fatty bone marrow only developed the cells. The pathogenesis was very obscure. One thought of some abnormal stimulus, some primitive stimulus. If this were true then they were dealing with a tissue disease and not a bone marrow disease. There was a stimlating effect with a tendency to proliferate; if so, how could radium do good? It destroyed a great many cells. Was the destruction of the cells limited to the spleen where applied, or was it diffuse over the body? Of course they were treating the whole of the symptoms rather than the disease itself. They should consider all the accessory factors that could be of help in the therapy of the disease.

Dr. William S. Thayer of Baltimore agreed with what was said in regard to the relapses in this disease. He always regarded this disease as related to pernicious anemia. There was, too, its spontaneous disappearance under the old fashioned treatment by arsenic.

Dr. S. Solis Cohen of Philadelphia said he had the opportunity of observing the results from both kinds of treatments, and it seemed to him that radium was more prompt in getting results and without much constitutional reaction. In his experience the combination of radiation with arsenic, as suggested by Morton of New York, was followed by the longest prolongation of life and with the greatest amelioration of the symptoms.

Dr. Joseph Almarin Capps of Chicago said that the *x*-ray and radium destroyed some substances which were poor in the leucemic cells. These substances were more or less selective.

Dr. Herbert Ziegler Giffin of Rochester, Minn., was glad to hear Dr. Peabody state that it was better to keep the patient in good general condition than to reduce the leucemic count to a low point, not above 50,000. He did not use arsenic until after he had used radium. These cases relapsed. One should consider the intravenous injection of soluble radium salts, but so far they had not attempted them.

Lung Ventilation.—Dr. C. F. Hoover of Cleveland, Ohio, presented this paper. He said that the respiratory excursion of the upper thorax was characteristically modified in the following conditions as shown by clinical and experimental studies: (*a*) When the scaleni were paralyzed; (*b*) when the intercostal muscles were paralyzed; (*c*) when extensibility of the upper lobes were impaired. Respiratory excursions of the lower thoracic cage gave valuable information: (*a*) on the total lung volume; (*b*) the degree of obliteration and the degree of distention of the pleural sinus; (*c*) the relative enlargement of the left and right ventricles of the heart; (*d*) the total enlargement of the heart; (*e*) enlargement of the pericardial sac; (*f*) paralysis of the intercostal muscles, paralysis of the diaphragm; (*g*) differentiation between paralysis of the diaphragm and activation of the diaphragm without excursion of the leaf of the diaphragm; (*h*) the size of the respiratory unit; (*i*) an explanation of the error of Duchenne's interpretation of the diaphragm which had been accepted at the present time.

Dr. A. Jacobi of New York said that Dr. Hoover had alluded to the upper portion of the thorax, but premature ossification of the upper part of the thorax should be considered which resulted in narrowing the upper part of the thorax, giving rise possibly to tuberculosis and emphysema. A number of operations had been performed for such an emphysema. He was glad that Dr. Hoover was doing work along this line.

The Significance of the Percentage of Carbon Dioxide in the Alveolar Air in Pneumonia Patients Who Were Cyanotic.—Dr. R. D. Pearce of Cleveland, Ohio, presented this communication, which was read by Dr. Pearce. He said it was possible to calculate the capacity of the dead space and the percentage of CO_2 in the alveolar air by comparing the percentage of CO_2 in ex-

pirations of varying depths, following a normal inspiration. The mathematics depend upon the influence which the dead space air exerts as a diluting agent in reducing the percentage of the CO_2 in expirations of different amounts. The method was very accurate and could be easily carried out in untrained subjects by the use of an apparatus which made the taking of samples practically automatic. The CO_2 pressure in the alveolar air was found to be lower than normal in some cases suffering with fibrinous pneumonia. In these cases cyanosis was present, but there was no evidence of cardiac impairment, air hunger or acidosis. Patients with massive pneumonia who had no cyanosis had a normal or high percentage of CO_2 in the alveolar air. The capacity of the dead space in both conditions was less than was expected. An explanation of this phenomena might be found in the assumption that the pulmonary circulation continued through the consolidated lung after its respiratory function had failed. This condition would supply venous blood to the left heart, which, acting as a diluting agent to the arterial blood, would increase the tension of carbon dioxide and decrease the tension of oxygen in the arterial blood. The increase tension of CO_2 in the blood stimulated the respiratory center with the result that the minute volume of the respiration was increased and the percentage of CO_2 in the alveolar air was reduced. The blood passing through the healthy lung had a lower than normal content of CO_2 to compensate for the high content of CO_2 in the venous blood with which it was mixed in the left heart. However, since the blood which passed through the healthy lung was fully saturated with oxygen no compensatory mechanism could be established by which the oxygen content in the mixed blood in the left heart could be brought to a normal oxygen tension. The blood therefore appeared cyanotic. The condition was somewhat analogous to that found in congenital heart disease.

Dr. C. H. Hoover of Cleveland, Ohio, asked how much blood was going through the pulmonary circulation and how much in the consolidated area and other parts of the lung that were encroached upon. How much unrespired blood was poured into the left ventricle?

Dr. Samuel J. Meltzer of New York described a method by which the blueness of the blood might be made to disappear by the administration of oxygen in these cases.

Clinical and Pathological Features of Bronchiectasis.—Dr. Alfred Stengel of Philadelphia read this paper. There were sixty-three cases reported, thirty-six cylindrical, eighteen sacculated, and nine cylindrical and saccular. There were two cases, cylindrical, of tumor obstructing treachea or bronchia. One case, cylindrical, of tumor metastasis in the lungs. There was one case of aneurysm, cylindrical and sacculated. Doubtful, five cases, one cylindrical, three sacculated, and one cylindrical and sacculated. There were nine cases of broncholiths, seven cylindrical and two cylindrical and sacculated. Of the pneumonias, there were, croupous one, bronchopneumonia eight, fibrinous eight, a total of seventeen, twelve cylindrical and five sacculated. There were twenty-seven tuberculous cases, twelve cylindrical, ten sacculated, and five cylindrical and sacculated. There was one case of atelectasic, cylindrical. The cylindrical and generalized bronchiectasis were amenable to medical treatment. He referred particularly to the special methods of treatment of this condition—first, the postural. This combined with the use of the vaccines resulted in benefit. Second, the specific types seen clinically. The most important sign associated with respiration was the "trapdoor" breathing, a condition he failed to see described in the current literature. Some called it the "veiled puff." Third, the treatment of the condition of emphysematous signs in the upper lobe. The upper lobes were very frequently involved, but the lower lobes were more frequently the seat of the disease.

Gastric Polyposis.—Drs. J. Friedenwald and John Miller Turpin Finney of Baltimore presented this paper which was read by Dr. Friedenwald. He reported three cases of this affection, and in both operation was performed and the condition demonstrated. In both instances carcinomatous degeneration was noted. A review of the histories of both cases, together with the *x*-ray examination and gastric findings pointed toward cancer. The third case was demonstrated by a specimen and presented a most marked instance of polyadenoma gastrica. The underlying cause of adenopapillomata was a chronic gastritis. In some cases the symptoms were very severe.

Dr. William S. Thayer of Baltimore said that some twenty-five years ago he was very much interested in one case. The patient was a lady, sixty or seventy years old, who presented the symptoms of pyloric obstruction. She vomited continuously. She had a large dilated stomach and a distinctly palpable tumor. No examination of the gastric juice was made, but the symptoms and signs pointed clearly to a case of pyloric obstruction. No metastasis could be made out. At autopsy there was found a long pedicle which engaged the pylorus and caused almost a complete obstruction. The microscopical examination did not show any evidences of carcinoma at all.

Dr. Theodore C. Janeway of Baltimore said he had seen an interesting type of that condition at St. Luke's Hospital which showed particularly the great motility of the tumor which lay between the ensiform and the right iliac region, but it never was on two consecutive days in the same portion of the abdomen. The symptoms and signs were those of carcinoma of the stomach. At autopsy there was found a pedunculated adenocarcinoma of the stomach which hung by a very long pedicle.

Alimentary Hyperglycemia Following the Repeated Ingestion of Glucose.—Drs. L. Hamman and I. Hirschman presented this report, which was read by Dr. Hamman. He concluded that the first injection of glucose stimulated while the second injection caused a less marked degree of hyperglycemia. The levulose was affected less than the glucose.

Dr. H. O. Mosenthal of Baltimore said that the practical bearing if translated into a normal diet was that there was not much rice sugar; as a matter of fact that was what was found in determining the blood sugar after a meal.

The Present Outlook of Diabetic Treatment.—Dr. Frederick Madison Allen of New York said that he had looked over a large amount of material in the hospital and tried to learn if it was possible to differentiate between the presence of diabetes and its absence. In cancer, pancreatitis, arteriosclerosis, and some other diseases various peculiar islands were found microscopically in both the diabetic and the non-diabetic material. It seemed impossible to establish diabetic disease. The sugar tolerance had never been tested. Some patients died with symptoms of diabetes and yet the islands that were there could have been saved by proper treatment; if the islands were not there recovery could not take place. If the diabetic could not be diagnosed at necropsy from simply a scarcity of islands the bulk of evidence lay with the clinician rather than with the pathologist. What was the interpretation? The failure to find the islands might be explained by animal experiments. In animal experimentation where the change was marked the condition ran a short course. It generally took months and years to bring the islands to a state of disappearance. If the disease was slower it was hard to find the islands in the human as they were found in experimental animals. The discharge of specific internal secretion was more rapid than the cells could form it and produced an exhaustion of the cells. In the worst type the treatment sent the patient into acute coma. Keep feeding the patient up to the point of tolerance to warn off acute dangers such as threaten. These patients might come to necropsy with little islands left. Inflammation of the pancreas had produced diabetes experimentally. There was a hardening of the pancreas and the islands were softer, caused by a loss of resisting power. With proper technique the pancreas became fibrous and not like the soft normal pancreas. It was noteworthy that in pancreatic inflammation without impairment or degeneration of the thyroid, the inflammation of the thyroid could be cleared up by diabetes. If they were dealing with traumatic diabetes the treatment could be instituted early and a radical and practical treatment was indicated. Diabetes was a weakness in assimilating food due to insufficient secretion of the islands. In going over the records for the past three years they collected thirty cases and these records were not bad. The present method was not a time saving device, but resulted in a greater prolongation of life. The islands were vital organs and should not be broken down. Progress should

be sought in some remedy to make good the organic defect.

The Maintenance Diet in Diabetes Mellitus.—Dr. HERMAN O. MOSENTHAL of Baltimore read this paper. He said that during the past few years, thanks principally to the efforts of F. M. Allen, the problems in the feeding of cases of diabetes mellitus had been very much simplified. By eliminating the carbohydrate element from the diet and lowering the protein and fat content of the food to an extent never before thought feasible the urine had in nearly all instances been rendered sugar free. The acidosis previously regarded as a dangerous factor, when such a dietary was ordered, had usually been readily controlled by limiting the intake of fat. The temptation at the present time lay in underfeeding these patients, thus rendering them free from glycosuria and acidosis and their attending dangers, but paying very little attention to the nutrition of the individual. It would seem self-evident that the body could not endure a loss of its muscular and glandular tissues over an indefinite period. A diet inadequate in covering the needs of the body in these respects would express itself in a negative nitrogen balance. In the present studies an attempt had been made to determine what constituted a maintenance diet in diabetes mellitus as measured by this standard. Carbohydrates were eliminated from the diets except as contained in the green vegetables. It was found that in order to furnish food which was palatable over a long period it was not possible to reduce the number of grams of fat much below those of protein. The nitrogen balance was determined on a series of diabetic patients under these dietary conditions. It was found that in an average individual a nitrogen balance could be obtained on a carbohydrate-free diet of 1,500 to 1,700 calories. The practical conclusion to be drawn from these observations was that every diabetic patient who was treated by means of a carbohydrate-free diet in which the number of grams of fat and protein were approximately equal to one another should ingest at least between 1,600 and 2,000 calories of this food in order to insure a nitrogen equilibrium—that was, a maintenance diet. When the glucose tolerance of the patient had warranted it the diet when increased beyond 1,690 calories in small individuals, or 2,000 in larger persons, had usually been augmented by the addition of starch-containing food and not by further protein and fat.

Diabetes in Children.—Drs. E. P. JOSLIN and HORACE GRAY of Boston presented this communication, which was read by Dr. Joslin. A series of 123 cases of diabetes in children under the age of fifteen years were analyzed especially as regards etiology, improvement in prognosis, and treatment. When one considered diabetes in children the question arose whether they should be as pessimistic as to the outcome as had hitherto been the case. Some 53 cases under the age of ten years had come under his supervision. Of these 31 were dead and 15 living in one group; there were 7 more cases, 2 dead and 5 living, making an average duration of over five years. Of the 5 living cases, they have gone on eight or nine years and appear to be in good condition and sugar-free. The cases either living or dead up to this time averaged 1.1 years; during 1916 the average duration was 1.6 years. Obesity played an important part in the etiology of diabetes in adults, 40 per cent. of his cases showing it. Among the children he had been impressed with one case which he thought was the type of a great many. This child showed sugar when four years old. At the age of one year he practically had the weight of a child of one year. At one and a half years he weighed what a child of two years weighed. Then he had a serious infection and the child was put to bed until the temperature subsided. This child was well fed and was given milk from a Jersey cow. At two years he weighed what a child of three and a half should weigh and at two and a half years weighed what a child of four years should weigh. With a twelfth infection—mumps—sugar appeared in the urine. The lack of exercise, overfeeding and the infections had much to do in bringing this on.

The Association Between Diabetes Mellitus and Tuberculosis.—Dr. S. SOLIS COHEN of Philadelphia said that the potentiality of diabetes, as much as in tuberculosis, was activated by an injudicious diet, too much fat, and too much carbohydrates. With a patient with evidences of tuberculosis and glycosuria and some symptoms of diabetes and not under skilled observation prior to that time they had no means of saying that the two conditions began simultaneously. They could not say they were associated and not dealing with an accidental infection. What was the relation between the two? He did not know. He did not find any statistical evidences that were of help. But there were certain facts gathered from the study of the family histories possibly indicating that there was some fundamental relation which was vaguely called constitutional, congenital, or hereditary conditions, and the conditions of metabolism of the patients. In the negro tuberculosis was common and diabetes was rare; among the whites they were relatively immune from tuberculosis and prone to diabetes. Diabetes mellitus and diabetes insipidus, transient glycosuria and a tendency to alimentary glycosuria were very common among these persons. Many of the patients that fell under his observation were obese or gouty. These associations were suggestive of some relationship between the two, and the diabetes was liable to eventuate into tuberculosis.

Dr. NELLIS B. FOSTER of Ann Arbor said he thought anyone could remember ten years ago when little or no work was done on this question in this country; today they could have a little pardonable pride in that they had so many ways, methods, and laboratories. The American temperament interfered with the work, and many small scientific facts were applied before they were linked with other facts. As an example of the good work done in many places was that of Dr. Fitz. The relationship between ketonuria and ketones in the blood due to functional change in the kidney at a time when, for some reason or another, coma was developing was an interesting theme. Because ketone was not excreted by the kidneys, it got into the tissues and set up disturbances. With regard to the pathology of the pancreas in diabetes, Dr. Allen had carefully stated the facts. It was notoriously a knotty question to determine those facts. He admitted that certain pancreases appeared close to the normal, while others showed gross changes. It was not fair, however, to compare the condition of the pancreas from diabetic patients with another pancreas from a patient who came to autopsy. The conditions which led to the death of a diabetic were peculiar. There were not only severe nutritional disturbances which gave rise to a peculiar blood picture, but there were other conditions which might cause certain organic changes. The work along these lines had been revised and their interpretation of the facts must be extremely guarded. They made a fundamental mistake in regarding diabetes as one thing, that was, as one disease. Glycosuria in a child did not mean diabetes in the sense they meant. The child would not get the characteristics of this disease unless the diet was bad and the child wasted. He thought he was the first to undertake to learn if keeping the child or young adult sugar free over long periods of time made any particular difference in the termination of that disease. Dr. Allen had stated that the pessimist should not treat this disease, but Dr. Foster thought the pessimist should not treat any disease.

Dr. D. D. VAN SLYKE of New York said that he had undertaken a monumental study of the acetone bodies in diabetes. One question arose with him, "Was acidosis caused by the acetone bodies, only the retained acid, or was it due also to the acidosis form of excretion?" The more acetone bodies in the blood, the more severe the acidosis. The acid formed in the body was neutralized by sodium carbonate. The acid doing the damage was retained, but it could be excreted and take alkali with it. This damaged the body by causing a double acidosis, the kind that developed the typical diabetic coma. These patients died because of the concentration of the acetone bodies in the blood and without Kussmaul's breathing. It was impossible to say whether death was due to an accumulation of the acetone bodies or not.

Dr. ABRAHAM JACOBI of New York asked permission to make one brief remark regarding the frequency of tuberculosis and the frequency of diabetes among the Hebrew race. He said he had looked over the literature carefully and he knew something about the Hebrews. For sixty years he had observed tuberculosis amongst

the Hebrews and amongst the poor. It had been repeatedly stated in the literature that diabetes was frequently found amongst the Hebrews; this was not true. It was more frequently found amongst the poor than amongst the rich. It was stated that tuberculosis was very rare amongst the Hebrews; such a false belief should be done away with.

Dr. Frederick Madison Allen of New York said that they had certain clews which led them to undertake the pathological studies of the human cases which gave them renewed hopes. He believed that the name "renal diabetes" should be changed to "renal glycosuria." A distinction should be made between the actual condition and the main symptoms. Any difference in the course and character could be explained by the thing back of it, such, for instance, as chronic pancreatitis in old persons. Diabetes was one thing, anatomically, a destruction of the islands of Langerhans. With that conception in view they could do more with the mass of glycosurias familiarly called diabetes. It was impossible to think of any diet being curative of diabetes. There was some specific cause interfering with the growth and development of the normal. It was a fact, too, that persons were killed because of the gloomy prognosis given them; one should tell the parent that the child would live for months and years. The treatment now was improving and the time would certainly come when these patients could be saved; the outlook was very hopeful.

Dr. E. P. Joslin of Boston said that 3 per cent. of his patients had tuberculosis with diabetes. With regard to the Hebrew race in Boston, a paper was published not long ago which covered a period of fifteen years, and this writer found that in proportion to the population there was a remarkable increase of this disease amongst the Hebrews compared with the other races in the State. It was best to keep patients on a low diet but yet maintain their weight. Dr. Joslin presented three groups of tables. In the first group ending March, 1916, the patients spent 33 days in the hospital, lost in weight 3.07 kilos, had an average diet of 26 carbohydrates and 54 proteins, and the last week showed calories per kilo .18. In the second group ending July, 1916, the patients spent 23 days in the hospital, lost in weight 2.87 kilos, had an average diet of 43 carbohydrates and 60 proteins, and the last week showed calories per kilo, .21. In the third group ending February, 1917, the patients spent 28 days in the hospital, lost in weight 1.6 kilos, had an average diet of 43 carbohydrates and 60 proteins, and the last week showed calories per kilo, .23. In his experience in the treatment of diabetes in children covering over 16 years, Dr. Joslin said he had never seen a case where the physician or the family had given up treatment but what the child was in a worse condition than he would have been if the treatment had been followed straight through to the end.

Dr. S. Solis Cohen of Philadelphia said that some 20 years ago he was called upon to deliver a lecture and he went freely over the work in his private practice, in the dispensaries and in the practice of others and he found that amongst the Jews diabetes was very common, both amongst the rich and poor. Whereas tuberculosis was rare amongst the rich Jews, though quite frequent amongst the poor and especially the Russians, but the proportion of cases of tuberculosis was less than amongst those of other races under the same social conditions.

Subacute and Chronic Non-Tuberculous Pulmonary Infections.—Dr. J. A. Miller of New York said that his report was based on 22 cases, but this report was not a report of the entire number of observations, there being twice as many or more. These cases he grouped into three types, the subacute, the subacute with recurrences and the chronic type. There were 9 cases in the first type with a clinical course similar to what was found in other types. This group was characterized by a mild onset, slight febrile disturbances lasting about five days. The expectoration consisted of a marked purulent discharge and sometimes with hemoptysis. There was no pain and the physical signs were characteristic and limited, as a rule, to the lower lobe. There was usually a slight impairment of resonance and a diminished vesicular breathing. There were moist ralês over the entire lobe. These cases usually presented the physical signs with tuberculous infiltration. He had seen evidences of consolidation. Among the nine cases the termination occurred in four weeks or six months. Sometime the physical signs persisted for two or three months and then entirely disappeared. The examination of the sputum had been thoroughly done for the tubercle bacilli and was consistently negative. One of the characteristic signs and the striking sign was the lack of evidence of pulmonary markings. There were 6 cases in the second type. This type was practically the same as the first type, but the condition recurred at intervals of several months or a year. In one instance there were four recurrences. In each recurrence the signs and symptoms were the same and always in the same area. The sputum was negative to tubercle bacilli. In 4 the *x*-ray was absolutely normal. In the third type there were 7 cases. The history of onset was as in the first type. The signs never cleared up. There were exacerbations in the symptoms. There was pain in three cases. In the sputum the pneumococci, Type IV, was found in 4 cases and the streptococci viridans in 3 cases. Unless taken in an acute exacerbation the number of bacteria was much less. The *x*-ray showed in all increased mottlings, very marked in 2. There were pleuritic adhesions in 4.

Summary: The ages ranged from 7 to 60 years. The subacute form predominated in young people. The seasonal incidence was the cold months. The site of lesion showed the left lobe affected in 13 cases, the right lobe in 5, both lobes in 3 and right upper and left in 1. Two patients had friction sounds. In 3 of the third type there was pain and thirst. Frank hemoptysis occurred in 2, and bloody sputum in 4 others. Cultures were taken in 21 cases and showed pneumococci, Type IV, in 10 cases; influenza bacilli in 8; streptococci viridans in 3 cases of the chronic type. The *x*-ray showed 7 normal cases; 1 with effusion; 10 increased mottlings; 4 pleuritic adhesions and in the chronic type.

Dr. James B. Herrick of Chicago said he had had six cases of the subacute type with recurrences. He had one case which recurred five times in as many years. The *x*-ray showed the same signs as in the subacute type. In the chronic type clearing up never seemed to occur. There were exacerbations of the symptoms that were similar to the acute type with the recurrences. He had had seven cases and three of the seven showed distinct pain. The *x*-ray showed something quite distinct. In all seven cases there were similar changes. In four there were evidences of pleuritic adhesions which were not present in the others. Recovery occurred in a few months in the subacute cases. In the Presbyterian Hospital in Chicago there were a great many of these cases.

Dr. Nathan E. Brill of New York said that there had been brought out a type of disease that had been familiar to him for years. Since the first pandemic of influenza in 1888 and 1889 this type had been known to him. In that pandemic he had seen such cases for the first time. In most of the cases the left lower lobe was attacked through the upper lobe, the right lobe, or both might be affected. During the last seven years he had frequently seen one or more such cases in the wards. He had demonstrated them to his students as cases of pulmonary invasion, non-tuberculous in character. Dr. Brill then showed slides.

Dr. Gerald Bertram Webb of Colorado Springs, Col., showed slides.

Dr. Hobert A. Hare of Philadelphia said that two or three years ago he read a paper before the College of Physicians and Surgeons and pointed out that there were no physical signs in these cases at all characteristic of tuberculosis. They made records of pulmonary lesions that occurred in the students and often advised them to lay off for one or two years. This showed how dangerous it was not to recognize that prolonged physical signs might exist in the lungs which were not due to any tuberculous lesion.

Dr. S. Solis Cohen of Philadelphia said that Dr. Da Costa had called atention to this class of cases that had been alluded to, especially the cases of recurrent bronchopneumonia following influenza. In 1880 he lectured on influenza and spoke of the persistent fevers, after influenza, stating that "like the poor they were always with us."

Dr. Lawrason Brown of Saranac Lake said that they should prove that these cases were not tuberculous before they were discharged. He asked regarding the condition of the antrum and the sinuses in these cases.

Dr. J. A. Miller of New York replied that his remarks were limited to the pulmonary symptoms alone. Aside from coryza there seemed to be no infection of the air passages.

A Roentgenologic Study of Pneumoconiosis.—Drs. H. R. M. Landis, H. K. Pancoast and T. G. Miller of Philadelphia presented this communication which was read by Dr. Landis. He said that 37 potters were sent for examination. Cement workers were also studied and it was well known that this dust produced definite changes in the lungs. Different dusts produced different kinds of damage and different individuals reacted differently with particular dusts. When one had to deal with organic dusts the changes were quite definite. Dusts had a tendency to collect at the junction of the lymph channels, and the terminal stage was a fibrosis which was quite extensive. Up to five years practically nothing was shown, but in the next ten years the linear markings became noticeable, and about the fifteenth year they had become quite distinct, and there occurred a diffuse fibrosis. There was also a marked dilatation of the bronchi.

Dr. George M. Kober of Washington, D. C., said that it had been estimated that more than one-half of the deaths from tuberculosis occurred among industrial workers who comprised about one-third of the total population. The majority of workers exposed to dusts of any kind had some kind of chronic disease of the respiratory tract and many of them developed pneumoconciosis. It might be concluded that the problem of preventive medicine was that of industrial hygiene. If they met the problem from this angle the hope of solving it might not be beyond realization.

Dr. W. M. L. Coplin of Philadelphia said he believed that a chronic lymphangitis was back of this trouble. Usually bronchitis, edema of the skin, and bronchial asthma accompanied this condition. The latent, mild chronic, or subacute, or even the acute type, showed the same process, a retardation of the lymph flow through the tissues.

Dr. Charles G. Stockton of Buffalo said that some years ago a similar case was described, and that since that time he had seen many similar cases in which the cause was the great amount of dust in elevators, where no precautions were taken to protect the elevator men and where no ventilation was provided. He now saw a great many of these cases such as Dr. Landis had described. The later cases went on to interstitial pneumonia, occasionally with cavity formation and sometimes asthma. They were described as "elevator pneumonia" of slow process.

Dr. David L. Edsall of St. Louis said that it had been shown that where there had been an exposure to dust, there was a proneness to chronic as well as acute pneumonia. An extraordinary thing about this exposure was the long period of time through which people could be exposed and apparently get no ill effects from it.

Dr. H. R. M. Landis of Philadelphia said that the fibrous form tended to retard the disease rather than accelerate it.

Cases of Aortic Aneurysm Treated by Wiring.—Dr. Hobart A. Hare of Philadelphia presented some slides and for the following reasons: First, they illustrated that much could be done to stop suffering; second, they possessed diagnostic interest; and third, they served to illustrate the safety of the method if its limitations were recognized and its technique was correct. As to the first, in 27 wirings he had always found the plan to allay or remove pain before the operation was completed. Often this pain required large amounts of morphine daily to make life tolerable. As the expansile pulsation was simultaneously decreased the relief of pain might be due to relief of eroding pressure or to the sedative effect of the galvanic current. In cases in which the aneurysm was the result of trauma the outlook was better than in those in which it was a manifestation of general arterial disease. As to the second, it was essential not to mistake a fusiform aneurysm, or a growth, for a sacculated or false aneurysm. These slides showed, too, the need of lateral as well as antero-posterior *x*-ray tests. As to the third point, the growth must be saccular for obvious reasons. The point of greatest bulging or giving way must be chosen. The needle must be properly insulated and not pushed too far so as to cause an electrolytic burn of the skin. The wire must be gold and platinum so as not to undergo electrolytic changes. Gold and copper alloy was eaten through rapidly. The wire must have spring but not be too strong. This was most important. If silver wire was used it would not coil. The positive pole must be in the sac as the use of the negative pole would liberate clots already formed. If street current was used it must be reduced, the operating table insulated, and the surgeon's feet covered with rubber shoes, or the patient would be shocked by grounding. The current must not be too strong. If it was it would cook or destroy the parts and cause death. One should start at five milliamperes and rarely go above forty, raising five every five minutes and then cutting down gradually. Never break the current. The wire should be 28 B and S gauge. This procedure if carried out properly as to technique was not dangerous.

Demonstration of Drop Heart; Its Variations in Health and Disease.—Dr. Chas. Lyman Greene of St. Paul, Minn., presented lantern slides. The almost constant association of drop heart with other structural defects was valuable in its identification when the characteristic outline was changed by disease. Its possibilities with respect to silent dilatations of high grade yet falling within the transverse dimensions were generally accepted as normal. Its special tendency was to minor decompensation.

(To be continued.)

THE MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held May 28, 1917.

The President, Dr. J. Bentley Squier, in the Chair.

Committee on Amelioration of Hardships of the Families of Physicians Called Into National Service.—This was a Joint Committee of the New York Academy of Medicine and the Medical Society of the County of New York—chairman, Dr. Walter B. James; secretary, Dr. Edward L. Hunt; treasurer, Dr. J. Bentley Squier—formed for the purpose of collecting and administering funds for the support and care of wives and families of the medical men who might require financial aid as the result of the head of the family being called into the service of the country, which fund was started by Dr. Edwin B. Cragin with $10,000 and $5,000 by Dr. John F. Erdmann and $1,000 by Dr. Seth M. Millican.

Organization and Work of the Mayor's Committee for National Defense.—Mr. Willard Straight, chairman, told of the work that had been done by this committee.

Organization of Work of the Committee on Hospital and Medical Facilities of the Mayor's Committee for National Defense.—Dr. Sigmund S. Goldwater told of the preparations that were being made among the hospitals of the City to aid the United States Government. He said that a census of the public and private hospitals of the City disclosed the fact that they could place at the disposal of the Government at a moment's notice more than 4,000 beds. He told of a course that had been arranged to train volunteer nurses' assistants to care for soldiers and he urged the women to take advantage of this opportunity to serve the nation in an effective way.

Medical Schools in War.—Dr. Francis Carter Wood presented this communication. He told of the effort that was being made at Columbia University and other institutions to shorten the courses in the medical departments in order to provide as many physicians as possible for army and navy. It was necessary to change the plan of instruction materially to meet the conditions imposed by war. For example, students were given a thorough training in the treatment of gas poisoning which in peace times was not so necessary. He believed that the federal authorities should exempt from the draft young men who intended entering medical schools in the coming fall. It was highly impor-

tant to keep up the number of physicians, remembering that as the war continued the demand would be greater.

The Medical Corps, U. S. A.—Capt. A. N. Tasker, M. C., U. S. A. He spoke of the urgent need of 20,000 doctors to care for the wants of the first million men to go abroad. This was one of the most perplexing problems that confronted the army and navy and he urged the members of the Medical Society of the County of New York to do their share in solving it. The work of the physician in war time was illustrated by stereopticon views. He warned that there was a great task ahead of the profession in keeping up the health of the civil population who remained behind working at top speed in the raising of food and the manufacture of munitions and other supplies for the soldiers.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Oklahoma State Board of Medical Examiners.

Oklahoma City, January 9, 1917.

(*Concluded from Vol. XCI, p. 1126.*)

SURGERY.

1. Discuss the tonsil surgically: (*a*) Anatomy; (*b*) Infections; (*c*) Pathology; (*d*) Treatment, including operative technique.
2. Give description, etiology, and treatment of pterygium.
3. Give three dressings suitable for fracture of clavicle.
4. In fracture of middle of humerus what nerve may be injured? Give localization of symptoms leading to diagnosis of nerve injury.
5. Name two inflammatory diseases of the skin and give treatment.
6. Differentiate chancre and chancroid. Give treatment for chancroid.
7. In non-operative treatment of acute appendicitis give the salient points advocated by Ochsner, Murphy and Fowler.
8. How would you treat a severe lacerated, contused wound of hand not requiring amputation?
9. Discuss briefly the value of radiography in surgical diagnosis and treatment.
10. Give treatment for gunshot wound of chest; of abdomen.

TOXICOLOGY AND MEDICAL JURISPRUDENCE.

1. Give the differential diagnosis between strychnine poisoning and tetanic convulsions.
2. Name two drugs that, given in lethal doses, will produce convulsions, and give antidote.
3. Mention the antidote in the case of poisoning from silver nitrate. How does the antidote act?
4. Discuss briefly the symptoms of cocaine poisoning.
5. Name the antidote for alkaloids. How does it act?
6. Define Medical Jurisprudence.
7. Differentiate between burns inflicted during life and after death.
8. When is it legally permitted to produce abortion?
9. For what reasons may a physician refuse to give expert testimony?
10. Define expert testimony.

ANSWERS.

SURGERY.

1. The *tonsils* occupy the recesses between the pillars of the fauces, the anterior pillar being formed by the palato-glossus and the posterior by the palato-pharyngeus. On the outer side of each is the superior constrictor, and internally the buccal mucous membrane. Their arterial supply is large, from the ascending pharyngeal, ascending and descending palatine, tonsillitic and dorsalis linguæ arteries.—(From *Aids to Anatomy*).

Acute Tonsillitis probably arises from infection with micro-organisms, but cold is a predisposing cause. The inflammation may be superficial, and only portion of a general catarrhal inflammation of the velum and pharynx. Treatment is by a gargle of chlorate of potash.

Acute Follicular Tonsillitis is marked by general enlargement of the tonsils, with consequent obstruction to breathing and swallowing. Patches of exudation are seen at the mouths of the follicles, the temperature is raised, the bowels are confined, and the submaxillary glands are enlarged and tender.

Acute Parenchymatous Tonsillitis is inflammation of the tonsil, soft palate, and fauces, and often results in a peritonsillar abscess. The palate and anterior pillar are dusky and swollen, and the tonsil is pushed across to the mid-line. These conditions are distinguished from scarlet fever by the absence of the characteristic rash. Follicular tonsillitis is treated by giving calomel (5 grains), salicylate of soda, and an antiseptic throat spray. Peritonsillar abscesses must be opened by puncturing the most prominent part of the swelling and enlarging the opening with forceps.

Chronic Tonsillitis results in hypertrophy, and is usually associated with adenoids. The tonsils are large and pale, and show the large orifices of the crypts. Recurrent attacks of inflammation are common. The patients are usually mouth-breathers and snore at night. Deafness may occur from associated swelling of the orifice of the Eustachian tube. *Treatment.*—Fresh air and good food, together with painting the tonsils daily with glycerine of tannic acid, will cure some cases; but most resist this treatment, and so tonsillotomy is required. This may be done with cocaine or gas, and the tonsil is best removed with the spade guillotine. Forceps and a tonsil bistoury may also be used. Hemorrhage soon ceases in children. If it continues, iced lotion should be applied; if that fails, the galvanocautery. The tonsil may also be shelled out with the finger after snipping the mucous membrane in front of it.—(*Aids to Surgery*).

2. *Pterygium* is a triangular fold of membrane extending from the inner or outer part of the ocular conjunctiva to the cornea; the apex is immovably united to the cornea, the base spreads out and merges with the conjunctiva. It is thought by some to originate from pinguecula, the process extending to the cornea and drawing the conjunctiva after it. It occurs in elderly persons who are exposed to wind or dust.

Treatment: The pterygium may be dissected away with a sharp scalpel or Beer's knife, and cut off, the conjunctival defect being closed by uniting the upper and lower borders, undermining the conjunctiva if necessary to bring the edges together. The apex of the pterygium must be thoroughly excised from the cornea, and its attachment in this situation scraped or cauterized with the actual cautery, to prevent recurrence. Instead of cutting off the pterygium, it may be dissected up and stitched underneath the detached conjunctiva, either above or below; or it may be divided into two halves, of which one is transplanted above and the other below, being held in the conjunctival pocket by a stitch.—(May's *Diseases of the Eye.*)

3. *Three dressings suitable for fractured clavicle.* (1) *Velpeau's bandage:* "First place the arm in the Velpeau position, the hand of the injured side on the opposite shoulder. From the axilla of the sound side pass across the back, over the outer part of the injured shoulder, down across the middle of the arm, behind the elbow, across the chest, and through the axilla of the sound side to the point of starting. Next apply a horizontal turn on a level with the affected elbow. Repeat these turns until the elbow is covered with the vertical, and the wrist with the horizontal turns. The vertical turns should overlap two-thirds of each preceding turn, and the horizontal ones one-third. Secure the bandage by strips of adhesive plaster. (2) *Desault's bandage:* "Three bandages and a wedge-shaped pad are required. The pad is placed in the axilla of the injured side, base up. The arm is allowed to hang by the side, and the forearm is flexed at a right angle. The first bandage is used to hold the pad in place. Beginning at the base of the pad, descending spiral turns, encircling the chest, are applied down to its apex near the elbow, and then ascending spiral turns back to its base. To hold the pad up in the axilla, the first bandage may be terminated with a figure-of-8 turn of the opposite shoulder. The second bandage binds the arm to the side. Beginning at the axilla of the sound side, on a level with the base of the pad, descending

spiral turns are applied, with increasing firmness, down to the elbow, so as to carry the shoulder outwards. The third bandage is applied in the form of an anterior and a posterior triangle, the apex of each being formed by the axilla of the sound side, and the base by the humerus of the injured side. Begin the bandage at the axilla of the sound side posteriorly, pass over the affected shoulder, down in front of and parallel with the humerus, under the elbow, and across the back to the starting point. The anterior triangle is applied in the same way, by continuing the bandage through the axilla, across the chest, over the shoulder of the injured side, down behind the humerus, under the elbow, and back across the front of the chest to the starting point. (3) *Sayre's dressing:* "Two strips of adhesive plaster three or four inches wide, and long enough to extend around the chest one and a half times are prepared. Lint powdered with zinc stearate is placed in the fold of the elbow and between the arm and the chest. A collar of lint as wide as the adhesive strip is placed about the arm just below the axilla, and over this is applied the end of one of the strips of plaster, so as to form a loop; the strip is now used to pull the arm backwards, and is fastened around the chest. The hand of the affected side is placed on the opposite shoulder, and the second strip of plaster, with a hole for the point of the elbow, is run from the back of the sound shoulder, under the elbow of the affected side, over the sound shoulder, to the back, thus drawing the elbow forwards and upwards, and with the aid of the first strip, which acts as a fulcrum, forcing the shoulder backwards and outwards. A pad, held in place by a strip of adhesive plaster, may be placed just above the clavicle to press the fragment downwards."—(*Stewart's Surgery.*)

4. *In fracture of the middle of the humerus,* the *musculospiral nerve* may be injured. If this injury is sufficient to produce paralysis, the patient is unable to extend the wrist and fingers, or to supinate the forearm. Sensation, in the lower half of the outer and anterior aspect of the arm and in the middle of the back of the forearm, is lost or impaired.

5. The *treatment of carbuncle* is excision in those cases in which the carbuncle is favorable situated; the wound is allowed to granulate under antiseptic dressings. In other cases the honeycombed mass should be opened freely by crucial incisions, and as much of the necrotic tissue as possible removed by forceps and scissors. The wound should then be disinfected with peroxide of hydrogen and bichloride of mercury solution, 1 to 1,000, and dressed with warm antiseptic fomentations. The constitutional treatment is that of sepsis.

The *treatment of furuncle* is incision, when the boil is mature. Tonics, calx sulphurata, dilute sulphuric acid, brewer's yeast, and vaccines have been recommended in the treatment of this trouble.

6.

CHANCRE.	CHANCROID.
First lesion of a constitutional disease, viz., syphilis.	A local disease.
Due to syphilitic infection.	Due to contact with secretion from chancroid.
Generally a venereal infection.	Always a venereal infection.
May occur anywhere on the body.	Nearly always on genitals.
Period of incubation never so short as ten days.	Period of incubation always less than ten days (generally about three).
Generally single.	Generally multiple.
Not autoinoculable.	Autoinoculable.
Secretion slight.	Secretion profuse and purulent.
Slightly or not at all painful.	Generally painful.
As a rule only occurs once in any patient.	May reoccur in same patient.
Buboes are painless and seldom suppurate.	Buboes are painful and usually suppurate.

Chancroid of the penis may be treated by being sprayed with peroxide of hydrogen, dried with cotton, then touched with pure carbolic acid and then with pure nitric acid; afterwards a dressing soaked with black wash may be applied. The penis should be soaked in hot salt water (a teaspoonful of salt to a pint of hot water) every few hours; and the peroxide of hydrogen spray, the drying with cotton, and the application of the dressing should be repeated.

7. *In the non-operative treatment of acute appendicitis: Ochsner* recommends that hot moist compresses be applied to the abdomen; he advises hot boric acid solution and alcohol.

Murphy recommended enteroclysis by the drop method, to relieve the thirst.

Fowler recommended that the patient be put in the semi-sitting posture.

8. "*The treatment of a severe contused-lacerated wound,* in the absence of urgent hemorrhage, is directed to the shock. After this has subsided, the patient should be anesthetized in order thoroughly to disinfect the wound. Tissue whose vitality is questioned should be removed if it is unimportant, in other cases it should be retained unless known to be badly infected. All visible vessels, whether bleeding or not, are ligated, and provision made for abundant drainage. It is important to introduce as few sutures as possible, and to be sure that they do not unduly constrict the tissues, otherwise the subsequent swelling will cause necrosis. The wound is dressed with hot antiseptic fomentations. The later treatment depends upon the complications. If there are symptoms of sepsis, the whole wound should be opened, redisinfected, and packed with antiseptic gauze. Sloughing demands hot antiseptic fomentations, and removal of the slough at the earliest possible moment. Secondary hemorrhage may occur at this period from the separation of a slough involving the wall of an artery. The general health should, of course, receive proper attention."—(Stewart's *Surgery.*)

9. *Radiography* has been employed as an aid to *diagnosis* in the case of: Foreign bodies, fractures, dislocation, epiphyseal separation, injuries around a joint, diseases and tumors of bones, pathological conditions of the mastoid and accessory sinuses of the skull, tuberculous deposit or cavity formation in the lungs, thickened pleura, aneurysms, enlarged glands, tumors, various diseases of the esophagus, stomach and intestines, renal calculi, movable kidney, tuberculosis of the kidney, pus kidney, ureteral calculi, vesical calculi, and other conditions. Radiography is an aid in the *treatment* of disease, as follows: (1) It causes atrophy of the appendages of the skin; (2) it destroys organisms in living tissues; (3) it stimulates the metabolism of tissues; (4) it destroys certain pathological tissues; (5) it has an anodyne effect. It has been used in various skin diseases, malignant growths, ulcers, exophthalmic goitre and numerous other conditions.

10. *Gunshot wound of the chest.*—"The treatment, in the absence of serious hemorrhage or the lodgment of a foreign body, is disinfection and suture of the external wound and immobilization of the affected side of the chest. Hemorrhage from the internal mammary or intercostal artery may be controlled by ligation, or by pushing a gauze sac between the ribs and filling the inner end of the sac with gauze so that when drawn upon it will make pressure from within outwards. Excepting extensive wounds, bleeding from the lung is rarely fatal, as the bleeding is checked by collapse of the lung. In the absence of external hemorrhage, serious loss of blood is diagnosticated by the constitutional signs of acute anemia, and a rapidly accumulating hemothorax. Cases of this sort have been treated by the introduction of a drainage tube in order to admit air and favor collapse of the lung, but in the presence of serious symptoms one or more ribs should be resected, and the wounded lung dealt with directly by sutures or gauze packing. Foreign bodies should be removed if easily accessible, and the same rules as to the examination of the clothing, etc., apply here as elsewhere. If the foreign body is not easily found, it should be allowed to remain, unless it gives rise to subsequent trouble, when it may be definitely localized by the *x*-ray and its removal effected, if such be deemed advisable."

Perforating gunshot wound of the abdomen. "The treatment, even without symptoms of visceral injury, is immediate enlargement of the wound, in order to explore the abdomen, check hemorrhage, and close such visceral perforations as may be found. The abdomen is then flushed with salt solution, and closed or drained, according to the amount of soiling present. If the omentum protrudes it should be ligated and removed, while coils of intestine should be carefully washed with salt solution and returned to the cavity. In cases in which there is doubt as to whether or not a wound enters the peritoneal cavity, such wound should be enlarged and the diagnosis positively made, being prepared at the same time to treat any visceral injuries that may be found. In gunshot wounds on the battle field an exception has been made to the rule of immediate exploration, because it has been found that the chances of recovery are somewhat better without than with operation undertaken in the absence of proper facilities."—(Stewart's *Surgery.*)

TOXICOLOGY AND MEDICAL JURISPRUDENCE.

1. The *symptoms of strychnine poisoning* are as follows: "Strychnine produces a sense of suffocation, thirst, tetanic spasms, usually opisthotonos, sometimes emprosthotonos, occasionally vomiting, contraction of the pupils during the spasms, and death, either by asphyxia during a paroxysm, or by exhaustion during a remission. The symptoms appear in from a few minutes to an hour after taking the poison, usually in less than twenty minutes; and death in from five minutes to six hours, usually within two hours."—(Witthaus' *Essentials of Chemistry.*)

In *tetanus*, the onset is gradual, is apt to begin with trismus, swallowing is difficult or impossible, the condition is persistent, consciousness is dulled or lost, and there is history of a wound or injury. In *strychnine poisoning* the onset is more sudden, the muscles of the jaw and neck are generally the last to be affected, there are marked remissions with muscular relaxation, consciousness is retained, and there is no history of a wound or injury.

2. *Two drugs that produce convulsions:* Strychnine and picrotoxin.

Antidote to strychnine: There is no chemical antidote; chloral or chloroform may control the convulsions.

Antidote to picrotoxin: There is no chemical antidote; chloral or chloroform may control the convulsions.

3. *The antidote to silver nitrate* is solution of sodium chloride; it acts by converting the silver nitrate into the insoluble silver chloride: $AgNO_3+NaCl=AgCl+NaNO_3$.

4. *Symptoms of cocaine poisoning:* "When a large dose has been taken the symptoms are not unlike those of atropine poisoning. There is dryness of the throat, tongue, and nose, difficulty of swallowing, faintness, and sometimes nausea and vomiting. The pulse is usually increased in fullness and frequency at first. The respiration also becomes more rapid, and there is much general nervous excitement, with general hyperesthesia. The eyes are bright and staring and the pupils dilated. The patient talks volubly and incoherently. Sometimes an erythematous eruption appears on the skin. The stage of depression soon comes on, when the breathing becomes shallow, the heart's action more rapid, and the face pale or cyanotic. The surface becomes anesthetic, and muscular twitchings and paralysis precede death, which is generally caused by paralysis of respiration."—(Riley's *Toxicology.*)

5. *The antidote for alkaloids* is tannic acid; it acts by forming a precipitate with the alkaloid which is practically insoluble.

6. *Medical jurisprudence* is the application of the knowledge of any of the branches of medicine to the problems and requirements of the law.

7. In *burns* produced *before death:* there is usually a blister, with a bright, red base, and containing a serous fluid, which is albuminous; occasionally, there will be no blister if there has been excessive shock; also, there will be a red line of demarcation between the injured and the uninjured parts, and this, being a vital process, is only developed during life.

In *burns* produced *after death* there is no true blister, no red base, and gas is present in place of serous fluid.

8. *Abortion is justifiable:* "(1) In pelvic deformity where there is sufficient space for a seven months' child to be delivered without injury. The object is twofold: (*a*) to save the child's life by obviating the necessity for craniotomy; (*b*) to spare the mother the dangers of craniotomy, cesarean section, symphyseotomy, or other operations that might be required if the pregnancy went to full term. (2) In cases where, in previous labors, the head of the child at full term has been prematurely ossified, or unusually large, so that labor has been difficult and dangerous, even though the pelvis were normal. The period of delivery need only be two or three weeks before 'term' in these cases. (3) In cases where the children of previous pregnancies have died *in utero* during the later weeks of gestation from disease (fatty, calcareous, or amyloid degeneration, etc.) of the placenta. (4) In conditions where the continuance of pregnancy seriously endangers the mother's life, such as: excessive vomiting; albuminuria; uremic convulsions, or paralysis; chorea; mania; organic disease of the heart, lungs, liver, blood-vessels, etc., threatening fatal disturbance of the respiration, circulation, and other vital functions; irreducible displacements of uterus; placenta prævia with hemorrhage; and in dangerous pressure upon neighboring organs from overdistention of uterus, due to dropsy of amnion, tumors, multiple pregnancy, etc."—(King's *Manual of Obstetrics.*)

9. In some states a physician is not allowed to disclose certain information without the consent of the patient concerned; such information is considered "privileged communication." In other states, such exemption is not allowed. The physician, however, must obey the ruling of the court.

10. In expert testimony the witness may give his *opinion* on facts or supposed facts as noted by himself or asserted by others. *Theoretically,* this can only be done by those perfectly familiar with the subject in question; but *practically* any (or almost any) physician with a license to practise is accepted as an expert witness.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading, but it must be with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

A COMPEND OF HUMAN PHYSIOLOGY. Especially adapted for the use of Medical Students. By ALBERT P. BRUBAKER, A.M., M.D. Fourteenth edition, with 26 illustrations. 262 pages. Price, $1.25 net. Published by P. Blakiston's Son & Co., Philadelphia, Pa.

PULMONARY TUBERCULOSIS. A Handbook for Students. By EDWARD O. OTIS, M.D. 220 pages. Illustrated. Price, $1.75. Published by W. M. Leonard, Boston, Mass. 1917.

REST, SUGGESTION AND OTHER THERAPEUTIC MEASURES IN NERVOUS AND MENTAL DISEASES. By FRANCIS X. DERCUM, A.M., M.D., Ph.D. Second Edition. 395 pages. Price, $1.25 net. Published by P. Blakiston's Son & Co., Philadelphia, Pa.

CLINICAL BACTERIOLOGY AND HÆMATOLOGY FOR PRACTITIONERS. By W. D'ESTE EMERY, M.D., B.Sc., Lond. Fifth Edition. 310 pages. Illustrated. Price $2.75 net. Published by P. Blakiston's Son & Co., Philadelphia, Pa.

SANITATION IN WAR. By MAJOR P. S. LELEAN, C.B., F.R.C.S., D.P.H., R.A.M.C. With 54 Illustrations. 336 pages. Price, $2.00 net. Second edition. Published by P. Blakiston's Son & Co., Philadelphia, Pa.

DIAGNOSIS FROM OCULAR SYMPTOMS. By MATTHIAS LANCKTON FOSTER, M.D., F.A.C.S. 490 pages. Published by Rebman Co., New York City.

THE NATION'S HEALTH. The Stamping Out of Venereal Diseases. By SIR MALCOLM MORRIS, M.D., K.C.V.O. 152 pages. Price $1.25 net. Published by Funk & Wagnalls Co., New York City.

CANCER: ITS CAUSE AND TREATMENT. By L. DUNCAN BULKLEY, A.M., M.D. Price, $1.50. 271 pages. Published by Paul B. Hoeber, New York City

Therapeutic Hints.

Treatment of Diseased Nasal Sinuses and Ears.—William Ferguson gives some timely treatment for certain conditions of these organs to be employed by the general practitioner. For the removal of cerumen, if it is too hard to syringe out, drops of a solution of sodium bicarbonate, sixty grains to the ounce, may be placed in the ears for a few days, then the ear syringed. This is both economical and satisfactory. For acute inflammation of the middle ear when the drum has lost its lustre and is of a uniform, hyperemic shade in both the membrana vibrans and Schrapnell's, with the drum bulging, he advises a free incision in the drum with an upward and backward direction so as to establish free drainage. Syringe with a solution of saline or boracic acid every three hours, and as soon as the discharge has lessened use a solution of alcohol and boric acid. This solution may be used in the proportion of half and half, and dropped into the sick ear. In the early stages of the disease when the pain is severe, a dose of morphine may be given for relief. This is usually not necessary in children. Carbolic acid and glycerin one in twenty may be dropped in the canal for relief of pain also. *Do not use oils.* Dry heat is grateful.

For purulent middle ear infection and mastoiditis in the early stages rest in bed, light diet, initial dose of calomel followed by salines and free incision of the drum under gas are indicated, followed by a syringe of saline or boric acid solution every two hours; a blood count and an *x*-ray should be made. Ice bags or morphine are contraindicated as they mask the symptoms.

The indications for operation are: 1. The persistence of the acute symptoms in spite of the above treatment. 2. When the flow is so profuse that it could not possibly come from the middle ear alone. 3. When the symptoms show improvement but the blood count remains high and the *x*-ray indicates a mastoid cloudiness. 4. When the condition seems improved but the patient does not sleep but suffers from a dull headache. 5. When the temperature manifests a septic type. 6. When mastoid edema or subperiosteal perforation occurs. The temperature indications are not of much value; the blood count and *x*-ray findings are the best guides. Many cases under careful treatment clear up, but to be too conservative in the face of positive clinical and laboratory findings, is simply to invite disaster from sinus thrombosis or cerebral abscess.

For chronic purulent inflammation a solution of alcohol and boric acid may be used locally and at the same time syrup of the iodide of iron should be administered internally especially if adenoids are present, and a medicated spray for any nasal condition. Later, if possible, any abnormal condition in the nose or throat should be corrected either by operation or medical treatment. Prompt action is necessary in all cases of ear or nose conditions in order to prevent deafness in the patient.

Foreign bodies should always be syringed out; never use forceps. Insects may cause intense irritation; a few drops of ether in the canal will put an end to their activities until they can be syringed out. Perichondritis of the auricle needs a free incision through the auricle, clean out, and insert a through-and-through drain. Eczema of the auricle and canal should be treated with boric acid in alcohol, twenty grains to the ounce, and a solution of silver nitrate, 240 grains to the ounce, should be applied to the canal to destroy the skin infection, to be followed by yellow oxide of mercury placed on a cotton swab and swept around the sides of the canal.

Avoid any contact of water while washing, by inserting a small pledget of cotton in the canal. Furuncle of the external canal may be relieved by placing the thumb gently on the mastoid surface close to the auricle, being careful not to touch it, and press smoothly and firmly backward, thus preventing pain. Now glide the thumb forward against the auricle and pain is elicited. Incise deep down to the bone one or more times, as indicated by the extent of the swelling; clean out and pack with half-inch strips of gauze wet in saline or aluminum acetate solution. Cover with moist dressing, except in severe winter weather, and dress daily. Later, the solution of boric acid and alcohol may be employed.—*New York Medical Journal.*

Excessive Perspiration.—Whitla states that when there is no elevation of temperature associated with disease, the parts should be bathed in very hot water to which vinegar is added. Cold douching alone, or following hot sponging, often is useful, to be followed by smart friction. Unna advises that an ointment containing ichthyol and turpentine be rubbed in before bedtime. This should be washed off in the morning, after which a powder containing mustard is to be dusted over the skin affected. In cases where the skin is warm the use of ichthyol ointment or soap is advised. Of the powders to be dusted on the best is: starch 12 parts, tannoform 4 parts, boric acid 4 parts, and salicylic acid 1 part. This effectually deals with the miliary eruption or numerous sudamnia so often present. The internal treatment consists in a very dry diet with the least amount of fluids combined with 2 grains of sulphonal three times daily. Tincture of belladonna in 5-minim doses, or atropine in 1/200 to 1/100-grain doses three times a day, alone or with 15 to 30 minims of the liquid extract of ergot, may give relief.—*Dictionary of Treatment.*

Treatment for Hookworm Disease.—Oil of Chenopodium is found to be more efficacious than thymol in the treatment of this disease, as the final results are better. A saline is given first, followed the next day by 15 drops of oil of chenopodium at 7, 9, and 11 A. M.; at 1 P. M., a dose of castor oil containing 20 to 30 drops of chloroform is taken, and at 1.30 P. M. another dose of plain castor oil; at 2 P. M. the treatment is completed with a cup of hot tea.—*Indianapolis Medical Journal.*

Foot Treatment.—Hare recommends the following for swelling of the feet, also for tender feet, and in cases of excessive sweating of the same parts:

℞ Pulveris acidi salicylici,
gr. xx vel xl (1.3-2.60)
Pulveris acidi borici.....℥ij (8.0)
Pulveris amyli .....q.s. ʒj (30)

M. Sig.—Dust over the feet night and morning, after washing and thoroughly drying them.—*Practical Therapeutics.*

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Original Articles.

AN EARLY MEETING OF THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION.*

BY STEPHEN SMITH, M.D.,

NEW YORK.

THIS 73d annual meeting of the American Medico-Psychological Association forcibly reminds me of a similar event which occurred in the year 1852. I refer to the seventh annual meeting of the "Medical Superintendents of American Institutions for the Insane," which met on the 18th day of May of that year at the Irving House, at the corner of Broadway and Chambers Street.

Being a graduate in medicine of but one year and an entire stranger in the city I naturally had much leisure for other entertainment than attending my patients. I was attracted to the sessions by the novelty of seeing the practisers in this branch of medicine and listening to their discussion of the weird subject "insanity."

As the Association of Medical Superintendents of American Institutions for the Insane of 1852 was the American Medico-Psychological Association of to-day in its infancy, it may be pertinent to this occasion if, as a spectator of its seventh annual meeting, I give my impressions of the personnel of its members and the subjects discussed. The number of registered members in attendance was twenty-six and among the names we recognize the pioneers of American psychiatry. The absence of two founders was noticeable, viz., Dr. Samuel Bayard Woodward and Dr. Amariah Bringham, both of whom had recently died.

The president was Dr. Luther V. Bell of the MacLean Asylum, Somerville, Massachusetts, a tall, well proportioned man, of courtly manners and adapted to the position of presiding officer of such a dignified body. He took a deep interest in the papers presented and skillfully brought before the members the various subjects for discussion.

Among the more notable members was Dr. Isaac May, Butler Hospital, R. I.; Dr. Edward Jarvis, Dorchester, Mass.; Dr. John S. Butler of the Retreat for the Insane, Hartford, Conn.; Dr. C. H. Nichols, Bloomingdale Asylum, N. Y.; Dr. T. S. Kirkbride, Pennsylvania Hospital for the Insane, Philadelphia; Dr. H. A. Buttolph, State Lunatic Asylum, Trenton, N. J.; Dr. S. Hanbury Smith, Lunatic Asylum, Columbus, Ohio; Dr. Francis T. Stribling, Western Lunatic Asylum, Staunton, Va.; Dr. Thomas F. Green, State Lunatic Asylum, Georgia; Dr. C. Fremont, Canada.

The members of the Association impressed me as educated gentlemen of a higher type of professional character than I had been accustomed to meet. The president, Dr. Bell, and several others answered well to the description of the founder, Dr. Woodward, of whom it is said, "His personal appearance was commanding, and his carriage majestic. He was erect, and, though full in figure, his motions were quick and graceful. Although very civil and acceptable to all he seemed born to command. Dignity and ever-enduring cheerfulness sat upon his countenance."

The session continued five days and the subjects discussed related chiefly to the construction, equipment and management of institutions for the insane. The proceedings were published in an eight-page pamphlet. Dr. May read a paper on the following subject assigned to him by the President: "On the best methods of saving our hospitals for the insane from the odium and scandal to which such institutions are liable, and maintaining their place in the popular estimation; including the consideration of the question, how far is the community to be allowed access to such hospitals."

On motion of Dr. Kirkbride it was resolved: "That the standing committee on construction of hospitals for the insane be requested previous to the next meeting of the Association to prepare a series of resolutions or propositions, affirming the well ascertained opinions of this body in reference to the direction, organization and discipline of hospitals for the insane."

Dr. Stribling read a dissertation: "On the employment of male attendants in the female wards of lunatic hospitals."

Dr. Kirkbride read a paper: "On the comparative advantages of steam and hot water in heating hospitals for the insane, large and small, with an attempt to fix the ratio of radiating surface to the space to be warmed in the climate of the northern sections of the United States."

Dr. Jarvis made a partial report: "On the connection between insanity and crime."

The Association discussed: "The proper disposition of insane criminals in State prisons."

Such were the subjects which engaged the thoughts and deliberations of the founders of your Association two generations past. It was the period of the custodial care of the insane and the location of asylums, the construction of buildings, their equipment, the methods of commitment, the mechanical restraint of the insane, and similar subjects were living, vital questions. Insanity as a disease was based on the Pinel-Esquirol classifica-

*Address of welcome of the American Medico-Psychological Association to the City of New York, May 28, 1917.

tion, viz., its "symptomological expression." The brain as "the medium of sensation, will, and even thought, the highest of psychic functions," was a sealed book except to a few laboratory students. The somatic doctrine of the German schools, as the basis of interpretation of all psychic phenomena, had made slight progress in this country. It is highly creditable to the genius of Dr. Luther V. Bell, president of the Seventh Annual Meeting of this Association, that he combated with great force the French theory of Symptomatology and was sustained by van der Kolk of Holland, Morel of France and other authorities. From these facts we infer that at the period referred to, 1852, neither insanity nor phychology had a scientific basis and that the superintendents of institutions for the insane were devoted to the care rather than to the cure of the inmates.

It is a far call from 1852 to 1917. The child of seven is now the sage of seventy-three. We scarcely trace in the latter a lineament of the former. The membership of 26 in 1852 was 827 in 1916; its constituency was formerly limited to a few States, but now it includes the United States and also Canada, Cuba, and Porto Rico; its eight-page pamphlet of proceedings is now a volume of 400 to 600 pages, embracing every subject relating to insanity and the care of the insane. Even the name of the infant Association is but an item of record in history. The vast improvements in the care and treatment of the insane during the period 1852-1917 is a matter of common knowledge. That the initiative of these improvements and their practical application have been the fruitage of the intelligent and consecrated devotion of the members of this Association, impartial history will record in detail.

Members of the Association: I esteem it a great, indeed a remarkable privilege, that I am permitted to join in welcoming you to the hospitalities of New York City. It is a matter I think of record that the annual meetings of your Association in this city have given an impulse and an inspiration to its members, inciting to higher ideals and renewed consecration to the service of the insane. At no time in its history has New York furnished such facilities as now for education in the more abstruse medical sciences. Its seventy-five hospitals specialize every form of disease. Its medical colleges teach the principles and practise of the medical sciences and arts clinically, and its laboratories of research unfold the ultimate elements of health and sickness. These are all open to your visitation, inspection and inquiries. This is the sixth annual meeting of your Association in this city and I can assure you that the discussions in your meetings have a reciprocal effect in stimulating public inquiry and professional research in regard to the care and treatment of the insane in this city and State.

President Wagner: Far back in the eighteen-eighties, I recall your cheerful manners and happy and helpful remarks to patients as we passed from bed to bed in the Utica asylum. I congratulate you on the occasion of your exaltation to the highest honors of your profession. Your kind and sympathetic manners reminded me of Dr. Isaac Ray's description of the "Good Superintendent." "He never grudges the moments spent in quiet, familiar interview with them for thereby he gaineth many glimpses of their inner life that may help him in their treatment." Your success as superintendent and your elevation to the presidency of this Association has verified Dr. John P. Gray's remark, "Wagner will succeed in what he undertakes." I cannot resist the temptation of stating in this connection the pleasure it had given me to notice from time to time the progress in their profession of the young assistant physicians whose acquaintance I made in the hospitals for the insane in this State in the period 1882-1888. Macdonald, Blumer, Brush, Pilgrim, Wagner have attained to the presidency of this Association, the highest honor in the gift of the profession.

Looking backwards through the long vista of sixty-five years, I realize that the workers in the field of American Psychiatry, whom I knew in their active days, are now silent forever. In bringing to you, at this your Seventy-third Annual Meeting, a welcome from one who attended the Seventh Annual Meeting of your Association, I may repeat the words of Job's messengers, "I only am escaped alone to tell thee."

THE RESULTS OF THE PSYCHIC TREATMENT OF MENTAL TORTICOLLIS.*

(Fifth Paper.)

By L. PIERCE CLARK, M.D.,

NEW YORK.

It is generally admitted that true mental torticollis has rarely been cured or even greatly benefited. Treatment of the condition rests upon very unsatisfactory grounds (Oppenheim). Various reasons to account for this have been given. In the vast majority of instances the ultimate failure to respond to treatment has been attributed to the fact that torticollitics are recruited from that large class of psychoneurotics who, when seriously crippled by any severe mental or physical disorder, are incapable of ridding themselves of the condition because of the innate weakness such persons possess. Many writers have outlined the essential defects in the primary endowment of the torticollitic, thus showing the basic weakness of primary instincts, such as the judgment, the will, perception, and the like. They have loosely grouped these defects of character and personality under the heading of "mental infantilism" (Meige). In this latter term is embraced those character defects that make the possessor of them indecisive, vacillating, weak-willed, or an erratically brilliant, emotionally unstable person. Partly with the purpose of probing deeper into the essential makeup of such invalids, to ascertain the exact nucleus of these various character defects, especially upon the occurrence of mental torticollis, and yet with the still more practical purpose to find a better plan of treatment for the disorder than that which now exists, I have undertaken a careful and prolonged observation study of five cases of mental torticollis, the investigation covering a period of six years.

Inasmuch as the torticollis in all these individuals

*Read before the Neurological Section of Academy of Medicine, April 10, 1917.

was chronic, severe, and classic in type and all sorts of physical and drug therapy had been applied before such afflicted persons came under analysis, it was thought an intensive study and treatment of the disorder might be of both practical and scien-

Fig. 1.—Front view of Case I. before treatment, showing torticollis.

tific interest. In general terms one might say that all these invalids had a psychoneurotic constitution which was most comparable to that usually designated as psychasthenic in type. More or less unsciously these individuals seemed to have shrunk from their adult tasks in life and to have taken refuge in the substitution of a simpler and cruder type of reaction—that of their torticollis. All the patients spoke of the intense "nerve strain" they had endured before the torticollis developed, and the relief from the latter vague syndrome which their unfortunate disorder brought with it. They fully lamented their terminal state when they found how impossible was its riddance either by "force of will" or other simple device.*

Without further comment on the disease or its pitiable possessor, I shall cite briefly case notes of the clinical material under study:

*Notes of the first three cases will be only briefly summarized here. Anyone interested in their complete and detailed history, together with their analysis, may consult my initial reports in the Medical Record, Feb. 7 and 28, 1914.

Case I,* referred to me for study by Dr. Reginald H. Sayre six years ago, was that of a man 34 years of age suffering from a severe spasmodic torticollis. I have nothing further to add clinically to his case other than to say he has remained entirely free from his torticollis and has not been under treatment for any disorder for four years.

Case II came to me for treatment nearly four years ago and was that of a single woman, 29 years old, suffering from a persistent right spasmodic torticollis with an added spasm in the left trapezius and splenius. She has not been under treatment for two years, and has finally fully recovered from her torticollis.

Case III is that of an unmarried man of 30 who was

*In the discussion of this paper, Dr. Sayre said he thought the results that had been accomplished in this case were very gratifying, as nerve resection and physical gymnastics had not benefited this patient in the least. Dr. Sayre had recently been handling another case of an extreme character by administering very large doses of conium. For a time the symptoms had entirely disappeared. He was also given suggestive and morally supportive treatment in the hospital wards during this treatment, yet he had recently relapsed and was as bad as before. However, he didn't despair of improving his condition very considerably under a more conscious principle of correcting the pa-

Fig. 2.—Side view of Case I. before treatment.

tient's neurotic attitude than by psychoanalysis. It might be possible in time, however, that the latter would have to be resorted to if the patient's tendency to alcoholic indulgence should continue to be one of the mechanisms by which he tried to overcome his feelings of inferiority and inadequacy.

referred to me by Dr. Virgil P. Gibney.* Our patient is the oldest in a family of three. He was a blue baby for several hours. He remained weak and puny throughout childhood. At about 18 months he walked with a straddling, slovenly gait. "His knees were weak and he walked pigeon-toed." Various devices were tried

FIG. 3.—Condition of recovery from the torticollis as seen in Figs. 1 and 2. The dropping and atrophy of muscles of the right shoulder are due to the nerve resections.

to overcome the weakness of the legs. There was marked spasticity in both legs, which was more pronounced in the left. The spasticity, the contracture in the calf muscles, and the shambling gait were slowly overcome, and at the age of 16 he was fairly rid of the major portion of the whole spastic syndrome. He was backward in learning to talk, which was begun with difficulty at 15 months. His speech was scanning and syllabic, and this defect still persists in part. Some of the symptoms of the cerebellar diplegic syndrome (cerebellar diasthesia; Dana) are still shown in the speech, awkwardness, and failure to properly gauge the exact measurement of distance (dysmetria). The knee jerks are greatly exaggerated and a slight general spasticity is brought out in precise tests. The nature of the cerebellar injury in which the cerebrum probably also participated, shown in the slowness and irregularity of his mental development, was probably a slight grade of Batten's type.* In spite of being handicapped by this birth injury, the boy grew into a strong man whose endurance in long distance bicycle races is well known to the sporting world. He prepared and entered a medical school and did his student work up to the average of his class, until the second year laboratory work required much microscopic study. He then more or less abruptly developed a "professional" torticollis. The head was inclined to the left; the face was turned upward and to the right; the brow was wrinkled, and a few short clonic movements occurred at the end of complete rotation of the head. The muscles involved were the left platysma, the sternomastoid, the trapezius, and the deep rotators. The torticollitic movement was so characteristic of the purposeful one of looking through the microscope that from a casual relationship nothing seemed wanting between the cause and effect. The patient did not finish his examinations for the year, and left for rest and treatment in the country.

Analysis showed that this man, to begin with, had an organically defective nervous system. The very slowness and difficulty in physical coordination entailed in consequence a corresponding defect in mental action. Upon this physical and mental defect was added the intensive strain to attain to a level of lifework which was plainly unsuited to him,

FIG. 4.—Back view of Case I. showing recovery from the torticollis.

and he broke down in a "nervous prostration" with a mental torticollis as the chief symptom. Coupled with a psychasthenic makeup and marked feelings

*In commenting upon these cases Dr. Gibney states the general results are not only highly important from a diagnostic standpoint as to the real nature of the disorder, but the final results obtained were certainly very gratifying and worthy of being followed by all clinicians handling such cases. Heretofore he had not realized the very painstaking attention it was necessary to give to the minute details of the life of a torticollitic and the important role they played in recovering him from his disorder.

*F. E. Batten, "Congenital Cerebellar Ataxia," *Clin. Jour.*, Vol. XII, No. 6, London, May, 1903.

of inferiority, he was intensely infantile in his emotional attitudes. He had no love affairs whatever until late in adult life and claims never to have had anything to do with sexuality. Having always been slow in coordinated movements and thought, the

Fig. 5.—Case II. showing position of head at beginning of treatment three and a half years ago.

medical training required him to speed up; in order to accomplish this he took caffeine at night to keep awake. This situation steadily increased the nervous tension until the medical study was so fatiguing that a persistent, painful, "sticking" headache ensued. During the last few days at medical school he had frequent dreams which revived pleasant childhood experiences with the mother, and her pettings and caressings. He often stopped in the midst of hard study to indulge in daydreams of her, and pictured how pleased she would have been to know he was fulfilling her desires in taking up a medical career. As he became still more fatigued, and even felt "muscle beatings and tremblings" in various parts of the body, he would sink into his study chair and firmly close his eyes, striving to gain a respite from the aching fatigue by fancying his mother patted his head or shoulder. At such times he made the torticollic movements in time to the fancy of her rhythmic caressments. Soon after these orgies of pleasure the full movement appeared, and he could not repress it by the strongest exercise of the will. In a few weeks it advanced to its climax, as related in a previous description.

The case is similar to Case I. In both men the emotional life remained infantile; apparently there were no heterosexual longings, and no real love affairs. Athletics helped both to repress the little sexuality that had escaped parental prohibition. In this latter case the mother's plan for a medical training was followed after her death; but the task was too great, and the patient's unconscious desires seem to have escaped the adult task and regressed to its infantile longings and derived its satisfaction there at a cost of a mental torticollis. The effort to continue his studies having lost its pursuit at adult adaptation, the conscious effort to attain it was also lost, and failure in the medical career resulted. The physical disorder at birth only paved the way for the defect in adult adaptation.

This patient was given the usual minute explanation of his type of makeup and a rationalization for the presence of his torticollis. These talks at once improved the patient's mental state, and his torticollis was also less severe, but he did not improve beyond a certain point and he has not been even temporarily free from the full range of torticollitic spasm. Indeed, as the years go by there seems to be a more permanent fixation of the neck in its abnormal position. There are bone and muscle changes which are now more or less permanent. A full psychoanalysis was attempted, but the patient profited little by it except for an improved attitude toward his disorder. It would seem as though the underlying congenital palsy and its mental defect act as a bar to his further progress. Intensive mental analysis did what it could. The patient feels much more satisfied and hopeful for an ultimate recovery than any of his numerous physician friends actually possess.

Case IV is that of a young man of 28 who had his mental torticollis for only four months before he applied to me for treatment. He had had a short treatment of drug and physical therapy in the four months' interval. The torticollis was to the extreme right, involving the sternocleido, the trapezius, and the splenius, and finally involved the whole shoulder girdle and muscles, as shown in Figs. 7 and 8. One able neurologist who saw him at the beginning of his torticollis said: "His mental attitude is such as to defeat any rational attempts at cure, such as exercises, etc., as he is easily discouraged and goes from one physician to another, each change resulting in disappointment. He does not view the matter calmly and is too much excited over his condition. He is extremely self conscious about his disorder and this helps to increase it. There is a definite mental element. If he could only get over his extreme self consciousness I am sure this patient would improve. I would not recommend resorting to cutting the nerve that brings about the spasm, although in some cases this is of benefit."

The above fairly summarizes the intensive neurotic

Fig. 6.—Showing ordinary position of the head in Case II, which has been in evidence for the past six months.

attitude our patient took toward his disorder. As a boy he was fanciful and vague of purpose. He was not at all self reliant, and although clever in his occupation as a machinist and possessing a fairly good education, he was never able to cross New York City alone, and always had to be met and conducted about. He was

always "enormously" concerned about little aches and pains, and much frightened over them. He was slow to make friends. He was always rather peevish and boyish. His friends said he was petulant and chiding in manner and that he "had to be handled with gloves or he would crawl into his shell." He thought the

Fig. 7.—Front view, Case IV., showing torticollis at beginning of treatment. Note general body distortion produced by accessory spasm in other trunk muscles as a sequence to the torticollis.

world treated him rather poorly and that he never got what he deserved or worked for. He always thought he wasn't treated well at home by either parent. He was impatient and wanted to be general manager of the company before he had fairly started in the business. His mood was either "way up or way down, and one didn't know where to find him." The family said he put a "lot of wishing in things, then sat down on the job and expected it all to work out of itself."

This young man, naturally very neurotic and easily disturbed in his emotional life, was nevertheless a very

Fig. 8.—Back view, Case IV., at beginning of treatment.

good workman so long as he was occupied with actual concrete work, but when promoted to an executive position requiring him to generate his own activities, he first got depressed and confused, was not able "to see into the work nor its future," then began to feel nervous, had headaches, tension in the head, was insomnic, and had frightening dreams. During the latter part of his prodromal nervous symptoms his father died, and on his return to work things went even more badly than before. He became more irritable and grouchy, and felt a nameless dread. Then his head began to turn, and in the course of a few days he was in the position shown in the photographs.

After a talk giving a rationalization of his life had been undertaken, in which he was shown the neurotic features of many of his ways of handling things, he was given psychoanalysis for three months. In the first six weeks of analysis the patient made rapid progress. The spasm of the neck muscles gradually disappeared, while those of the back and shoulder, least contracted at the outset of treatment, disappeared entirely. The whole figure became erect, with but a slight yet more or less constant torticollis remaining. He slept better, and the dreams were less disturbing. He steadily gained in weight. From a state of extreme invalidism in which he did nothing but bemoan his fate, he became industrious, took up wood-carving, shoveled snow, sawed wood, and took long walks without an attendant. At this time he decided to release his fiancée from their engagement, on the ground of his present incapacity and the uncertain outlook as to their marriage. Soon after making this resolve, his

Fig. 9.—Showing normal position of head in Case IV., ten months later.

neck became stiffer and required the support of the hand to prevent the extreme retracting spasm of the trapezius and splenius. He began smoking to excess and withdrew within himself. He became cynical and indifferent to analysis. He finally persuaded himself he would not get well and that there was nothing more for him to live for.

At first the resistance in the analysis and his regression to a neurotic attitude toward life was thought to be due to his preparation to take up life in the country, a solitary existence far from encouraging friends and the physician. Analysis showed, however, the main fault was to a greater extent due to his having taken a more independent attitude toward his fiancée than he could yet maintain. Analysis of his feelings of inferiority and dependence resulted in his taking a less definite attitude relative to breaking off the engagement. Through all the latter part of the analysis the final great fault was shown to be the innate weakness of infantile fixation on the mother, and later, a conscious father-antagonism, but even more deeply, a too great dependence and attachment to the father, and this had arrested his main growth and self reliance. Just as the father's death had much to do with the exposure of his underlying infantile attitude coming to the fore in his ultimate nervous

breakdown, so the breaking of the engagement later precipitated him again into the old maelstrom of his original incapacity. In other words, he had lost the adult trend of interest in the girl as well as the job.

As to the torticollis: When he was working independently in the manager's office he found he could

Fig. 10.—Showing front view, Case V., at beginning of treatment.

do his work best when he turned his head away from the annoying manager who, in his peremptory manner of authority, was found to be the father-symbol. In earliest life the patient had used this gesture to turn away from painful situations when the father upbraided or accused him of ill conduct, when he turned toward the mother for comfort and support. The movement was the identical one of the torticollic spasm. Again, in a more adult setting he found his "legs wanted to turn away from going into the main shop," where he had to take charge of the men, but on bracing

Fig. 11.—Back view, Case V., at beginning of treatment.

himself against this tendency his head slightly turned in a torticollitic manner. Still again, when he was indecisive about his engagement and marriage, his head also "played him the same trick." A number of similar instances were also shown, and they were all traced back to the one great motive—that the torticollis was a turning away from a too painful situation and he regressed to an infantile type of habit which afforded him protection and comfort. It was not until all these affect reactions had been fully traced to their genetic source that the patient was finally released from his spasm, ten months from the beginning of treatment. Even then he had to outgrow this primary inadequacy and build anew a different and more healthful attitude toward life and his future purpose to become an independent factor in it.

Case V is that of a young man of 29 who had a right spasmodic torticollis of two months' duration when he applied for treatment. It had a gradual onset of two weeks before it was in the classic state shown in the photograph. He had taken all sorts of drug and physical therapy without effect. He had a mildly severe grade of neurotic constitution. He was tender-minded and sensitive and had trouble with his superiors; a feeling of inferiority and much tension was soon engendered and he finally had a nervous breakdown and a torticollis. After a short series of talks he submitted readily to psychoanalysis. In the ultimate analysis, as in all the other torticollities, the underlying inferiority was brought to the fore. After his mother became insane (paranoia) when the patient was twelve, he tried to transfer his intensive interest to the boy group, but this failed largely because of his too sensi-

Fig. 12.—Case V. after six months' treatment, showing complete recovery from his mental torticollis.

tive nature and because he had not been fully adapted to it by earlier continued association with them instead of with his parents. He then became rather shy, reticent, and shut in. At this time he went to live with his maiden aunt, who supplied many of the real mother attributes as well as others which were of a more intimate and personal nature. As he said, "Every elderly or married woman wanted to mother me." The attachment to the aunt made impossible any real satisfactory social settings with girls of his own age until he was twenty-seven years old. He then took the matter definitely into his own hands and became engaged, but underwent great "moral" torment and indecision. Coupled with this emotional conflict, a new stressful situation was induced in his inability to get on with the boss and the job (the authority symbol), and he soon contracted his torticollis and a "nervous breakdown."

As to the particular type of torticollic spasm: In all the stressful situations, with the boss, the father, at school, and even in "bracing for a scrap with the boys," he used to turn his head to the right—"a childish habit," he called it. When he fortified himself against this aversion of the head, he would avert his eyes instead. This gesture of turning eyes or head away from difficulties had existed from infancy. It had also been the initial head movement toward the mother when she petted and caressed him. Three months' analysis

almost completely restored this patient to the normal. This speedy recovery was partly due to the fact that his torticollis had been very recent when he came under treatment (three months); also, when the underlying defects of inferiority, infantile attachments and fixations were once psychoanalytically released, there was a more spontaneous readjustment of his attitude toward adult life and its purposes.

In spite of the fact that the patient is entirely free from his mental torticollis, many of the underlying inferiority defects in his personality are still in evidence. In a recent letter he writes: "I am more contented in my married life and feel assured that as time goes on I will improve. There are times when I am troubled mentally and have felt ready to give up hope, but I have observed a strong reaction and for this reason I believe the weakness will finally be overcome. The one great difficulty to be met, in one of my type, is lack of resolution, the one great asset necessary to success. The process of rebuilding goes on, and time will tell the tale. I am applying the principles laid down in our daily sessions."

As to the particular mechanism operative in these cases, Dr. James J. Putnam, who has followed types of cases like those described, has commented upon the principles as follows:

"According to the newer views, the disorder is recognized as mental in origin. This is now generally accepted, but the value of Dr. Clark's careful and long-continued studies is that they have brought out some of the actual mechanisms of the production of the disorder in a way that could not have been done prior to the discovery of the psychoanalytic method. I fully endorse Dr. Clark's view, that patients who suffer from this disorder are poorly adjusted for meeting the difficulties of life; or, to speak more accurately, their 'adjustability' is poor. The failure to make an adequate adjustment leads them to react in ways that are within their command, and that are accepted by them at first as fairly satisfactory. It seems out of place to characterize these simpler reactions as 'giving pleasure'; and yet it is hard to find any better designation. It is hard to say why one patient selects, as it were, torticollis for his reaction, and another some other coordinatory defect, or some wholly different symptom. It is, however, not improbable that the particular form of breaking down (reaction) is determined in part by some essential weakness of a physiological or anatomical sort. It is not improbable, for example, that there is a defect in coordination which makes it hard to keep the head exactly balanced—a defect analogous, one might say, to that met in some cases of strabismus. Then comes in the desire to 'turn away' or 'turn toward,' as symbolizing some part of the patient's repressed emotional desires and as recalling infantile associations. With some persons, a feeling of 'tension,' unattended at first by obvious movement, is present for a long time; and this muscular tension well represents the tension in such a patient's mind.

"It is not difficult to suggest a possible explanation to account for the violence of the spasm. It may be that the turning of the head clear around to one side represents a position which it is easier for the patient to maintain (actually and in a psychological sense) than an intermediate position. The raising of the shoulder, which is so common, is often a part of a secondary protective mechanism. I have a patient, a lady of middle life. She has been successful, up to a certain point, in a professional pursuit, and is decidedly capable and ambitious. On the other hand, ever since her childhood she has been obsessed with a desire for domination and for gratification of desires of a very primary and unacceptable character. Her childhood and adolescence were unsatisfactory, and marked by a positive craving for admiration and also by tendencies which set up feelings of humiliation to a very considerable extent. The torticollis itself came on after a number of years of relatively satisfactory immunity from all manifestations of trouble, but at a period of peculiar tension with reference to her private affairs. Special circumstances made the idea of *being looked at* abhorrent to her, while at the same time she could not endure *not being looked at*. The movement of the head to one side typified with absolute clearness the attempt on her part to escape from a state of tension which had become unendurable and also a desire to conceal certain local blemishes.

"The treatment has been conducted along lines of etiological analysis and temperamental education, and is, at last, resulting in much benefit. Besides prolonged and numerous interviews, educative gymnastics have been persistently employed, and attempts have been made to induce the patient to employ herself."

Therapeutic Remarks.—In criticism, it may be urged at the outset, as has been so frequently suggested before, that the underlying emotional inferiority of torticollitics cannot be removed and in consequence the torticollis will again return so soon as the strong therapeutic suggestion has worn off. I believe heretofore this termination has proven to be the case, simply because "suggestion and re-education" have been the methods employed, and not psychoanalysis. Nothing less than a sincere, complete reconstruction of the whole neurotic attitude can make these torticollitics remain well. If any torticollis is grafted upon an underlying mental defect such as may appear in psychopathic inferiors, within the strict meaning of that term, the condition cannot be permanently eradicated, for obvious reasons.* If the makeup is that of a simple neurotic constitution, though many of the instinctive trends of the primary intellect and emotion are weak, I believe the state may be completely corrected.

Again, in most cases psychoanalysis *alone* does not seem sufficient. The cases do not recover completely while under analysis (at least not in my experience). When simple mental analysis and psychoanalysis have been undertaken, the intensive transference—which seems so necessary for such cases to make in order to accomplish the analysis—will stand in the way of their getting quite well. Probably the deepest unconscious strivings are not freed under a moderate transference. I begin to make clear both the importance and the danger of this infantile filial-paternal transference after the first few weeks of psychoanalysis. As probably holds true in many other neurotics, the weaker the personality the greater the transference, and the longer it takes to recover such an individual from his torticollis and his underlying neurosis. In all these cases the unconscious strivings are those to be found in all neurotics. The pattern of the dreams is quite the ordinary.

There is a fairly definite mechanism for the torticollis; it is a gesture of the infantile personality, a turning away from the difficulties of adult adaptations under stress, and a use of a type of movement that has been employed more or less by that infantile makeup to gain protection and satisfaction which is not unlike the more intense shrinking and mental regression in other psychasthenics.

*If the young man in my fourth paper (MEDICAL RECORD, March 28, 1914) had had a true torticollis, I should have had grave doubts of his ever being able to recover from it as his whole psychic constitution was too inferior. The very fleeting and multiple character of his tic habits seem to have made him immune to so overwhelming a disablement as a genuine torticollis. It is interesting to note, however, that this young man has never recoursed to his tics after the initial treatment; he is by no means a productive citizen, but he fits into his world niche as satisfactorily as might be expected.

128 EAST SIXTY-FIRST STREET.

OSMOSIS, A FACTOR IN THE TREATMENT OF TUBERCULOSIS.

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WHILE suggesting the following view, on the importance of considering osmosis in the treatment of pulmonary tuberculosis, I am well aware that we are dealing with many questions, not of immutable truth, but of expedience and practice.

Osmosis is, as yet, an imperfectly understood phenomenon, and it is not my desire to pretend to conclude a subject so grave; but rather, if you will, to induce questions which seem to be of considerable importance, and upon which a more general discussion may prove to be of no little value to us all.

Through the efforts of observers in all parts of the world and those who confine their attention wholly to research, our knowledge of tuberculosis is constantly undergoing radical changes.

We know, now, that the progress of this dreaded infection is arrested with a greater relative frequency than that of almost any other infectious disease. Paradoxical as such a statement may at first seem, it is nevertheless true, and in the light of our gradually accumulating knowledge, it is rapidly taking precedence over the older view that these cases were almost always hopeless.

Eminent pathologists, associated with the larger hospitals of Europe and America, where a considerable number of the indigent cases are submitted to autopsy, advise us that in the vast majority of these cases, where they have reached a fair maturity, the lungs either show quiescent foci; an active tuberculous process; or a calcified area as the remains of a previously active lesion which had healed. These indigent cases have, for the most part, succumbed to diseases other than tuberculosis.

These conditions are so constant through the large numbers examined annually, that these observers, who have ample opportunity to formulate statistics, have arrived at the conclusion that almost every living individual either has, or has had, or in all probability will have an active pulmonary tuberculosis. At least, this conclusion is justified through something more than 90 per cent. of the cases which come to autopsy. Briefly, this is the status of human susceptibility to pulmonary tuberculosis.

Hereditary transmission is unproved, though intrauterine infection is known. Hereditary predisposition is also quite uncertain. The disease being so widespread, so distributed in age and sex, its latent period so indeterminate, that reliable statistics are extremely difficult to collect, and much of the subject is still sub judice.

However this may be, it is true that the vast majority of people experience no noticeable inconvenience whatsoever during the brief interval that their tuberculosis may have been active. Indeed, there are many millions of individuals, living under every conceivable variety of climate and social environment, engaged in every possible occupational pursuit, who may truthfully say they have never known a single day of illness. And yet, many of these would reveal, upon careful examination, a greater or lesser tuberculous focus, with positive evidence of a permanent repair. With more or less difficulty a few might recall to memory, several days or weeks of slight malaise or indisposition, possibly accompanied by a slight dry cough. Others will perhaps remember having had several mild attacks of pleurisy, while others, again, will remember that they experienced for a month or two what was supposed to be an attack of la grippe, which was accompanied by a moderate degree of cough and fever. This is the vague, indefinite history, which these cases of spontaneous recovery present, in contrast with that of the occasional individual, who breaks down completely and has a long, distressing illness with which to contend.

Here, then, arises the perplexing problem of why the majority successfully resist an invasion of the tubercle bacillus, spontaneously, unconsciously, and without effort; while again, a comparatively small number experience considerable inconvenience, through a greater or lesser physical impairment extending over variable periods of time, before the activity is arrested. Why are some individuals so much more susceptible than mankind in general is known to be?

This question has baffled science in almost as great a measure as did the materia prima, or philosopher's stone of transmutation, the discovery of which became the universal problem of mediæval alchemists. But modern scientific research has perfectly and conclusively solved these perplexities of the early alchemist, and one by one the great problems of humanity are being solved through steadily advancing scientific knowledge.

In all civilized countries, notably in Japan, Germany, France, and America, scientists are assiduously working away at the complex problems of tuberculosis, and there is every good reason to feel great encouragement over the prospect of important discoveries in a future not altogether remote.

Considering the fact that bacteria were not discovered until 1700, when Leuwenhoek first demonstrated them, we have made a remarkable progress in the study of bacteria and infectious diseases. At first, bacteria were held to be animalculæ, and they were so considered until recent years, when researches of bacteriologists showed conclusively that they are minute and unicellular plants. In 1880, the remarkable discoveries of Pasteur in immunity induced by means of inoculating with cultures of bacilli attenuated in virulence, stimulated a world-wide interest in the newer science of bacteriology. Koch, in 1882, published his discovery of the *Bacillus tuberculosis*, and later gave us a valuable diagnostic agent in tuberculin. Many observers had noted the fact that normal blood serum is naturally bactericidal, and Metchnikoff (1900) showed that such action is largely due to phagocytosis, the enveloping and destruction of bacteria by the leucocytes. Wright, in 1903, discovered that this process is promoted by chemical substances (opsonins) in the blood, which act in some way upon the invading bacteria, preparing them for assimilation by the leucocytes before their toxins can affect the cells of the organism. Even within the year, Toga's notable paper on chemotaxsis and the possible advantages of cyanocuprol, a highly synthetical preparation, in the treatment of tuberculosis, illustrates an immense amount of advanced experimental work in the right direction.

But while we are patiently awaiting the discovery of a more desirable means of treatment we ought to have no hesitancy in considering the possible advantages of any measure already at hand in our efforts to improve, even a little, upon the usually accepted methods of the present. The latter may be briefly said to consist in prophylaxis and isolation, good nutritive diet, freedom from worry or anxiety, and an open-air life with as much sunshine as possible. To these I am disposed to add those measures which consistently promote osmotic activity.

In the direct morphology of the tubercle bacillus under normal conditions of development, there exists a decided disposition on the part of the bacillus to encapsulate itself in reparative structures of fibrous and calcareous nature, and to produce distinctively a localized process with well-defined reconstructive tendencies. The specific toxemia which follows is, as every one knows, not due to the tubercle bacillus itself, but to secondary organisms, principally the streptococcus, which readily engraft themselves upon the original tuberculous process and interfere very materially with the original efforts at repair. It is now quite generally conceded that without the streptococcus-pneumococcus group of Rosenow, tuberculosis would be a relatively mild disease.

Any treatment, then, to be efficient, should harmonize its therapeutics with this pathology; but at the same time, unless some specific attention is directed to the impaired subtle forces which influence osmosis, and many important physiological processes secondarily, the treatment would seem to be incomplete and unscientific.

Merely to say that an individual with pulmonary tuberculosis is run down, or has a lowered resistance, or an impaired nutrition, or to treat him accordingly, is as ambiguous and improper, in the light of our newer discoveries, as it is to use such meaningless expressions as blood-poison, female trouble, or catarrh, which convey no information whatsoever of any exact condition. It would seem to express something much nearer the truth when we say that the tuberculous individual has an impaired osmosis. In fact, the more I look into this subject the more convincing the evidence becomes that tuberculosis develops into a highly reactionary process, because of an interference with the normal osmotic phenomenon; in other words, because of a long-continued reduction in osmotic activity, which is one of the fundamental physical phenomena underlying the living organism, and upon which much of our metabolism depends, viz., growth, reproduction, assimilation, and repair.

In recent years the physical conceptions of the nature of the processes of osmosis have changed considerably. Although a brief description of the newer conceptions may not be out of place here, the very limited space that can be devoted to the subject forbids anything more than a condensed, elementary presentation. For fuller information reference must be made to special treatises.*

If upon the bottom of a vessel containing pure water we pour some water colored with a little aniline red, by delivering it through a funnel tube so as to prevent the mingling of the two, and then allow the vessel to remain at rest for a few hours, the color will be found to have diffused itself throughout the water so that a homogeneous mixture of the two is obtained. This is due to the continual movements of the molecules to and fro within the limits of the confining space. If the two liquids happen to be separated, as they frequently are in the body, by a membrane, this diffusion will still occur, provided the membrane is permeable to the liquid molecules, and in time the liquids on the two sides will be mixtures having a uniform composition. Not only water molecules, but the molecules of many substances in solution, such as common salt, may pass to and fro through membranes, so that two liquids separated from each other by an intervening membrane, and originally unlike in composition, may finally by the act of diffusion come to have the same composition. Diffusion of this kind through a membrane is frequently spoken of as osmosis.

The same phenomenon occurs between gases as well as liquids.

In the body, we deal with aqueous solutions of various substances that are separated from each other by living membranes, such as the walls of the blood capillaries or of the alimentary tract, and the laws of osmosis are of immediate importance in explaining the passage of many of the complex physiological fluids through those living septa, in sustaining the processes of assimilation, repair, and elimination of waste.

In aqueous solutions, such as we have in the body, we must take into account the movements of the solvent, water, as well as the substances dissolved. These latter may have different degrees of diffusibility as compared with one another or with the water molecules, and it frequently happens that a membrane which is permeable to water molecules is less permeable to the substances in solution.

The energy or force responsible for the diffusion of molecules in solution is an outcome of the intrinsic energy of the molecules which keep them in movement. This energy is designated as osmotic pressure. It can be measured accurately, although its exact nature is not understood.

When we imagine two masses of water separated by a permeable membrane we can readily understand that as many water molecules will pass through from one side as from the other; the two streams, in fact, will neutralize each other. If, now, on one side of the membrane we place a solution of some crystalloid substance, such as common salt, and on the other side pure water, here it will be found that an excess of water will pass from the water side to the side containing the solution. In the older terminology it was said that the salt attracted this water, but in the newer theories the same fact is expressed by saying that the salt in solution exerts a certain osmotic pressure. As a matter of experiment, it is found that the osmotic pressure varies with the amount of substance in solution. The stream of water to the side of the crystalloid will continue until the hydrostatic pressure on this side reaches a certain point, and the hydrostatic pressure thus caused may be taken as

*Consult Cohen, "Physical Chemistry for Physicians and Biologists"; H. C. Jones, "The Theory of Electrolytic Dissociation"; E. W. Reid, "Diffusion, Osmosis, and Filtration," in Schäfer's "Text-book of Physiology."

a measure of the osmotic pressure exerted by the substance in solution.

Two solutions having the same osmotic pressure are said to be isotonic. If one of the two liquids has a higher or lower osmotic pressure than the other it is said to be hyperisotonic or hypoisotonic respectively.

As a matter of fact, most of the membranes that we have to deal with in the body are only approximately permeable; that is, while they are readily permeable to water molecules, they are also permeable, although with more or less difficulty, to the substances in solution. In course of time, however, the substances in solution will have diffused through the membrane, and osmotic pressure on both sides will become equal.

The molecules of many substances, when brought into a state of solution, are believed to be dissociated into two or more parts known as ions. Substances which exhibit this property of dissociation into ions are known as electrolytes. The conception of electrolytes is very important for the reason that the act of dissociation increases the number of particles moving in the solution, and thereby increases the osmotic pressure.

The osmotic pressure exerted by crystalloids, such as the ordinary soluble salts, is, as we have seen, very considerable, but the ready diffusibility of most of these through membranes limits very materially their influence upon the flow of water in the body. Thus, if we should inject a solution of common salt directly into the blood-vessels the first effect would be the setting up of an osmotic stream from the tissues to the blood, and the production of a condition of hydremic plethora within the blood-vessels. The salt, however, would soon diffuse out into the tissues and extravascular lymph spaces and exert an osmotic pressure in the opposite direction. This fact, together with the further fact that an excess of salts in the body is soon removed by the excretory organs, gives to such substances a smaller influence in directing the water stream than would at first be supposed when the intensity of their osmotic action is considered.

In addition to the crystalloids, the liquids of our bodies contain a certain amount of protein, the blood, especially, containing over 6 per cent. of this substance. These proteins, which are supposed to be so important for the nutrition of the tissues, are practically indiffusible through animal membranes, so far as we know. This difficulty in regard to the indiffusibility of the proteins is met by the modern conception that the digested protein of the food circulates in the blood as amino-acids, and is supplied to the tissues in this form. The amino-acids have much simpler molecules, and may pass through the permeable membranes by diffusion.

It has been generally assumed that proteins in solution exert little or no osmotic pressure, but Starling and others have claimed, on the contrary, that they exert a distinct although small osmotic pressure.

In the body, then, water and substances in solution are continually passing through membranes; for example, in the production of lymph, in the absorption of digested foodstuffs from the alimentary canal, in the nutritive exchanges between the tissue elements and the blood or lymph, in the production of various secretions, and so on. In these cases it is a matter of greatest difficulty to give a satisfactory explanation of the forces controlling the flow to and fro of the water and dissolved substances, but there can be little doubt that in all of them the physical forces of filtration and osmosis take an important part.

Whenever, therefore, the normal osmotic activity throughout the body becomes impaired, all of the dependent physiological processes likewise experience a corresponding reduction below normal. Digestion, absorption, secretion, the elaborating functions of the blood or lymph, and many other vital functions, become impaired to a greater or lesser degree. After a variable period of time, which may be either months or years, the continued subnormal processes everywhere throughout the body slowly, though progressively, produce a condition of hypotonicity. The balance between repair and elimination fails to be maintained. The individual susceptibility to infectious bacteria increases; phagocytosis, which may be considered fundamentally a process in osmosis, becomes impaired; while the vital phenomenon, osmosis, also progressively declines. The increasing burden placed upon the already subnormal physiological systems becomes greater than they are capable of sustaining. The affected individual begins to realize that there is something radically wrong with himself, but pass over the whole realm of physiology though he may, it is impossible for him to definitely localize his pathology. He tires easily, and there is a general feeling of languor and lassitude. He observes that his digestion is not normal, and his physician, after discoursing at some length on "autointoxication," prescribes a modified form of diet. Again, perhaps, his attention is attracted to the torpidity of his liver, and a cholagogue is administered which temporarily arouses the hepatic function and carries the subject a few weeks longer over a delusive calm. Toxins, availing themselves of the inactivity of the bodily fluids, in which they find ready solution, continue to accumulate in geometrical proportions. The streptococcus, seizing upon the opportunities offered in diminished resistance and impaired phagocytosis, or other bactericidal agents, attacks the quiescent foci of the tubercle bacilli and arouses the latter into activity, though they may have reposed quietly in the lungs for many years. The delicate biological balances are overthrown and the period of latency is at an end. Sooner or later symptoms manifest themselves in the lungs, and upon a more thorough examination it is discovered that here is a case of incipient tuberculosis.

In view of the preceding facts, showing that the physical phenomenon of osmosis is very largely dependent upon a high degree of fluidity in the solvents of the body, it is certainly a logical deduction that any measure which promotes this fluidity should likewise promote osmotic activity. Also, it is a reasonable conclusion that this osmotic activity directly improves the functional characteristics of many physiological processes and tends to restore the balance between repair and elimination; improves the general tonicity of the body and assists very materially in combating infectious processes.

There are no measures as yet known which accomplish this with greater ease and facility than

plenty of good pure water, for water, as we have seen, is the important solvent in the body.

An important law of osmosis is that of Van't Hoff, which may be expressed as follows: *"At constant temperature, the osmotic pressure of dilute solutions is proportional to the concentration (the number of molecules or ions in solution) of the dissolved substance."* This is analogous to Boyle's law for gases.

But osmotic pressure alone is not the end to be attained. If there is insufficient water on one side of the permeable membrane to compensate the attraction on the other side, an inefficient physiological process is the result.

Excess of water in the body, like excess of crystalloids, it is true, is soon removed by the excretory organs. The amount of water absorbed is in accordance with the demand, not according to the supply. But this is also true of the very oxygen we breathe, and for which we appreciate the necessity of aërating the lungs with as much fresh air as we can get.

After all, respiration is merely one of the many vital phenomena in the body depending upon diffusion through membranes. In the lungs, where the medium of exchange through the permeable membrane is gaseous rather than liquid, the process is still governed by the same laws of diffusion. However this may be, it is nevertheless true that liquids, when taken in liberal quantities, will, in a measure, at least, remain in the system long enough to promote certain physiological activities. It is not an uncommon observation that the milk of nursing mothers is very materially increased in quantity when a liberal allowance of liquids is included in the diet. Surgeons who frequently operate to drain the gall bladder are quite familiar with the post-operative increase in the quantity of bile when a liberal liquid diet is prescribed.

Water constitutes something more than 75 per cent. of the bodily weight, and in the light of our present knowledge of osmosis it is certainly as necessary a requirement to place an abundance of water at the disposal of the body as it is to supply it with an abundance of fresh air.

It is a fallacy to suppose that the kidneys become overworked because of an abundance of pure water. This is as impossible in its conception as it is to regard an abundance of fresh air a detriment to the lungs. The truth is, the kidneys suffer a much greater degree of impairment through highly concentrated, acid urine, than would ever be possible through high degrees of dilution.

It is obviously impossible to accurately determine the exact degree to which liquefaction should be carried, or the quantity of water which may be regarded as adequate for each individual; yet, a very valuable index is the specific gravity of the urine, which should be brought to a point approximating 1.008, when the buoyancy at that point may be maintained through a regulation of the quantity of water ingested. The patient should supply himself with an individual urinometer.

Two hundred c.c. of water, which may be regarded as approximating the capacity of the ordinary drinking glass, taken every hour during the day, with an additional 200 c.c. at 9 A. M., 10 A. M., 3 P. M., and 4 P. M., is a good basic formula, but there should be no routine amount adjusted to all cases alike. This amount implies a normal functional activity of the kidneys and blood-elaborating organs. When these are severely impaired, or when the lungs show almost complete involvement, the prognosis will probably not be altered.

Mineral waters, or those containing a high percentage of soluble salts, should be avoided. Aërated distilled water is preferable. To avoid the undesirable possibility of a disturbed gastric function, warm water only is to be recommended. Iced water, or even cool water, is not only of little value, but may really be harmful. Communities depending upon neighboring streams for their supply should know that the water is absolutely pure, as shown by bona fide bacteriological reports at frequent intervals; otherwise, it is certainly unfit for any use. Organic matter is frequently removed from water by precipitation with alum, ferric chloride, or copper sulphate. When alum is added to a water it is decomposed with the formation of the hydroxide, which, as it settles, carries down with it all suspended matters and a large part of the dissolved organic matter and microorganisms. If an excess of an amount required to accomplish this is added, and free alum is consumed in the drinking water, it has a tendency to impair osmosis by dissociating the organic constituents of the bodily fluids from their aqueous solvent. Alum also renders animal membranes less permeable. For these same reasons, baking powder adulterated with alum is particularly harmful.

It is not to be presumed that efforts devoted to an improvement of osmosis only are to be considered. At best, tuberculosis is no easy foe to conquer, and certainly no element of the usually beneficial methods of treatment should be neglected. The osmotic theory is suggested merely as an adjunct, not as an ultimate end of treatment.

Medical literature abounds with so many excellent treatises on outdoor life, climate, rest, diet, etc., that any remarks in this connection relative to those subjects would be superfluous.

Suffice to say, that in no other disease is it so necessary to regulate the treatment systematically for such long periods of time, and to direct the attention persistently to the most minute detail. No measure in any treatment is of worth until it is carried out with every degree of fidelity. There are certainly no specifics for tuberculosis, and until such are discovered, patient application to the available measures at hand is our only watchword.

To facilitate brevity and clearness in this short paper I have endeavored to simplify the nomenclature as far as possible; avoiding a complication of the subject by omitting a description of the allied processes, filtration, selective absorption, selective diffusion, etc. Also, I have had some hesitancy in recommending measures which, being so commonly at hand, recognition of their value will not at once be appreciated. If, however, their adoption should improve our present statistics ever so little, I shall be rewarded.

The Sewer Rat and Weil's Disease.—Courmont and Durand state that even in regions hitherto exempt from Weil's disease the rats act as potential carriers of the malady.—*La Presse Médicale.*

MEDICAL ETHICS.

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UNDER section one, "Principles of Medical Ethics of the American Medical Association," we find the following: "A profession has for its prime object the service it can render humanity; reward or financial gain should be a subordinate consideration. The practice of medicine is a profession. In choosing this profession an individual assumes an obligation to conduct himself in accord with its ideals." What are the ideals of the physician? Are they not much the same as those of any learned profession? In other words, to be a man honored and loved in his community one must live clean and deal fairly with his fellow men. Add to this fair and square dealing with his brother practitioner and you have a pretty substantial code of ethics. It is not my purpose in this address to lay down a course for others to follow. I simply want to emphasize the necessity of our getting together on a more solid basis as a fraternity and this can only be accomplished by hearty cooperation and good-will. At the present time many threatening evils present themselves as a menace to our stability as a profession. The Judas is outside our gates and would willingly tear us asunder. The various cults are becoming stronger and this many times because one of our number is pleased to work in company with their propaganda. An instance of this came to my notice recently. A certain physician told me that one of his patients had troubled him with frequent visits relative to obscure symptoms of fancied disease. He made a careful physical examination and found all organs normal. He then told the patient his findings and said that he would be all right and not to worry about his condition. The patient persisted that he was ill and needed medical treatment. The physician told him he could do nothing for him, but that there was a doctor in the next block, a chiropractor, whom he had better see. And this at a time when our State Legislature is considering a bill for licensing these persons and giving them the title of "doctor." He would rather send his patient to one of them than ask the opinion of one of his fellow practitioners.

Petty jealousies will ingratiate themselves into every body of men, and what an evil it has become in our profession! We must rise above it and stamp it out. Physicians have high standing in their community because of their ability to combat disease and minister to the bodily welfare. They are placed on a high plane and have the respect and confidence of their patients and fellow citizens. If they are to maintain their standing they must do so by living up to the code of ethics set down by the great body of their number who have passed and gone. Never before in the history of medicine has there been so great a need for us to stand together. Natureopaths, Christian Science practitioners, and many other irregular sects are banding together to destroy the physician's standing before his clientèle. In a hearing before a committee at the last session of the Legislature I was surprised and chagrined to see two so-called reputable physicians working hand and glove with a group of this sort to combat a matter of honest medical legislation. Could these doctors of medicine suggest that they were following the code of ethics? "Do unto others as you would have others do to you," is a pretty good slogan, and if we carry it engraved on our banners we will be pretty safe in our ethical position. It is often said that no organization is stronger than its weakest member. Is it not a matter of ethics to hold out our hand to the weak brother and strive to make him a stronger, more potent factor in our midst? Do we have patience with the men in our profession who have not the same moral stamina as we have? Do we chide them in a fair-minded way for their shortcomings or do we hold aloof and point the finger of scorn?

This may sound like a sermon, but I assure you, gentlemen, it is not my purpose to have it so. I have been led to touch on this subject because I see the necessity more and more of our becoming stronger as we work for all that is good in the practice of medicine. Our duty to medical societies is a matter we often neglect. In chapter two, section two, of the principles already referred to, we find as follows: "In order that the dignity and honor of the medical profession may be upheld, its standards exalted, its sphere of usefulness extended, and the advancement of medical science promoted, a physician should associate himself with the medical societies and contribute his time, energy, and means in order that these societies may represent the ideals of the profession." A large number of physicians seldom attend a meeting of their county or State society, and even the local city or town society must hold out sufficient inducements to have a fair percentage of members present at its meetings. This should not be so, and we must wake up to our duty. We must stand together as one man or we will all go down before the onrush of pernicious legislation and selfish advancement of those who are seeking to cheapen us in the eyes of the public for their own financial gain. We hear so much of efficiency and preparedness, why not have a little in the practice of medicine? We should be willing to write a paper occasionally on some chapter from our own experience if nothing else. Many of our number say that they cannot do so, but if they will make the trial a few times it will soon be comparatively easy to write a good paper on some timely medical topic. If we cannot write papers we can certainly discuss them. Ofttimes I cuss internally upon hearing, "I have enjoyed the paper very much, but have nothing to add." One can at least ask a question now and then.

Under article six, section three, of the "Principles of Medical Ethics of the American Medical Association," relative to the secret division of fees, we read as follows: "It is detrimental to the public good and degrading to the profession, and therefore unprofessional to give or to receive a commission." This is only a part of the section. It seems rather strange that the medical superintendent of any sanatorium could give commissions to doctors for sending him patients under such a provision. If any deduction from the

weekly rate be made the patient should get the benefit of it and not the physician. All an established institution can do to fulfill its mission is to give those patients entrusted to it the best of medical treatment and care. Work for efficiency not for commissions if you wish to get results for all time. It would seem that the same rule might well apply in any division of fees between medical men. The slogan, "I am out to get the coin," is not one that adds to the dignity and high standard of medical practice. Every man has a right to attain high standing in his profession, and if in so doing he accumulates wealth honestly no one can criticise. In fact, we should all be proud of such a man, not jealous of him. I have already mentioned the ethical side as it refers to our fellows in medical practice, but want to refer to it again. How many of us go out of our way to call on a new arrival in his chosen field or strive to make the way easier for him? The world looks hard to the young doctor as he starts his life work, and how he warms up if he receives a little kindly notice! We have held aloof from each other all too much and the signs are apparent that we must get together and solidify our organization.

The meeting of the Connecticut Medical Society held at Bridgeport, 1916, was certainly a very pleasant one. Members generally have talked about it and how they enjoyed the social side. A special effort was made to make everybody warm up, with the result that many men became acquainted with each other who had never met before. To many men attending their first society meeting there is a feeling of diffidence. They are wondering just how they are to be received; in fact a new side of the medical world is opened up to them. Ofttimes their first impression is not a pleasant one, perhaps in part their own fault. If this occurs two or three times there is one less in attendance at future meetings. Recently I attended a meeting of a certain medical society in New York City. After the meeting I stopped a moment to talk with a member of the organization and he made the following remark: "This is a cold and clammy bunch." And he might be right in saying so. In defense of the president of that society I am glad to say he was right on his job and tried his best to make it pleasant for everybody. Gentlemen, if I read Medical Ethics aright, it is our duty to see that such things change. No matter to what heights we attain from an intellectual standpoint, in many ways we are no better than our most lowly brother. The doctrine of a handclasp and a smile help to make us stronger with our fellows. Let us try it out in this society.

Section three under article four needs no comment; it certainly is very plain in its meaning. It reads: "A physician should never take charge or prescribe for a patient who is under the care of another physician, except in an emergency, until after the other physician has relinquished the case or has been properly dismissed." Section four, article four, reads: "When a physician does succeed another physician in the charge of a case he should not make comments on or insinuations regarding the practice of the one who preceded him. Such comments or insinuations tend to lower the esteem of the patient for the medical profession and so react on the critic." We all know that in many instances physicians have made comments and insinuations which placed their fellow practitioner in no pleasant light with the family who perhaps they had treated for years. Better say nothing than to destroy the standing of one who has done as well as he knew in the treatment of his patient. A physician may treat all the members of a family successfully for years and then fall down hard in some particular case. Another doctor is often called, and if he happens to perfect a cure he is the hero of the moment. He must not forget, however, that sooner or later he may have the same condition confront him in his own practice. It is very hard for any physician to resist the plaudits of the family and friends if he makes an especially good cure or has a very successful operation. But the hurrah soon subsides and we are just as apt to get a good roasting on our first mistake in subsequent practice. The old saw is very true,

> "God and the doctor we alike adore
> On the brink of danger, not before.
> Danger is over, all is requited,
> God is forgotten, the doctor slighted."

We cannot afford to be sarcastic at the expense of our fellows; it is not square or Christianlike.

Another section of the code often overlooked is section nine of this same article. "When a physician is called to the patient of another physician during the enforced absence of that physician, the patient should be relinquished on the return of the latter." Simply a case of fair dealing, and such a course should always be followed. A part of section two, chapter three, relative to epidemics, should be noted. "At all times it is the duty of the physician to notify the properly constituted health authorities of every case of communicable disease under his care, in accordance with the rules and regulations of the health authorities of the locality in which the patient is." It is the duty of every physician to cooperate with the Board of Health in his town or city and such boards of health should not be the tool of politicians. Men who establish health laws and regulations should be the most intelligent and capable of our fraternity. They should rise above petty jealousies and bickering, standing together for all that is best and most scientific in progressive medicine. Remembering that the eyes of the public are upon them and that they are expected to stand in the gap in the face of dreaded disease. Is it not our duty to stand for more central regulations of health matters state-wide in character?

I have simply tried to suggest in this brief paper the necessity of a better understanding of our Code of Ethics. Let us rise up and acquit ourselves as men in this matter. We must stand together shoulder to shoulder in our fight against those who would discredit us. This can only be accomplished by a knowledge that we stand for high principles of ethics in our practice and in our relation to our associates. Truest altruism has always been associated with our profession in the past and may it ever be one of high morale. We must deal with our clientèle kindly and walk among them in a manner which will always command their respect and support. Ours was ever

called a noble profession. Let us follow out our code of ethics that we may always be worthy of the high standing to which we have attained.

A MIXED TYPE OF NEPHRITIS.

REPORT OF A CASE WITH AUTOPSY FINDINGS.

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I REPORT this case because of several interesting features connected with it: (1) The ability to follow the patient from his first admission into a hospital for the nephritis to his death; (2) the rapidity of accumulation of fluid in the tissues and in the several cavities; (3) the change in the disposition and temper of the patient; (4) the apparent susceptibility to infections, which eventually caused the death of the patient; (5) the duration of the condition after requiring hospital attention—less than eleven months; (6) the findings at autopsy.

The patient, a man, thirty-four years of age, had been a truck driver since he was fourteen years old. He entered the hospital for the first time in this illness on March 17, complaining of puffiness of the eyelids, general swelling of the body and genitalia, pain in the lumbar region, and shortness of breath. There was no family history of cancer, syphilis, insanity, heart or kidney disease. The patient remembered having had measles when a child, and pneumonia with pleurisy when twenty-six years of age. He denies having had scarlet fever, diphtheria, rheumatism, malaria, lues, or Neisserian infection. Associated with his occupation as truck driver, we find him to be a heavy drinker—he drinks all the whiskey and beer he can get—using also considerable tobacco. He has been married eight years; his wife has had two children and no miscarriages.

The following history of the present trouble as obtained from the patient is that he felt perfectly well up to three weeks before admission to the hospital, at which time he caught a severe cold after exposure to rain when unable to change his wet clothing. He states "he felt stiff all over the next morning and was all choked up." He had severe pain also in the lumbar region. He tried self-medication, became worse, had to stop working, went to bed and was brought to the hospital for treatment. His condition on admission was as follows: A large-framed, well-built, muscular young man, with a skin doughy, edematous, rather clammy to the touch, and very pale. The eyes seem rather small, due to the puffiness of the tissues. The sclera is clear, there is no jaundice present. The mucosa is pale and anemic-looking; the teeth, fair; the tongue, slightly coated, and the breath offensive. The tonsils are clear. The neck is edematous, no enlarged glands are present, and the pulsation of the carotids slight. The chest tissues are quite edematous, the pitting on pressure remaining for some time. Expansion is good and equal on both sides, resonance slightly impaired by the edematous chest wall. The respiration is deep and moderately slow. The cardiac borders, the right border is one inch to the right of the right parasternal border; the left, just inside of the midclavicular line. The apex beat is in the fifth interspace. The sounds are clear, regular, distinct but not strong. There is the suggestion of a soft, blowing murmur at the finish of the first sound heard over the entire precordium. The abdomen is slightly protruberant, muscular, firm and resistant. The walls are thick and markedly edematous. Flatness is present in the extreme flanks. There is no fluid wave and no tenderness. The liver is normal in consistency and two and one-half inches below the costal margin. The spleen is not palpable. The extremities are much swollen, the pitting on pressure remaining for some time after the pressure has been removed. The glandular system shows no enlargement.

The patient at the time of this first examination felt extremely weak especially in the legs. He had had no vertigo nor dizziness, and no spots before his eyes. His blood pressure was 150 mm. systolic, 135 mm. diastolic. The blood examination showed 4,480,000 red blood cells, 11,500 white blood cells, with 86 per cent. polys, 14 per cent. small lymphocytes. Hemoglobin, 65 per cent. The urine was acid, varied in specific gravity between 1008 and 1015, contained large quantities of albumin, no sugar, many epithelial, granular and hyaline casts with many red and white blood cells. The blood Wassermann was positive. Examination of the eyegrounds by Dr. H. M. Smith showed marked edema of the retina with a few hemorrahges.

Sixteen days after admission, the patient had a severe chill and developed a diphtheria with a temperature of 105°. He was given antitoxin and recovered from this condition. Upon the improvement of his symptoms, the patient insisted upon his release from the hospital and left April 17, after a stay of one month. Paracentesis was not performed during this stay; there was present most of this time a marked edema of the face, body, and legs. He had severe headaches at times, and was irrational immediately after the development of the diphtheria.

We had no trace of the patient from April 17 until June 23 when he again came under hospital care with a general edema and fluid in the abdominal cavity. On June 25, paracentesis abdominalis was performed and 3960 c.c. (132 oz.) of fluid withdrawn. On July 1, paracentesis abdominalis was again performed and 8460 c.c. (282 oz.) of fluid withdrawn. On July 22, 8400 c.c. (280 oz.) of fluid were removed. On August 1, the patient was very edematous with the fluid reaccumulating rapidly in the abdomen. On August 6, 5400 c.c. (180 oz.) of fluid were removed and on August 15, 3060 c.c. (102 oz.) were removed. The patient had been in the hospital from June 23 until August 16, when he demanded his release. He claimed to feel better, although there was no improvement in his condition. His urine during this stay at the hospital was scanty in amount, of a specific gravity between 1.013 and 1.017, contained large amounts of albumin, many granular and hyaline casts, and red and white blood cells.

On August 28, he reappeared at the hospital with edema marked throughout the tissues and fluid in the cavities. Paracentesis abdominalis was performed on August 29, and 3700 c.c. (123 oz.) of fluid withdrawn. The urine was similar in character to that on the previous visit. The patient left the hospital on the following day, August 30, to reappear in about two weeks. On September 17, he returned in a condition similar to that on his former admissions, but with more fluid in his tissues and less in the cavities. He remained one week, until September 25, but was not tapped during this visit. On October 7, he again returned with the symptoms aggravated and was treated for eight days. The urine was of low specific gravity, 1.014, still loaded with albumin, hyaline and granular casts, red and white blood cells, and renal epithelium. Paracentesis was performed on October 13, the amount of fluid withdrawn being 7350 c.c. (245 oz.). On October 15 he was discharged, feeling better, but unimproved.

On November 5, we find the patient again appearing for hospital care. Dyspnea and edema are the chief complaints. Nocturia is beginning to be troublesome, the patient being compelled to void four or five times nightly. There are no evidences of a pleuritic friction rub at the present time. The abdomen at the umbilicus measures forty-one inches. An examination of the eyes at this time shows the pupils equal, reacting slowly to light and poorly to accommodation. There is marked edema of the retina with a few hemorrhages. There is no arteriosclerosis of the vessels, and no albuminuric retinitis. On November 6, 9600 c.c. (320 oz.) of fluid were withdrawn from the abdomen, the measurement changing from forty-one to thirty-seven inches. Paracentesis was again necessary on November 13, when 9840 c.c. (328 oz.) of fluid were withdrawn. The ascitic fluid at this time was grayish white, opalescent, of specific gravity 1.012, alkaline in reaction, no cells except a few endothelial ones. The urine was scanty, with a specific gravity of 1.013 to 1.016, heavy albumin, many granular, hyaline and degenerated casts. The systolic pressure was 165 mm. The patient left the hospital November 19, contrary to advice.

On December 15, he returned with general anasarca, dyspnea, headaches, nausea and vomiting, the symptoms of previous attacks were much aggravated. Paracentesis was performed on December 17, and 6900 c.c. (230 oz.) of fluid withdrawn. At this time the patient remained in the hospital two weeks, leaving December 29 at his own request with his symptoms relieved. Although he looked anemic and pasty the blood showed hemoglobin of 70 per cent. and a red cell count of 4,420,000. The quantity of urine was small, the specific gravity 1.016 to 1.018, a large amount of albumin, with hyaline, granular casts and white blood cells.

Again, on January 26, the patient entered the hospital complaining of dyspnea, general edema, and weakness. Paracentesis was performed the same day and 900 c.c. (30 oz.) of fluid withdrawn. On February 6, 5760 c.c. (192 oz.) of fluid were withdrawn from the abdomen. There were signs of fluid in both pleural cavities, but it was not considered necessary to aspirate. On February 7, the patient, who was usually irritable and complaining seemed much more disagreeable. There was a slight droop of the left eyelid, and the face seemed slightly drawn to the right. His hearing became less acute, and he complained of pain in the left ear. Pus was obtained from the left ear February 8, and from the right ear on the ninth. The patient became more and more irritable, grunted and groaned considerably, and gradually became comatose. The pupils were contracted, the left more than the right, the neck muscles stiffened, and the hand was placed to the head and neck as though in pain. The patient was absolutely deaf and could not be aroused, although there was resistance to passive motion of the arms and legs. The reflexes were increased and Kernig's sign was present. Paracentesis was again necessary and on February 12, 3450 c.c. (115 oz.) of fluid withdrawn. Physical examination of the chest on February 14 showed a leathery rub on the left side from the third rib down. This sound overlapped the precordium and obscured the heart sounds. The right chest had no friction rub, but signs of fluid were present. The abdomen was distended, tense, and held rigidly. There was dulness on the dependent side.

The patient died on the following day and the clinical diagnosis made before autopsy was chronic parenchymatous nephritis, cirrhosis of the liver, dry pleurisy in the left chest, hypertrophied heart, acute mastoiditis, and uremic meningismus.

We were fortunate in this case to obtain permission for a complete autopsy, which was performed by Dr. B. T. Terry, director of the pathological laboratories at the Kings County Hospital, to whom I am indebted for the report of the findings. A summary of which is as follows:

There is edema of the pia arachnoid, with congestion of the vessels on the left side of the cerebrum. Pus is present in the inner ear on the left side. On the right side, we find pus external to the drum. Microscopic examination of this pus shows steptococci and traphylococci. Fluid is present in both pleural cavities, in the pericardial sac, and in the abdominal cavity. Fibrinous peritonitis and pericarditis are present. There is an obliterative pleurisy on the left side. On the right side there are a few chronic pleuritic adhesions. The heart is enlarged, with atheroma of the aortic valve and atheroma in the aorta behind the valves. There is marked atheroma of the coronary arteries. The myocardium shows cloudy swelling. The lungs are enlarged and the pleura thickened. Acute bronchitis is present. There is edema and congestion of both lungs with atelectasis of the lower right lobe. Perisplenitis and interstitial splenitis are present. The kidneys show a chronic diffuse nephritis on macroscopic examination, the parenchymatous changes being most marked. There is also marked atheroma of the aorta. Microscopic examination of sections of the kidney show marked increase in the interstitial tissue and changes in the glomeruli and tubules, where in places all the epithelial cells are destroyed, or in the process of destruction. The liver shows the changes found in chronic alcoholism.

We have been able to follow in this patient his history and course of the disease from his first admission to a hospital for his kidney condition until his death, occurring two days less than eleven months. He was, during this period, a patient at eight different times in hospitals, twice at Long Island College Hospital and six times at the Kings County Hospital, where he died and where the autopsy was performed.

This is a case commonly diagnosed as chronic parenchymatous nephritis, but which on more careful study and autopsy we find to be a mixed type, a nephrosis and a nephritis. We have much fluid in the tissues and the cavities, a low specific gravity of the urine, large quantities of albumin, all kinds of casts, hyaline, granular, degenerated, a moderate systolic blood pressure, retinal edema, and hemorrhages, but no albuminuric retinitis, and a terminal infection with autopsy findings of changes in the glomeruli with degeneration and disquamation of the tubules with considerable increase in the connective tissue of the kidneys, and the liver showing the fatty changes most commonly found in chronic alcoholism.

The more recent tests for renal function—the test meals, the salt and water excretion, the blood examinations of urea, uric acid, creatinin retention were not performed upon this patient, as these examinations were not being made at the Kings County Hospital at the time of this patient's admissions. At present there is under observation at the County Hospital a case very similar in history and course to the one reported above, upon whom these tests are being performed. If an autopsy is obtained a comparison of the two cases may be reported at a later date.

108 Prospect Park West.

CLUB FOOT AS A PRODUCT OF EVOLUTION.

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If we study the course of an acquired club foot in a child and see the changes that have followed the destruction of cells in the lower part of the spinal cord after infantile paralysis, we note first the loss of power in the muscles and later the deformity of the limb due to the modification in the bones from lack of use of the muscles and, in course, of time from the non-development of the bones. In the acquired cases we know that the primary lesion is loss of nerve control of these tissues that in the end show non-development.

In the congenital cases of talipes we find varying degrees of the typical equinovarus similar to the different stages of the acquired talipes. The prenatal course of development is not easy to follow but is therefore all the more worthy of our study. The most common type of congenital talipes (equinovarus) at the time of birth shows a condition similar to the advanced stages of the acquired talipes. The bones are abnormal in shape and the muscles are small and weak, especially in one group. The nerves so far as we know have been but little studied. In connection with the nerves we think of the conditions frequently associated with the congenital club foot of spina bifida, hydrocephalus, paraplegia, bladder and rectal loss of control, which are all lesions in the central nervous

system. It is not unusual to find associated also extra toes, webbed toes, absent toes, clubbing of both feet, and less often similar deformities in the hands. One notices with interest the frequent symmetry either complete or partial of these deformities and symmetry always suggests a lesion in the central nervous system. Congenital absence of limbs sometimes described as intrauterine amputation is not infrequently associated with the clubbed foot and we believe due to the same general factor. (See *Am. J. Obstet.*, 73, 6, 1916, Case of Congenital Amputations.)

The extra toes and absent toes are very interesting in the light of comparative anatomy. We may compare the arm and leg of the same individual or the marked changes that have taken place in evolution of the race. If we compare the two limbs of man and note the nearly equal size and nearly equal importance of function of the radius and the ulna and the equality in size of the digits beyond them and then note the large tibia and the great toe and the comparatively slender fibula and diminutive little toe with the less significant function of the post axial group, it surely is suggested that a club hand would be a much greater variation from the normal hand than a club foot would vary from the normal foot. And we all know that the club hand is far more rare than the club foot. We might notice while comparing the changes in the fifth digit of hand and foot that the comparative anatomists have considered that in the hand an extra post axial digit is represented by the pisiform bone while a similar but more completely lost postaxial digit in the foot is represented by a mere tubercle on the os calcis. As for the preaxial lost digits in normal limbs neither prepollux nor prehallux remnants are recognized. Hence the preaxial nerve group, or at least bone group, seems to be more dominant and the fore limb more stable than the hind limb. We might expect such a superior dominance in line with the development of the head and brain, at the upper end of the central nervous system, and the dropping of the tail and the coxygeal nerves at the lower end of the central nervous system.

The changes in the evolution of the race are also interesting. The study of the horse's foot we all have seen demonstrated in the museums of natural history. There the evidence is shown of the dropping of one digit after the other from the five toed horse to the one toed, until there is left a single large bone in the leg from knee to ankle, a single tarsal bone and a single ray of phalangeal bones. When we look at the human skeleton and compare the size of the tibia and the fibula and the digits beyond each of them it does not take much imagination to see suggested in the slender fibula and the diminutive little toes, an early stage in the reduction process which if carried farther would lead to a diminution of the number of toes on man's foot. In talipes equinovarus (the word "equinus" is full of meaning) we have the partially developed foot in which the muscles are least developed and the bones incompletely developed also and at times we find a shortened fibula and absence of the little toes. It may not be wandering too far astray from the idea of the control of tissue development and growth by the central nervous system to call attention here to some case reports on autoamputation of the little toe, called ainhum, and the evidence which suggests that ainhum be classed as a lesion with its origin in the central nervous system. (See MEDICAL RECORD, March 18, 1911.)

To gather together then our ideas on the cause of club foot which our text books tell us starts with the inheritance of a family trait, we recognize the symmetry of the lesions, the association with multiple congenital deformities of brain, spinal cord, and limbs, the close analogies with dropping of digits in other species, the anatomical changes in the structure of the leg suggesting an underdevelopment of the postaxial ray in the leg. We come thus to the suggestion of club foot as a tendency toward the dropping of the postaxial digit group of the lower limb. And this dropping of a digit group would seem to be due to restricted development in the central nervous system—a factor that has been at work since before the days of the five-toed horse.

STONELEIGH COURT.

Medicolegal Notes.

Payment for Services Rendered Injured Employee.—In a surgeon's action against railroad contractors for services rendered an injured employee, evidence that the person who wrote a letter obligating the defendants to pay for the expense of the employee's treatment was defendant's timekeeper, and that he signed checks, attended to correspondence and signed letters for the defendants, was held to authorize the jury to find that he had authority to sign the letter. The injured man was sent to a hospital for treatment with the contractors' knowledge of their obligation to him. The plaintiff, besides having charge of the patients in that hospital, was the railway company's physician. He treated the injured man. The contractors, after the railway company found the man was not one of their employees, wrote the railway company acknowledging liability for the expenses of the hospital services. It was held they were liable to the surgeon for the entire services rendered by him, not merely for those rendered after the date of the letter. The fact that the contractors collected a fund out of the wages of employees to enable them to care for and furnish medical aid to anyone who might be injured did not necessarily make them liable to the surgeon for his services to the injured employee. but it was a proper circumstance to be considered by the jury. Judgment for the plaintiff was affirmed.—Perkins vs. Kilpatrick (Mo.), 193 N. W. 876.

Evidence as to Physician's Earning Capacity.—In an action for personal injuries to a physician and surgeon while a passenger on a car which stopped so suddenly that he was thrown down, it appeared that he was in hospital for some time and disabled from practising for over two months, and, as he testified, was permanently injured. On appeal from a verdict and judgment for $40,000 it was held that although he testified that he could not give a definite idea of his cash receipts for a month or any period of time, but thought, without having examined his account books for previous amounts, that his income for the two months would have been $2,000 a month. that the question of his earning capacity was for the jury, and the judgment was affirmed.—Graul vs. United Rys. Co. (Mo.), 193 S. W. 38.

Transactions between Physicians and Patients.—It is undoubtedly the rule that any transaction between a physician and patient inuring to the advantage of the former will be closely scrutinized, and stricter control over it will be exercised than in cases where no such confidential relation exists between the parties. The precept, however, does not go so far as to constitute a medical man a guardian for his patient, and it is not enough to say that he merely had knowledge of the action of a third party against whom the patient seeks relief without showing also that the physician participated in such action.—Ulbrand vs. Bennett, Oregon Supreme Court, 163 Pac. 445.

Military Medicine.

VENEREAL DISEASES IN THE WAR.

(From Our Regular Correspondent.)

PARIS, June 19, 1917.

IN the series of letters which I have been privileged to write to the MEDICAL RECORD I should feel that I had signally failed in a great duty if I shrank from exposing to my medical colleagues (as much as I dislike to do so) the dangers that lurk in beautiful France to engulf the unsuspecting American soldier, and I dread and fear that bodies crippled by wounds and lost limbs are not the worst that will be brought back to the New World, fair America; and it is to do what I can to awaken my colleagues coming to service in France to the widespread danger to which our troops will be subjected, far more dangerous to American national life than any war devices of the enemy, that I bring to their knowledge certain statistical information respecting syphilis in France at the present moment.

There are fewer than fifteen thousand doctors in all of France, and more than two-thirds of these are mobilized, and more than one-half of those are at the front. More than two thousand, since the beginning of the war, have been killed, wounded, or made prisoners. Only a few weeks ago six hundred were returned from Germany via Switzerland, in exchange. It will readily be seen that civil practice and the civil service in the hospitals is sadly in need of doctors. Being a graduate of the French Medical School, and legally entitled to practise in France, I was, more than a year ago, assigned to a civil hospital position in addition to my military service, that civil work being in the section of the Cochin Hospital devoted to syphilis. More than 5,000 cases have passed through our clinic in twelve months; but it is not to my own service I shall refer for my statistics, but to that of Professor Gaucher, who, outside of my own chief, Fournier, is one of the best known in this specialty in Europe.

In a recent publication (*Paris Médical*, January 20, 1917) Professor Gaucher writes as follows: "Whereas, before the war, in round numbers, out of 3,000 clinical patients 300 had syphilis, or 1 in 10, during the first months of the war these increased to 800 in 5,000, or 1 in 6. During the last eight months of 1916 this increased to 600 in 2,300, or 1 in 4. I therefore find that from August, 1914, to the end of December, 1915, the ratio of syphilis had increased more than one-third, and from January to August 1, 1916, it had increased more than one-half, and since then has advanced to nearly two-thirds of the clinical cases that present themselves in the service."

This rapid increase in this disease is carried out by the reports of the Clinical Service at St. Louis Hospital, which is one of the most celebrated, where, before the war, out of 300 to 400 coming daily to the outdoor clinic, four or five were syphilitic. At this present time, twelve to fifteen appear in the same number, and it is a deplorable fact that everywhere reports show an increase of from one-half to two-thirds in this disease since the outbreak of war.

Professor Gaucher further expresses himself: "Venereal diseases are still considered a subject about which one should keep silent and never speak. This hypocrisy is full of danger, and steps should be taken to warn both civil and military against the present danger. Happily, during the present year great progress has been made in this respecting the military. Conferences have been organized all along the front and among the reserves respecting venereal diseases, by the heads of the hospital service and the medical chiefs of troops in the field. This is due to the initiative of my military chief, the incomparable organizer and initiator, Inspector-General of the Medical Corps, General Sieur, who arranged twenty-two conferences in the Paris district, with lantern slides and lectures, which were attended by 8,000 of the troops, delegates from various arms of the service, and five similar conferences for 1,500 officers, with the hope to prove the truth of the old axiom, 'Once warned is twice armed.'"

If these men, and also women, had not been brought up in complete ignorance of everything pertaining to sexual life, but taught in youth to care for and safeguard themselves, the present deplorable state of affairs would not exist.

The space of this letter permits only of one cardinal warning to be remembered and communicated by the front-line surgeon to the soldiers and officers coming to Paris on furlough.

It would seem that all the loose characters in the country have congregated, since the war, in Paris. The railway stations at which the men arrive from the front are infested by lewd women, who have located their quarters as near to these sections as they can; as a rule, they are well dressed, perfumed, good-looking, and mostly young. They thoroughly understand reading the faces and make-up of the newly arrived, and seek him coyly or openly, as they decide most likely to succeed. There is only one safe rule: Warn the soldiers under your care not to have anything to do with any woman who can be picked up on the street anywhere.

146, AVENUE DES CHAMPS-ELYSÉES.

PROTECTIVE INOCULATION AGAINST GAS GANGRENE.

THE prevalence since the early days of the war of gas gangrene has greatly quickened interest in the bacteriology and pathology of this condition, but the views hitherto put forward have been mainly theoretical. The treatment has, in consequence, been somewhat empirical, and rather barren of results. It is known, of course, that the infection was with a microorganism of the Welsh bacillus group, but the pathogenesis of the condition has been variously interpreted. Among the different views held have been that the symptoms, both local and general, are caused by an acidosis; that the necrosis is produced mechanically by pressure of the gas; that the systemic effects are the result of absorption of endotoxins or of the products of decomposition of the tissues; in other words, that the fatal results are due to an acidemia, an endotoxemia, or a sapremia. As we have said, all these explanations are purely theoretical, not proven by experiment, and not sustained by the results of treatment.

A much more satisfactory interpretation of the symptoms of gas gangrene is offered by Carroll G. Bull and Ida W. Pritchett in their account of a

number of inoculation experiments made at the Rockefeller Institute, published in the *Journal of Experimental Medicine* of July 1, 1917. In their studies they used five cultures of the Welch bacillus, four of which came from infected wounds in the present war. The inoculations were practised upon pigeons, rabbits, and guinea pigs, the former being the most susceptible, and were made intravenously and intramuscularly, the effects produced by the two differing markedly. From the results of these experiments the authors came to the conclusion that "infection by *Bacillus welchii*, like infection by *Bacillus tetani*, essentially resolves itself into an intoxication in which an exotoxin yielded by the multiplying organisms constitutes the chief danger. The two conditions differ, however, with respect to the local effects produced on the tissues, since the tetanus toxin does not possess inflammatory and necrotizing properties. The Welch bacilli, therefore, grow more abundantly and produce wide destruction of tissue, in which process they are soon assisted by the usual pyogenic microorganisms which quickly obtain a foothold in the disorganized structures." As in the case of tetanus, the cause of death in gas gangrene is not a bacillemia but an intoxication with a virulent toxin produced by the specific microorganisms in the tissues. This toxin is a complex body, consisting of a hemolysin and another poisonous element which of itself may cause death without erythrolysis.

Having thus determined that the gas bacillus, like those of diphtheria and tetanus, exerted its pathogenic effects by means of an exotoxin, the authors naturally made inquiry into the possession by the latter of antigenic properties and into the possibility, therefore, of antitoxin formation. Two sets of tests were made, viz., the setting up of active immunity and the production of an antiserum, and both gave positive results. Successive injections of carefully graded filtrates of cultures of the Welch bacilli into pigeons and rabbits gave rise to active immunity, and the blood from the immunized rabbits neutralized toxic filtrates *in vitro* and *in vivo*. The filtrate is to be regarded, therefore, as toxin and the serum as antitoxin. The antitoxin is found to be protective, in pigeons, against infection with both the spore and the vegetative stages of the gas bacillus, and studies are now being made to determine the limits of its protective and curative action.

So far as they have gone, the results of these investigations seem to be eminently satisfactory and encouraging, and it is to be hoped that when put to the clinical test they may be found to be effective in the treatment of gas gangrene in human beings. Up to the present time the treatment of this condition has been empirical, and has relied largely on the oxygenation and consequent inhibition of anaerobic bacteria by means of continuous irrigation with peroxide of hydrogen or by other modes of permeating the infected wound with oxygen. Further investigations in this direction will be awaited with great interest.

Paramedical Work at the Front.—The term "paramedical" is used by Morin (*Journal de Médecine de Bordeaux*, March 25) to designate medical auxiliary activities. Upon the Service de Santé devolves the task of rapid evacuation of soldiers with major wounds to the rear. This is necessary for the *morale* of the troops. Nevertheless the execution of measures for this purpose is extremely difficult. To carry them out too literally is to defeat one's own aims. Yet system is of course indispensable in as far as it does not eliminate personal initiative and valor. Prudence and hardihood must go hand in hand. The medical auxiliary must be in as close touch as possible with the fractions of troops engaged in battle who will furnish the severely wounded and at the same time must keep in touch with the communications which pass from the fighting line to the *postes de secours* along which transportation is effected. The length of the communications is seldom less than 800 metres counting the windings of the passages. The stretcher bearers have to reckon with four components: 1. The weight of the wounded. 2. The length of the passage. 3. The nature of the passage. 4. The langers incidental to the trip. The more difficult the road the shorter should it be and the less hazardous. With diminution of danger as the porters leave the front and with a good sheltered thoroughfare adjacent a long stretcher trip may be practicable. Four men are required for a stretcher at the outset, or at the very least three. Two men never suffice because if the party is hit with bullets it might end transportation straightway. With extra members of the crew this is much less likely to occur. The principal reason for more than two men is, however, that the porters can work in short shifts and so expedite the transportation and return. The porters frequently have to take cover and dash from cover to cover. When overworked they may be unable to play hide and seek with machine guns.

In transportation from the fighting front trench-like cuts are largely utilized and these may readily be choked up. Special stretchers are utilized to negotiate these passages. Some of these are shorter than the patient, who must be borne with his lower limbs flexed on themselves or with his thighs flexed on the pelvis. The most ideal yet devised permits of transportation with the patient sitting. This pattern, however well suited for the narrower tunnels, is at a disadvantage in wide cuts and in free roads, and its use should therefore be restricted to static warfare. In aggressive drives they appear to be useless; for in this form of warfare men count for more than stretchers and the latter can be rapidly passed along by many shifts of men almost like buckets by a fire brigade. This plan works out admirably, for the transportation is rapid, the porters do not become fatigued and efficiency has full play. There is abundance of room for precision without hopelessly sacrificing initiative.

When all is properly planned every fighting soldier knows who will transport him if he is wounded, and the porter in the ranks of the combatants is himself practically a combatant. Aside from this close relationship with the troops the porters are themselves organized, first in crews with a head porter, the crews being in turn organized into squadrons, which are directed by a surgeon or, in his absence, by an officer of their own. The porters in the course of an advance with the troops are never exposed unnecessarily. If a body of troops

is invested and threatened with capture, the chief executive of the porters orders them to stick to the wounded and maintain the communications to the rear. Under fire there is no maneuvering, for the one aim is to take cover previously in view for the purpose, so that the porters are not supposed to work under fire. Under the temporary shelter they first give attention to the wounded, and it is often possible to group and evacuate the severely wounded before the cover is abandoned. They are then in position to attend to the victims of the barrage fire, which include soldiers already wounded.

Reserve troops have their own porters. Orderlies and even regiment musicians may act as porters. Formerly machine-gun companies dispensed with porters, but at present some of them are thus endowed. One aim of porter service is to eliminate the slightly wounded men from clogging the *postes de secours*. Without such service the "fake" wounded would also secure transportation. Any soldier so injured as to be unable to help himself has his wound painted with iodine and receives an occlusive dressing. Tournequets and retentive apparatus are available when needed.

Transportation may be hampered or rendered impossible by barrage fire, machine gun activities or investment by the enemy. In such cases the wounded must be grouped in shelters—five being the usual limit—until nightfall or cessation of enemy fire. One man, or perhaps two, could be overlooked, but this could hardly occur if the group comprised more, for some one could give the alarm. The reader will perhaps wonder if the stretchers get back to the front, and if so how this is accomplished. It is evident that they must often be bloody and dirty. There is supposed to be a sufficiency of stretchers at the start—often a burdensome excess. When relays are used, clean folded stretchers are readily passed along from the rear to replace soiled ones. Porters when they drop out wounded have their places filled by orderlies or porters from the reserve troops. Relay men are never disturbed, for obvious reasons. The captain of all the regiment porters, whether an auxiliary physician or layman, not only supervises the activities of his subordinates, but keeps watch for wounded soldiers. His duties are very hazardous. The battalion physician supervises the slightly wounded, aided by his immediate staff, and sees that attests are duly made out. He also inspects the severely wounded after their injuries have been dressed. Naturally his watchfulness extends over the state of the communications; in fact, he neglects nothing which bears upon proper care of the wounded.

Fitting the Mutilated for Agriculture.—Thus far perhaps only such armless men as had previously followed the profession of agriculture have been fitted with prosthesis suitable for their occupation and as two-thirds of all thus mutilated were originally tillers of the soil the manufacturers of artificial hands and forearms will long have their work cut for them in this class alone. Yet so great is the need for agriculturalists that many armless men not originally farmers may be so equipped as to be able to do certain kinds of farm work. At present many mutilated men are in doubt as to which activity to take up and the medical profession have excellent opportunities to recommend this course. Charmot, in a graduation thesis (Lyons) published last year, has supplied much useful information along these lines. It has already been stated that two-thirds of the mutilated are agriculturalists and he adds that two-thirds of these have mutilations of the upper extremities. If one-third of the upper extremity remains useful prosthesis is possible. Naturally, a considerable interval must be allowed for reeducation, but this movement has long been under way. Last August there were competitive trials by instructed men in spading and mowing. In regard to digging the surprising fact was noted that men with full arm prosthesis did better work than men with forearm prosthesis and normal men. Such efficiency means that the movements required are much more simple and limited. Men with both types of prothesis could mow 4 ares (about 1/10 acre) in about an hour.

The socalled Jullien tool, affixed to a temporary artificial arm, was used in all the competitive tests. Lyons has in fact become a center for the reeducation of these mutilated workers. Making allowance for the fact that speeding up is inseparable from competitions the results were none the less remarkable. As an offset may be mentioned that the competitors suffered from certain drawbacks. The first experiences are difficult and cause much fatigue. The prosthesis is not permanent. They are depressed naturally, and the first reaction is one of increased depression. They must not be worked too hard and the attitude of those over them should be a sympathetic one.—*Journal de Médecine et de Chirurgie Pratiques*, February 20, 1917.

Commissioner for American Red Cross.—Major-General Pershing has selected Major G. M. Murphy of the St. Louis Army Medical Unit as member of his staff to be commissioner for the American Red Cross in Europe.

Dr. Alexis Carrel of the Rockefeller Institute of Medical Research recently arrived from abroad at an American port on a French line steamship. It is stated that Dr. Carrel and his associate, Dr. H. D. Dakin, will instruct classes of American surgeons who are going to attend to the American wounded in France.

Insurance or Pensions for Soldiers.—Secretary of the Treasury McAdoo has opened a conference at Washington with reference to the subject of possible insurance for American soldiers and sailors. There seems to have been some suggestion of insurance as an alternative to pensions after the war. The comparative advantages of this talked of change will be a subject for consideration by Congress. It has been suggested that pensions based on the system of life insurance policies would solve the problem. That is, the pensions could be paid on stated conditions to the beneficiary as are life policies. A pension could be provided by act of Congress to the soldier or sailor during his life after his discharge at the end of the war; if disabled and unable to work, a proportionately larger amount could be granted; and in case of death while in the military service of the country a pension of a stated amount could be made payable to a person or persons designated

by him at the time of his enlistment. A simple but definite system could thus be developed and would remove the pension system from politics and at the same time insure peace of mind to the men with dependents and who have entered the United States services.

Sanitary Corps for Army.—Secretary Baker has approved an order creating a sanitary corps under the Medical Department of the Army which will include various classes of experts in sanitation, bacteriology, sanitary engineering, and men skilled in supplies, transportation, storage, etc., in connection with medical department work. Creation of this corps will make possible taking over intact hospital and ambulance units already organized in France which, under the law, can not be incorporated in the medical corps, to which the law authorizes the appointment only of graduates in medicine. This will allow the medical corps to make use of other trained men not graduates in medicine. The order creating the corps is as follows: "The President directs that under the authority of the first proviso of section 2 of the act 'to authorize the President to increase temporarily the Military Establishment of the United States,' approved May 18, 1917, there be organized under the Medical Department for the period of the existing emergency a sanitary corps consisting of commissioned officers proportionately distributed among the several grades as in the Medical Corps now established by law, and such enlisted men as the Secretary of War may determine to be necessary. The total number of officers in said corps may be approximately equal to, but not exceed, 1 for every 1000 of the total strength of the military forces authorized from time to time pursuant to law. The officers of said corps will be provided by assigning officers of the Medical Reserve Corps thereto, or by the appointment of citizens of the United States who are found under regulations established by the Secretary of War to possess special skill in sanitation, in sanitary engineering, in bacteriology or other sciences related to sanitation and preventive medicine, or who possess other knowledge of special advantage to the Medical Department. There shall be no grade in the sanitary corps above that of major and no officer of the Medical Corps shall be appointed in the sanitary corps. The number in the several authorized grades of the sanitary corps shall be proportional to the number authorized by law for the corresponding grades of the Medical Corps."

Red Cross Mission to Russia Departs with Speed.—The Red Cross Mission to Russia was organized, equipped with several carloads of hospital supplies, medical, and surgical supplies, first aid materials, etc., and started on its way within five days after designation of its members. The commission is composed of twelve men, including experts in medicine, public health, and social service. Not alone will immediate aid be given, but a study will be made of the most effective methods of giving relief to wounded soldiers and needy and suffering civilian population of Russia. The commission is headed by Dr. Frank Billings of Chicago and Mr. William B. Thompson of New York. As advisers go Raymond Robins of Chicago, Dr. J. D. McCarthy, professor of public health, University of Pennsylvania; Dr. George C. Whipple, professor of sanitary engineering at Harvard University; Prof. William S. Thayer, Johns Hopkins University; Prof. C.-E. A. Winslow, Yale University, and Dr. Wilbur E. Post of Chicago. Harold H. Swift of Chicago and Prof. Henry C. Sherman of Columbia University will manage the food supply question. The rest of the commission is composed of J. W. Andrews, Thomas Thacher, and Dr. Orrin Weightman.

United States Forces to Have Tuberculosis Test.—Since trench warfare in Europe quickly develops tuberculosis in men already infected with the germ, the War Department at Washington has completed arrangements to have all men drafted into the new national army, the present members of the National Guard and regular forces now in America especially examined for tuberculosis. It is assumed that the American forces now in France have undergone the special examination. All National Guard regiments will assemble at Southern camps, hence it will be necessary to draft physicians from other sections of the country to conduct the work on account of the large number of men brought together in the South. Col. George Bushnell of the Medical Corps, U. S. A. has been placed in charge of the special tests, and will be assisted by several hundred examiners. These men will be made members of the Medical Reserve Corps. The work will start with the National Guard and men in the officers' training camps about July 1, and will be continued with selective conscripts as the latter are called.

Dentists Pass Navy Tests.—Twenty-one dentists have passed examinations qualifying them for probationary appointment as dental surgeons in the United States Navy. The examinations required ten days and were both physical and professional. After two years' service in the Navy, probationary dentists are in line for a permanent commission, if their qualifications are proven. The salary is $2,000 a year, with $500 allowance when quarters are not furnished.

Women Give Hospital Unit.—The New York Infirmary for Women and Children, supported by the National American Woman Suffrage Association, New York City, has organized the first mobile hospital unit to be offered by the women of the country to the Government. The director of the unit is Dr. Caroline S. Finley, with an organization committee on which are Dr. Anna von Sholly, Dr. Mary Lee Edward, and Dr. Alice Gregory. The unit will have a force composed of about eighty women. It has now a nucleus of twelve doctors, twenty-one nurses, and three orderlies.

Presentation of an Ambulance.—The A. R. Elliott Publishing Company, publishers of the *American Druggist* and the *New York Medical Journal*, have presented an ambulance to the Montclair, N. J., Chapter of the American Red Cross.

Education of Crippled Soldiers.—Mr. Jeremiah Milbank has placed the building at Twenty-third Street and Fourth Avenue, New York, occupied many years ago by the College of Physicians and Surgeons, at the disposal of the Red Cross for the benefit of the Institute for War Cripples. It will be used for the training and readapting to industry of men permanently crippled and disabled by the war.

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A DOUBTFUL EXPERIMENT IN HEALTH ADMINISTRATION.

FOR over a year the Department of Health of New York City has been carrying on an experiment of health administration on the district plan in the Borough of Queens. The essential feature of the plan is the establishment for each of the four sections, into which the Borough has been divided for the purpose, of a local health department with a medical officer at the head of it, under whose directions visiting physicians and nurses and sanitary inspectors carry on the work incident to school inspection, the supervision of contagious and communicable disease cases, attendance at clinics and milk stations, and food and sanitary inspection. It is a radical departure from the present form of organization in the Department of Health, with its many divisions and specialized functions. It is an attempt to break away from specialization in health work and to revert, as it were, to the small town idea where the manifold health functions are carried on by a health officer with his small local staff.

It does not recognize the need of specialized services, such as supervision of tuberculosis cases, of contagious diseases cases, school inspection, or baby welfare. It assumes that these forms of specialization are unnecessary and that every nurse is, or should be, able to perform all the functions incident to health work. It is an implication that the theory on which the health administration of New York City, and everywhere else, has been so assiduously built up is erroneous, and that over specialization has led to the loss of a sense of reality of the whole realm of public health work on the part of the agents of the Department. It is claimed that under the old departmental system no single officer of the Department of Health has a complete idea of the whole fabric and purpose of health work. It has also been stated that the bureau system led to a great deal of duplication of effort.

There is no doubt that there are arguments in favor of the district plan of public health organization aside from the fact that it is in line with the modern attempts of creating stronger civic sense through small community organization. No one will deny that there is a distinct need of bringing the Health Department of the city closer to the people, of facilitating its contact with the community, and of simplifying many of its procedures. There is need of district offices or health centers where the citizen can register his complaints or make application for the various kinds of permits he needs; and there should be local stations where the agents of the Department, working in certain districts, could report for duty and whence they could go out to perform their functions in the neighborhood. These local health stations might also house the baby clinic and the dental clinic and discharge other functions of the Department of Health. But all this is entirely distinct from giving administrative authority to local health officers. The plan as carried on in Queens, and as contemplated eventually for the whole city, creates a large number of independent administrative units and embraces the possibility of submitting the Health Department administration in the district to local political pressure. It also offers possibilities of substantial differences in discipline and in the emphasis laid on the various kinds of public health procedure.

Whatever the merits and demerits of the system, one thing stands our clearly—that this experiment, the value of which has as yet to be demonstrated to the public, should not be applied to any other borough except that in which it is now being tried. No changes of such sweeping nature as the almost complete decentralization of the City Health Department should be made at the end of an administration, when we do not know what results the November elections will bring forth. There is no reason for extending the plan to any other borough this year and there is every reason against it, particularly at this critical moment in our history when the physicians of the Department may be called upon by the Government for duty in addition to their Health Department work.

INCREASING RECOGNITION OF THE IMPORTANCE OF THE INVOLUNTARY NERVOUS SYSTEM.

THE old, much neglected sympathetic nervous system is rapidly and surely coming into its own. It is taking long strides forward in its march to the front ranks, where it is holding our interest in more and more clinical problems. Eppinger and Hess in their stimulating and very suggestive monograph on Vagotonia have given us a good description which applies in varying degree to a host of individuals whom many of us had been in the habit of labelling, in our lazy fashion, "just nervous," or of even attributing their complaints to "imagination"—and letting it go at that.

An interesting paper along this line is furnished also by Smith under the title of "The Relation Between Overactivity of the Vagus System and Anaphylaxis," in the *Journal of Nervous and Mental Diseases* for January, 1917.

The relationship of the involuntary nervous sys-

tem, with its two great antagonistic divisions, named the vagus and sympathetic systems or divisions of the vegetative nervous system, to the activity of the ductless glands and to many biochemical phenomena, even what is now being referred to as acidosis, is being developed here and there. Many paroxysmal conditions, for which it was difficult for us hitherto to offer a satisfactory explanation, are now being reexamined in the light of our newer viewpoints and concepts, and the reflected light derived from the newer studies on the involuntary nervous system is now being permitted to illuminate many dark places. The reactions to many drugs are now understood and explained with the help of the newer knowledge of the involuntary nervous system. Here we may mention atropine and the belladonna group, adrenalin, pilocarpine, physostigmine, muscarine, choline, and the like. Serum sickness and the reactions to all sorts of foreign proteins (including those derived from bacterial infection, acute and chronic), are being viewed from this angle.

From this standpoint, too, we are now beginning to look upon many of the symptoms due to intestinal parasites, the reactions found in the many food idiosyncrasies, and the phenomena observed in asthma, hay fever and spring catarrh, juvenile emphysema and eosinophilic catarrh, mucous colitis, urticaria and angioneurotic edema, and many other allied conditions. The explanation of even migraine, if approached from this angle, is much simplified when we bring it into relation with localized instability of the involuntary nervous system.

The method of action of the emotions and psychic stimuli—trauma and shock of all sorts—in producing their many visceral disorders, can now be appreciated. The effect of toxins and of the ductless glands is so much the better grasped.

The whole problem of anaphylaxis, infection, and immunity is now being attacked with these new weapons in hand. Here, too, let us not forget to mention the symptomatology which we come upon at puberty, the menopause, and some of the vague complaints found in the aged.

THE RATIONALE OF THE CARREL METHOD.

ALTHOUGH what is known as the Dakin solution is admitted on all hands to have had really remarkable results in cleansing and disinfecting infected wounds, perhaps, the technique of administration thereof devised by Carrel has been the chief cause of its unprecedented success. Even saying this might be going too far; it is the laying open of infected wounds, combined with the Carrel technique, that has rendered Dakin's solution so effective. Most of if not all surgeons at the front unite in stating that infected wounds must be laid completely open; this is the essential procedure. Many surgeons who lay extreme stress on the point, however, are by no means enthusiastic concerning one or any antiseptic in treating infected wounds.

The Carrel technique has been so often described that we need not repeat the description here, except to say that the object of the method is to instil, continuously or intermittently, the Dakin solution into all the recesses and anfractuosities of the wound, into which it is conveyed by fine rubber tubes. The intermittent method is the one generally used, because the continuous instillation, drop by drop, is too tedious for employment, as a rule, under war conditions. The technique is regulated according to shape, location of wound, and so on.

The solution employed, while mildly antiseptic (the reason why it has to be employed more or less continuously for a protracted period), is comparatively innocuous to healthy tissue. Scientifically controlled and measured by the technique devised by Carrel, Dakin's solution appears to fulfill the main postulates of the ideal antiseptic. It disinfects the wound and does not injure healthy tissue, but it is possible that this result may be due to the technique and the opening up of the wound thoroughly, rather than to the solution itself; and it may be that other antiseptics, if employed in the same way, would have much the same effect as Dakin's solution. Personal cleanliness of the surgeon, and especially of the hands of the surgeon, was preached and insisted upon by Pasteur and Lister, and now, as Defosses says in the *Medical Press*, May 30, 1917, Carrel has taught surgeons to wash wounds. Carrel, in fact, has taught surgeons the only effective manner in which a mild antiseptic can be used. A strong antiseptic defeats its own purpose to a great extent.

FUNCTIONAL MITRAL STENOSIS.

IN 1854 Stokes described a spastic form of mitral stenosis after Läennec had expressed the opinion that such an affection was theoretically possible. He was corroborated by a number of French clinicians, the prevalent opinion having been that the condition was due to a spasm of the papillary muscles. It occurred in the absence of a neuropathic disposition and without any increase in the volume of the heart; and its functional nature was especially betrayed by its inconstancy and variability. The question eventually arose, "is this spastic type the sole functional type?" or better, "is there not such a condition as a quasi functional stenosis which has a physical basis?" This question incidentally invokes the possibility of a mitral stenosis murmur without stenosis. These problems all deal with an isolated condition; for of course it is well known that a functional mitral stenosis may accompany aortic insufficiency.

In 1915 Rodriguez of Havana described a type of functional mitral stenosis which is discussed by Ferranini in *La Riforma Medica* for March 24. In this form there is actually stenosis present, but the murmur is transitory and heard only occasionally. The condition is due to a lack of elasticity in the atrioventricular ostium due to the presence of fibrous tissue which indicates a previous prolifer-

ative process of obscure nature—tuberculous or syphilitic. The left atrium shows dilatation, which also appears in the right ventricle, and the radial pulse occurs later than the apex beat.

Ferranini rejects this disease conception entirely, for according to its discoverer, it is a functional condition so called, with a physical basis. It may behave like a functional condition so far as the murmur is concerned, *i.e.* it may be an "acoustically functional" condition, but in general there is no essential difference between Rodriguez's disease and Duroziez's congenital mitral stenosis, because in the latter a murmur is not always audible. Moreover, the alleged causation is the same, as are also the physical signs—dilated left auricle and right ventricle, belated radial pulse, etc. Naturally Rodriguez should be heard in his own defense, and it is to be hoped that he will restate and amplify his conception of the new disease entity.

RADIOTHERAPY OF DEEP SEATED MALIGNANT DISEASE.

In the treatment of deep seated malignant disease, all surgeons and a very large number of physicians agree that in those cases in which the removal of the disease is possible it should be done immediately. Radiotherapy has not effected much in the case of deep seated cancerous growths, except so far as the uterus is concerned. However, John Macintyre, writing in the *Glasgow Medical Journal* of May, 1917, points out that notwithstanding all the skill of the great operators, there is always the possibility of the invasion of the lymphatics for a considerable distance, it may be, for example, through the chest, where the secondary disease cannot be got at by the surgeon. Many surgeons, therefore, by way of prevention of recurrences, introduce tubes of radium into the wound immediately after an operation, and give a sufficiently strong dose to destroy any small portion which may have been missed or which is beyond the reach of the knife.

But in judging of the value of these agents, attention should be drawn to the fact that the stage which the growth has reached and the state of exhaustion may mean that success cannot be hoped for from the application of radium or *x*-rays. For this reason Macintyre has always classified cases of malignant disease under observation, whether treated by the *x*-rays or radium, into four classes: (1) Those which have had treatment and there is no return of the affection. (2) Those cases in which the disease may return once or twice or oftener, but in which it is ultimately controlled. (3) Cases in which we can hope only for amelioration and prolongation of life. (4) Cases in which neither radium nor any other agent is of the least avail.

Thus the experience of Macintyre leads him to the some conclusion as that of other radiologists, that radium and the *x*-rays are in the treatment of deep seated malignant disease by themselves of little use, except in the case of the uterus, but that as adjuncts to surgery they are not infrequently of great value.

Medicinal and Nutritive Properties of Yeast.

Yeast has been found to be rich in vitamines; in fact, it contains an enormous amount of the antiberiberi vitamine. Dr. Morris Stark, in a paper contributed to *American Medicine* for November, 1916, states that cases of pellagra which were treated with autolyzed yeast under his direction showed either a very rapid improvement or else complete disappearance of symptoms in a very short time. The antiscorbutic value of yeast has not been so decidedly proved, although Allan Brown is cited by Stark as stating that autolyzed yeast is of very considerable antiscorbutic value if used in sufficient dosage. Moreover, in the case of rickets in a nursling, it is said that autolyzed yeast has been administered to the mother with good effect on the child, or it may be given to the infant itself. Yeast has been employed with benefit in the treatment of certain skin affections, and is said by some to have a quite wide therapeutic range. Dried yeast, as pointed out by Baruch in the Medical Record of June 16, 1917, has been combined with straw in order to increase the nutritive value of the latter as fodder. The experiments conducted to determine the medicinal and nutritive value of yeast seem to show that it possesses considerable merit in both directions. Its chief value, however, probably lies in its high vitamine content, rendering it, on the whole, one of the most efficient remedies in our possession for the treatment of beriberi, and possibly also of pellagra. The argument that yeast has such a high nutritive value that breweries should be continued mainly for its production will, however, hardly hold water, or even beer.

Tuberculosis in France.

For many years tuberculosis has been more prevalent in France than in, perhaps, any of the European countries, and the conditions of trench warfare have been responsible for a vast increase of the disease among French soldiers. At the beginning of the war the French were compelled to defend themselves without much aid from the British and Belgians, and in consequence could not be very particular as to the physical fitness of their men. Tuberculosis is, therefore, rife among French soldiers, and although the authorities are doing their best to repair the results of the early neglect of careful examination, and are removing all tuberculous soldiers as quickly as possible, the problem of tuberculosis in that country is extremely serious. It has been announced recently that the Rockefeller Foundation with the approval of the French Government and in cooperation with the American Red Cross is about to take steps with a view to curbing the spread of this disease in France. It is understood that the work will be carried on under the supervision of a French central committee and local committees which are being organized throughout provincial France. From all points of view the scheme of the Rockefeller Foundation to restrict the ravages of tuberculosis in France is most meritorious. Not only is it giving powerful aid to a brave ally, but it is helping to lessen a danger to which our own troops will be exposed when they reach French soil.

Plant Secretin.

In an editorial note on the pharmacological action of vitamines which appeared in the Medical Record of June 23 attention was called to the fact that vegetable vitamines had been nicknamed "plant secretin" (by the way, the printer caused this term to appear as "plant secretion"), because of its power to activate the secretion of the gastric glands and pancreas. According to an abstract in the *Hospitalstidende* for May 9 Bickel published in a recent number of the *Berliner klinische Wochenschrift* an article on a new plant secretin, but without reference to the vitamine nature of the latter. The excessive use of vegetable foods by the Germans during the present war has stimulated an intensive study into the complete food values of even the least nutritious plants. Bickel was able to isolate from spinach a substance which exhibited the power of animal secretin. It may be extracted by heat or digestion with HCl, but is destroyed at a temperature of 140 deg. C. Inert, practically, when given *per os*, "spinach secretin" exhibited parenterally can increase the secretion of gastric juice in the stomach pouch of Pawlow dogs. Its behavior recalls that of pilocarpine, but it may perhaps act further through the central nervous system.

News of the Week.

Restricted Diet for U. S. Cabinet.—The wives of the members of the Cabinet at Washington have become members of the food administration and have pledged themselves to one wheatless meal a day as well as serving beef, mutton, or pork but once a day, completely cutting out veal and lamb. Strict economy will be practised in the use of butter and sugar and, instead, fish, fruit, and vegetables will be served in sufficient quantity. Thousands of pledges are reaching the offices of the food administration. An effort is being strenuously made to enroll every woman in the country over sixteen years of age.

Warning Against Burma Bean.—The United States Department of Agriculture has ascertained that certain shipments of beans from the Orient known as Burma or Rangoun beans have entered this country through Canada. These beans to the ordinary glance resemble the navy bean but can be distinguished by their pale, yellowish color and the fine, distinct radiating lines passing out from the hilum or eye. They are pole beans of the lima type, but not suitable for planting here since they are tropical and will not mature in the bean-growing states. They are not fit for human consumption because they yield hydrocyanic acid in amounts sufficient to be injurious to the health of the United States public. The port and border laboratories of the Bureau of Chemistry are under instructions to make examination of all shipments of such beans offered for entry and to effect their detention.

Free Vaccination for the Public by U. S. Health Officers.—Secretary of the Treasury McAdoo has issued the following: To medical officers of the United States Public Health Service, and others concerned: Hereafter as a means of preventing the spread of disease either by military forces of the civil population, any person in the United States may receive, without cost, upon applying in person at those places designated by the Surgeon General of the United States Public Health Service, vaccination against any one or all of the following-named diseases: smallpox, typhoid fever, parathyphoid fever. Medical officers and others charged with the duty of performing such vaccinations should make requisition for the materials necessary therefor, and shall render a monthly report showing the names of those so vaccinated, their addresses, and the date of said vaccination. Upon the request of any person so vaccinated certificate of vaccination may be issued.

A Correction.—In the report of the Section on Diseases of Children of the American Medical Association, the issue of June 9, the title of Dr. Thomas S. Southworth's paper should be "A Familial Tendency to Fat Incapacity in Infancy and Childhood" and not a "Familiar Tendency." This misprint results in the loss of the main point of the author's paper which was to call attention to the fact that an incapacity to digest normal amounts of fats may be hereditary and in certain instances can be demonstrated in several members of the same family.

A Shoeless Nation.—The City Council of Zittau, Saxony, has appealed to its population to go barefooted because leather and shoes will be most scarce during the coming winter. The Wuerzburger student body has demanded of all students, male and female, that they either go barefooted or wear wooden shoes without stockings from June 28 on.

The War and Our Food Supply.—The *Food Bulletin* states that this food question has two parts: one to be solved collectively, and one to be worked out individually. To solve the collective problem New York City has been organized into 46 districts under the supervision of a central food aid committee, representing the School Board, the Mayor's Standing Committee on Foods and Markets and the Mayor's Committee of Women on National Defense. Every district has a central office in charge of an expert who will help on the special problems of her district whether these are reducing waste in the homes of the wealthy or of making more food available in the homes of the wage earners. There will be posted in the central offices lists of the food arriving in the city each day and its wholesale and retail price. If necessary the districts will open public markets and operate public kitchens.

Public Dehydrating Kitchen.—In New York City the Women's University Club, the Mayor's Committee of Women, and the Junior League have begun to can or dehydrate for the community the daily surplus of fruit and vegetables in the markets which would otherwise be wasted. The school lunch kitchen under Williamsburg Bridge has been secured for this work and sorting has already begun on the Erie Pier under the supervision of a committee of women, composed of voluntary workers. The food is shipped to the school kitchen, where canning and dehydrating machines have been installed, and under the leadership of a trained dehydrator, more volunteers preserve it. Each worker will receive a daily work card which will be redeemable in vegetables during the winter. In order to avoid waste it may be necessary to run both the work at the piers and in the canneries

night and day, which will necessitate four six hour shifts of workers. This is definitely a war work and the committee is requesting volunteers to send in to the Women's University Club their names and the number of weeks, days or half days they will be able to serve on the piers or in the cannery or drying kitchen. This is a valuable opportunity to do on a large scale for the community the same sort of work done individually in the home—to perform altogether an important war service.

Our Points of Economy in Food Rations.—At the present time all cereals are important war exports. During the first two years of the war 575,000,000 bushels of wheat were exported from this country and this year the Allies will require 1,000,000,000 bushels of cereals, half of which must be wheat. Hence for home consumption the patriotic food budget would substitute other cereals for wheat when possible—corn and rye bread, oatmeal, hominy, and rice. The two hinging points in the food budget are cereals and meat, as our Allies must have them, and so must we. Substitution is the accepted thing. All crop reports indicate an increased supply of fruit and vegetables. The fats needed by the armies will be lard, bacon, and salt pork; the housewife may substitute any available fat in home food budget. Sugar is another commodity sorely required by our men and neighbors across the water; our substitution here can be maple sugar and honey, of which 6 to 10 ounces a day will meet family requirements.

Feminine Governmental Aid.—A lament has arisen from the women of the land that sufficient opportunities for their services in the war have not been made by the Government. Their opportunity to make good has now come in their application of their energies to the dull, routine work of unending readjustment of the food budget and food supply. It may not be heroic but it will bring as sure results as the work demanded of the men in this time of stress.

Delay of Anti-Drug Law.—The New York State Department of Health has announced that the amendments to the State anti-habit forming drug laws, enacted by the Legislature this year, to become effective July 1, will not go into effect until August 1. The reason given for the original enforcement is an inability under the State finance law to contract in advance for the required printing to comply with the new law's provisions.

Aviation Relief Hospital.—Building of the Aviation Relief Hospital of the National Special Aid Society for the use of aeronautic section of the First Battalion of the New York Naval Militia, has been started at Bay Shore, L. I. The society has not only donated the hospital but also the needed equipment.

Bay Ridge Hospital Contract Given.—This hospital will be erected at Seventh Avenue and Ninety-second Street by the E. E. Paul Company. The main wing will cover the present erection and will cost about $135,000. Later the other buildings will be grouped around the main one, which will contain sixty beds, two free wards, an operating room, and several private rooms. The hospital will be open to all regular physicians and surgeons.

Leland Stanford Men Praised.—The ambulance section of the American field service of Leland Stanford University in France since last February has been mentioned in orders to the division by General Mougill for having shown courage and devotion in efforts to reach wounded at the battles of Verdun and Moronvilliers.

Franking Privileges Asked for American National Red Cross.—The Insurance Economics Society of America has been instrumental in introducing into Congress a bill which would extend the franking privilege to all mail indorsed "Official Business of the American National Red Cross." It is pointed out that inasmuch as the government is the beneficiary of all Red Cross effort, and inasmuch as the handling of Red Cross mail can be carried on by the government without cost, there is every reason why this bill should become law. It would stop the drain on the treasuries of local chapters.

Dr. Oswaldo Cruz, director of public health, Rio de Janeiro, died recently in that city, aged 46 years. Dr. Cruz was one of the foremost hygienists and bacteriologists of Brazil, and through his activity in preventive work he succeeded in three years in abolishing yellow fever and plague from Rio de Janeiro. In 1900 he established an institute of bacteriology and serum therapy in Rio de Janeiro, which in 1908 received his name, and which is one of the leading institutes of parasitology in the world. There Cario Chagas discovered the cause of South American trypanosomiasis, also called Chagas' disease, the organism of which was given the name *Trypanosoma* or *Schizotrypanum cruzi*. In 1908 Dr. Cruz instituted a crusade against malaria and smallpox in Rio de Janeiro. He also put an end to yellow fever as an endemic disease in Brazil. His efforts in the prevention of disease placed him practically as the national hygienic director of Brazil.

Obituary Notes.—Dr. Charles H. Howland of New Haven, Conn., a graduate of Yale University Medical Department, New Haven, in 1880, died suddenly in his office on June 26, from heart disease, aged 67 years.

Dr. Barton Dwight Skinner of Greenport, Long Island, N. Y., a graduate of the Bellevue Hospital Medical College, New York, in 1869, a veteran of the Civil War, and for nearly fifty years a practitioner in Orient and Greenport, died in the Eastern Long Island Hospital on June 22, aged 73 years. Dr. Skinner was visiting physician to the Eastern Long Island Hospital and was a member of the American Medical Association, the Medical Society of the State of New York, and the Suffolk County Medical Society. The last-named he had served for thirty-two years as treasurer, and had also filled a term as president.

Dr. Edward Howard died suddenly at his office in San Francisco, Cal., on June 12, at the age of 58 years. He was former chief surgeon of the Central Emergency Hospital, and at one time head of the Municipal Emergency Service.

Dr. Charles H. Whitman, superintendent of the Los Angeles County Hospital for the past eight years, died at his home in Los Angeles on June 15, at the age of 62 years. He was born in New York, but as a boy settled in the West, and graduated from the Bennett Medical College, Chicago, in 1886, and from the medical department of the University of Illinois in 1890. He was a member of the

Los Angeles Medical Society, a fellow of the American Medical Association, and past president of the Los Angeles Surgical society. He was also a member of the faculty of the College of Medicine, University of Southern California, and a member of the Southern California Psychopathic Society.

Dr. BURNSIDE FOSTER, a graduate of Yale and Harvard Universities, and student in several European universities, died at his home in Saint Paul, Minn., on June 12, after an illness of three months, at 56 years of age. He was former president of the Ramsey County Medical Society, a member of the Minnesota Medical Society, and a fellow of the American Medical Association, an editor for several years of the *Saint Paul Medical Journal*, as well as a clinical professor of dermatology and lecturer on the history of medicine at the University of Minnesota.

Dr. SOPHIE HARTLEY, 84 years old, died at Milwaukee, Wis., on June 15, after an illness of several months. She was graduated from the University of Michigan and practised in Ann Arbor for thirty years.

Dr. E. W. BROWN died at his home in Orange, Tex., on June 16, after a lingering illness, at the age of 59 years. He was graduated from the medical department of Tulane University, New Orleans, in 1882. He was Mayor of Orange for two years.

Dr. JAMES PARTRIDGE of East Missionary Ridge, Chattanooga, Tenn., a graduate of Chattanooga Medical College in 1909 and a member of the Hamilton County Medical Society, died on June 25 after an illness of several months, aged 46 years.

Dr. LOREN E. REX, a graduate of the John A. Creighton Medical College, Omaha, Neb., in 1899, died suddenly at his office in Wichita, Kan., on June 20, aged 41 years. Dr. Rex specialized in eye and ear work.

Obituary.

BROOKS HUGHES WELLS, M.D., F.A.C.S.

NEW YORK.

Dr. BROOKS H. WELLS died on Friday of last week at the Norwalk, Conn., Hospital, of fracture of the base of the skull, received in a collision with an automobile while he was bicycling on the road near his country home at Southport. Dr. Wells was born in New Haven, July 28, 1859, and was graduated from the College of Physicians and Surgeons, Columbia University, in 1884. From the first years of his medical life Dr. Wells devoted especial attention to gynecology, in which specialty he early won distinction. He was professor of gynecology at the New York Polyclinic, and gynecological surgeon to the Polyclinic Hospital; associate surgeon to the Woman's Hospital; consulting surgeon to the Brattleboro, Vt., Memorial Hospital and to the Beth Israel Hospital, New York City. He edited the translation of Pozzi's "Treatise on Gynecology," and for twenty-five years had been editor of the *American Journal of Obstetrics and Diseases of Women and Children*. He was a fellow and vice-president of the American Gynecological Society, a member and ex-president of the Medical Society of the County of New York, and a member of the State Medical Society, the New York Obstetrical Society, the New York Academy of Medicine, and the American Medical Association. He was recently commissioned captain in the Medical Reserve Corps of the Army.

Dr. Wells was, despite his confining labors as editor and practitioner, a follower of the outdoor life; he was fond of riding and wheeling, and was an enthusiastic yachtsman, often spending many weeks sailing along the New England coast. His summer home was at Southport, Conn., where he had passed his boyhood. He married Miss Mary Frances Pomeroy of Southport soon after his graduation, and is survived by her and four daughters.

HERBERT MAXON KING, M.D.

LIBERTY, N. Y.

ON the morning of June 24 Loomis Sanatorium lost its chief and medical director, Herbert Maxon King. Although he had been a tuberculous invalid for many years, Dr. King never ceased work until a few weeks before his last and fatal illness. During the past fifteen years he had had a number of exacerbations but always recuperated from them enough to resume work. The last, however, was complicated by a meningeal involvement from which he failed to rally.

Dr. King was born August 11, 1864, in Adams, N. Y., and was thus in his fifty-third year when he passed away. He graduated from Dartmouth College in 1884 and took his medical degree at the New York University in 1886. He engaged in general practice in New York, became much interested in laryngology and was made instructor in the New York Post-Graduate Medical School. He served for some time in the Marine Hospital Service, and after his resignation from the Government service he took up general practice in Grand Rapids, where he became one of the leading practitioners and attending physician to the Butterworth Hospital.

In 1902 he went abroad to visit and study the European sanatoria so as to be better prepared for his work at Loomis Sanatorium, for the directorship of which he had been chosen that year. On his return from Europe he entered upon his new task with energy and enthusiasm and with a thorough scientific knowledge and medical training. Under his guidance and direction the institution soon rose to be one of the best tuberculosis sanatoria in this country, if not in the world. Building after building was added. Dr. King had the faculty of interesting wealthy people in his great work. An annex for the poor who could pay only a small sum, with a number of endowed free beds for those who could not pay anything, an intermediate division for those of moderate means, an infirmary for the patients needing special medical care and supervision, a number of beautiful cottages, and lastly, a medical building with modern laboratory facilities, were the additions which the Loomis Sanatorium owes to Dr. King. Thus, the three divisions can accommodate at this time no less than 175 patients.

Dr. King's influence as an authority on tuberculosis and as a worker in the antituberculosis crusade has been widely felt throughout the United States. He has made many valuable contributions to tuberculosis literature, among them the article on "Tuberculosis" in Forchheimer's "Therapeusis of Internal Diseases." He was a member of the

New York Academy of Medicine, the National Tuberculosis Association, and many other scientific bodies.

Dr. King was a unique and striking personality. His patients worshipped him and believed and trusted in him implicitly. Many a one has told me that he had felt better after having seen and talked with Dr. King, who seems to have had the power to instill hope for recovery into every patient with whom he came in contact. His associates, friends, and pupils were devoted to him, and with his board of managers his word was law, and seldom if ever did they refuse him a request. They knew his intense interest in the institution and in his patients and that it was his ambition to make Loomis an ideal institution.

Though relatively young in years, Dr. King's life had been full of achievements. His memory will be cherished by thousands whom he has helped on the road to recovery and by the many friends and coworkers whom he inspired by his enthusiasm and devotion to medical science.

S. Adolphus Knopf, M.D.

New York.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

EXCISION FOR GUNSHOT INJURIES—POISONING BY RHUBARB LEAVES — SPECIALIZATION IN ARMY PRACTICE.

London, June 16, 1917.

Gunshot injuries are much to the fore at the present time and the operation of excision is struggling for a return to the position it formerly held in military surgery. In older wars, no doubt, operations were performed for what would now be regarded as injuries scarcely severe enough or extensive enough to demand so radical a procedure. Moreover, wound treatment is often defective. Excision occupied a prominent place until, with the introduction of the bullet of small caliber or dome-shaped tip, injuries of the joints began to be regarded as of minor importance. A revulsion of opinion about this occurred early in the campaign and some surgeons have endeavored to enlarge the sphere of the application of this operation. Experience shows that it may be resorted to in well-chosen cases in all three stages of the progress of a joint injury with a distinct prospect of success under suitable conditions. This implies immediate operation at the casualty station. A certain number of joints may be excised as an alternative to amputation. Comminuted fractures of the upper end of the humerus and of the femur form good subjects for operation. On the elbow a partial excision may often be done. For these procedures the patient must be in condition to bear safely the risks of transport to the general hospital. Intermediate excision must only be undertaken with the definite intention of following it at once by an amputation if the procedure is at once succeeded by local extension of infection and signs of systematic absorption. But excision may be successful as an alternative when the severity of general and local signs indicate amputation as probably the only resource. The explanation of this seems to be in the fact that better drainage can be ensured when the articular ends of the bones have been removed and the wound can be treated more effectively. It is a striking fact that progressive osteomyelitis from the sawn ends of the bone has not developed, especially when the frequency of this complication in ill-drained comminated fractures is remembered. Two special details should be mentioned: (1) Should the synovial membrane be removed? As a rule the answer to this is negative. The synovial surface in itself is better able to deal with an infection than a freshly cut layer of subsynovial areolar tissue; further, when no extensions of suppuration have taken place it forms an effective barrier against such extensions when proper drainage is provided. (2) Should the refreshed bone ends be placed in apposition or be temporarily kept widely apart by extension? The latter plan has been more frequently adopted. The excision of bone should be of the most limited extent in the case of the knee. In this, as in all other joints, excision is not to be regarded as a proper alternative where efficient drainage can be expected to ensure the desired end.

Several cases of poisoning by rhubarb leaves have been reported lately. This is no new experience. As a substitute for spinach, these leaves have long been employed, but those who use them are generally acquainted with their disadvantage. At the inquest this week on a clergyman who died soon after eating cooked leaves it was stated that analysis showed oxalic acid salts were present to the extent of 10 grains to the pound. Dr. Spilsbury attributed the death to poisoning from this and said that in the ordinary way 20 grains to the pound might not be sufficient to cause death, but that amount would be on the border line and might affect some persons while others might escape. Though the use of the leaves as a vegetable is inadvisable, the stalk may be used provided that no soda is employed in the cooking. For a century or more the stalks have been used on an enormous scale as a substitute for fruit and have come to be looked upon almost as the fruit itself. In some very rare cases of idiosyncrasy every part of the plant seems to disagree. In all cases the leaves should be rejected.

Specialization continues to develop in all directions and in military medicine and surgery has increased so far that the authorities have found it desirable to establish special centers for cardiac, cutaneous, and venereal diseases as well as for compound fractures of the thigh and the treatment of disabled men in orthopedic hospitals or in curative workshops. Professor Strauss has suggested special hospitals or departments for cases of gastric disorder and chronic dysentery. He would also like to see special wards for trench nephritis.

Military Epidemic of Poliomyelitis.—Etienne saw an epidemic incidence of acute myelitis in twelve soldiers in a single hospital service. The disease was of the Hiene-Medin type.—*La Presse Médicale.*

Tests of Cardiac Aptitude for Effort.—Lian makes use of the genuflection test, 10 or 12 during a period of 5 seconds, and compares the pulse with the count before the test. The acceleration should disappear after two minutes or earlier.—*Journal de Médecine de Bordeaux.*

Progress of Medical Science.

Boston Medical and Surgical Journal.

June 28, 1917.

1. Loss of Sight from Posterior Accessory Sinus Disease, with Report of Three Cases. Leon E. White.
2. On Cranial Measurements of Persons Dying in Insane Hospitals. Lawson G. Lowrey.

1. Loss of Sight from Posterior Accessory Sinus Disease, with Report of Three Cases.—Leon E. White states that cases of retrobulbar neuritis can be divided into three classes: (1) The acute ones which usually follow the grip or a coryza and are accompanied by severe pain. The pressure of the secretions in the sinuses and the swelling from the inflammation in the mucosa cause construction of the optic nerve and artery. (2) The chronic ones where there is less pain, if any, and where an empyema of one or more sinuses is causing either a pressure on, or a toxemia of, the nerve. (3) Those cases where, on opening the sinuses only a thickened mucosa is found. Here hyperplastic changes are taking place and a periostitis in the sinuses by extension through the optic canal becomes a perineuritis. Patients with retrobulbar neuritis demand most careful attention. The diagnosis is made largely from the findings of the ophthalmoscope, vision and the visual fields. Radiographs may be helpful and should be taken, for even though they show no diseased sinuses, they may show some peculiar abnormality or some faulty development which might predispose to nerve involvement. Enlargement of the blind spot is another valuable and early sign of neuritis. The prognosis is, on the whole, favorable, especially where treatment is initiated before optic atrophy occurs. The success of any treatment must be based on a recognition of the pathology. Each case should receive individual treatment as no line of treatment is suitable for all. Some would get well without any treatment; other cases may clear up under appropriate general treatment, while severe cases demand careful and skilled medical and surgical treatment.

New York Medical Journal.

June 30, 1917.

1. Summary of the Wasserman Tests Done During 1916 in the Philadelphia General Hospital. Randle C. Rosenberger.
2. The Effects of Fatigue Upon the Aged. Arthur L. Fisk.
3. A Plea for the Early Diagnosis and Treatment of Acute Catarrhal Appendicitis. Maximilian Lewson.
4. A Case of Bilateral, Spontaneous Nontuberculous Pneumothorax with Autopsy. Alfred Meyer.
5. A New Method for Auditory Percussion of the Chest. Robert M. Alexander.
6. The Use of Nitrous Oxide Analgesia in Obstetrics with Description of a Simple Apparatus. Thomas H. Cherry.
7. Physiological Therapy in Gonorrhea. Albert G. Geyser.
8. Personal Service to Insane. John W. Meagher.
9. Infantile Pyloric Stenosis. J. Epstein.

1. Summary of the Wassermann Tests done during 1916 in the Philadelphia General Hospital.—Randle C. Rosenberger, director of the clinical laboratory of this hospital, states that from the men's medical ward, where it is almost routine, 1,097 specimens of blood serum were examined, and 259, or 23.5 per cent., were positive. From the women's medical ward, 273 examinations were made with 103 positive, or 37.7 per cent. In 273 submitted from the men's and women's surgical wards, including eye, orthopedic and dental, ninety-two were positive, or 33.3 per cent. The cases in the psychopathic wards included all types of mental cases under observation, toxemias of pregnancy, manias, dementias, including precox, paresis and paranoia, and traumatic and alcoholic confusional insanities. In all, 906 specimens of blood were submitted and of these 198 were positive, or 21.8 per cent. Of the 432 specimens obtained from the nervous wards, 103 gave a positive reaction, or 23.8 per cent. Gynecological cases numbered sixty-nine, of which twenty were positive, or 26 per cent., and of fifty-eight from the men's venereal forty-five were positive, or 75.8 per cent.; 278 were examined from the women's venereal and 127 were positive, or 45.7 per cent. A series was also obtained from the wards of the tuberculosis department. Of these 291 specimens were examined, ninety-eight, or 33.6 per cent. of which gave a positive reaction. From the children's department there were only fifty-six examined, of whom eight, or 14.2 per cent., were positive. Maternity cases numbered 136, of which ten were positive, or 7.3 per cent. In 561 specimens from the insane department, only 154, or 27.4 per cent., gave a positive reaction. Out of a total of 4,430 specimens of blood serum examined, 1,317, or 27.4 per cent. were positive. These Wassermann tests were done entirely by the technician, Miss McNitt. Rosenberger concludes that where an antigen is made carefully, and where titration is done regularly, where the control of each reagent used in the test is properly made, then there should be no great variation in the end result of this test.

Journal of the American Medical Association.

June 30, 1917.

1. The Hospital Opportunities and Responsibilities to the Syphilitic. Henry R. Varney.
2. Etiologic Diagnosis of Chronic Nephritis and Hypertensive Vascular Degeneration. Arthur R. Elliott.
3. Should the Colon Be Sacrificed or May It Be Reformed? J. H. Kellogg.
4. The Hypodermic Use of Chaulmoogra Oil in Leprosy: Preliminary Report of Series A. Nathaniel Bercovitz.
5. Oil of Chenopodium and Chloroform as Anthelmintics: Preliminary Note. Maurice C. Hall and Winthrop D. Foster.
6. Occurrence in Clinical Tuberculosis of Scars from Tuberculous Cervical Adenitis. Stanley L. Wang.
7. The Treatment of Hypopyon Keratitis. F. H. Verhoeff.
8. Further Study of the Effects of Heat on the Eye. William E. Shahan.
9. Cuff Operation for Nephropexy. Charles M. McKenna.
10. Oxycephalus: Report of Three Cases with Operation in One. Arthur J. Bedell.

3. Should the Colon Be Sacrificed or May It Be Reformed?—J. H. Kellogg, after an experience in the treatment of over 40,000 cases of intestinal conditions, during the past ten years at the Battle Creek Sanitarium, in which most of these patients suffered from intestinal stasis, has found that indications for surgical procedure are rare, and that nonsurgical means have brought permanent relief in the majority of cases. He has performed colectomy in but twenty cases, or less than one in 2,000. Kellogg takes the point of view that the colon, instead of being a useless organ, has a decided physiological place in the human economy, but that it has been badly treated by abuse through neglect, ignorance, and departures from biological methods of living. He offers the following nonsurgical means for relief in intestinal stasis: (1) A low protein, bulky diet consisting largely of fruits, fresh vegetables and whole grain preparations. (2) The free use of bran or agar-agar, or a combination of both, at every meal. From one half ounce to an ounce of cellulose daily seems to be necessary to stimulate the bowels to normal activity. (3) The use at every meal of half an ounce to an ounce and a half of liquid petrolatum. In some cases an emulson of liquid petrolatum gives more satisfactory results, and the best results are often obtained from the use of petrolatum (which melts at the temperature of the body). (4) Abdominal massage and special exercises for developing the abdominal muscles. (5) In very obstinate cases the patient takes, three or four times a day, a couple of tablespoonfuls of bran and as much fruit as he can eat. Fresh and stewed tomatoes are found to be especially useful. Lettuce and celery may also be used freely. The patient is allowed to take fruit between meals or whenever he feels inclined to do so. For persons suffering from hyperacidity, nonacid fruits, like bananas, pears, white cherries and melons, are used. Occasionally it is found advantageous to make the diet consist wholly of green vegetables raw and cooked, with bran or agar-agar. This regimen will usually clean off the tongue and get the bowels moving three or four times a day within four or five days. Occasionally the regimen must be continued for a week or ten days. When mechanical obstacles to bowel action, such as prolapse of the pelvic colon and adhesions or other obstructive lesions, are not present, this method will very rarely fail. (6) At first it is occasionally necessary to use an enema at 80° F. once a day. The patient should be required to go to stool on rising in the morning and after each meal. (7) In cases of colitis with a spastic condition of the descending and

pelvic colon, the colon is treated by means of hot saline enemas, and afterward there is introduced into the colon, with the patient in the knee-chest position, several ounces of a liquid culture of *Bacillus bulgaricus* and *Bacillus bifidus*, to which is added a small amount of malt sugar and boiled starch, the purpose being to change the character of the bacteria growing in the colon and thus encourage the healing of the infected mucous surface. (8) In cases in which the lower colon has lost its normal sensibility, various stimulating applications are made, among the most useful of which the electricity applied to the upper part of the rectum or pelvic colon by a bipole electrode; very weak solution of hydrogen peroxid (0.25 per cent.); solution of citric acid (from 0.25 to 0.5 per cent.), and a mixture of equal parts of carbon dioxid and pure oxygen gas (from 200 to 500 cm.). (9) In cases in which the mucous membrane is atrophied as the result of chronic proctitis, it is found very advantageous to introduce into the lower colon at night 3 or 4 ounces of a preparation of petrolatum which melts at the temperature of the body. Such a preparation may be made by melting together equal parts of liquid petrolatum and paraffin. (10) The wet girdle worn at night and a variety of other hydriatic procedures are also found highly useful in dealing with stubborn cases of constipation. Too much cannot be said in favor of bran and liquid pretrolatum used in combination. One supplies bulk, which is necessary to stimulate the sluggish colon, and the other furnishes lubrication which is required on account of loss of the normal mucus due to degeneration of the mucous membrane which results from chronic infection. Kellogg points out that except in cases in which actual and severe mechanical obstruction exists, surgery is not indicated and that the time has come to call a halt on colectomizing and short circuiting operations.

The Lancet.

June 9, 1917.

1. A Lecture on Digitalis in Auricular Fibrillation. Arthur R. Cushny.
2. The Treatment of Some Common War Neuroses. E. D. Adrian and L. R. Yealland.
3. Chylohemothorax from Wounds Involving the Thoracic Duct. T. R. Elliott and Herbert Henry.
4. The Menace of Morphine to China. Wu Lien-Teh (G. L. Tuck).
5. The Experimental Production of Tuberculous Peritonitis in Guinea Pigs Previously Exposed to *x*-Rays. J. J. McGrath.
6. Operation for Loose Semilunar Cartilage. R. P. Rowlands.
7. Three Cases of Septic Infection Due to Otitis Media. W. Wilson and J. W. Barrett.
8. Ligature of Common Carotid Artery. Notes on Three Cases at a Casuality Station. J. J. M. Shaw.

4. The Menace of Morphine to China.—Wu Lien-Teh (G. L. Tuck) states that the year 1917 will be historic as the one in which opium, the curse of China for 75 years, will be officially and finally banished from the country, for in this year the ten-year agreement made between Great Britain and China regarding its importation into China, including the last two seaports of Shanghai and Canton, will come to an end, so that even in the British Settlement of Shanghai the remaining opium shop will be closed by the month of March. The whole nation will rejoice at this happy termination of an awful vice, which once looked as if it might exterminate the Chinese race. That the drug is scarce may be ascertained by the fact that the present price in Canton is at least $15 per tael, with a tendency to rise. Except for some smuggling from Turkestan and Russia by way of Siberia very little opium will in future find its way into China, though the government and customs authorities will still have to exercise, in dealing with this enormously paying business, the greatest vigilance over unscrupulous people. Such hopes cannot be sustained with regard to morphine, for up to the end of last year all statistics point to increased importation into China. The supply of morphine comes mainly from two firms in Edinburgh and one firm in London. The declared exports of morphine from Great Britain alone in 1912 equaled 7½ tons; in 1913, 11½ tons, and in 1914, 14 tons, while in 1916 the estimate is at least 16 tons. In Japan a ton a month was imported for medicinal purposes in 1914. There is a large firm in Japan which acts as agent for the manufacturing firm in London. In 1913 alone this agent in Japan imported 2½ tons of morphine by *registered post* via Siberia. The two other British firms exported 2 tons by the same method, and 1⅜ tons came from Germany, making a total of 6¼ tons in 1913. So far it has been ascertained that neither Japan nor Germany has got the necessary plant to manufacture morphine on any large scale, and the alkaloid has come mostly from firms in Great Britain. Once arrived in Japan the morphine is usually made up into small packets or placed into small bottles, labeled in different ways—e.g., morphine, "white powder," "soothing stuff" "dreamland elixir," etc., and exported openly or smuggled secretly into China by way of Dalny, Antung, and Formosa. Almost every Japanese drug dealer or pedlar in Manchuria sells it in one form or another, and does so with impunity, because no Japanese can be arrested without complaint being first lodged at the Consulate. From these Japanese agents and subagents the drug may be passed on to disreputable Chinese who frequent the coolie depots and inject a solution, usually very dirty, with a hypodermic syringe which may be made with glass, metal, or even bamboo. Rigorous imprisonment for two years is a common sentence for Chinese found with morphine in their possession, but the principal culprits often escape punishment. Wu Lien-Teh reports that during his five years' residence in Manchuria he has seen terrible havoc wrought upon the population by this drug. Thousands of poor people die in the large cities during the winter months, partly from cold but principally from inability to work on account of their morphine habits. The evil appears to be spreading. Enormous profits are made by the dealers in this illicit trade. The profits made on 6¼ tons by the dealers in China in 1913 amounted to about $4,200,000. Unless a strong action is taken by the medical profession, as was done in the case with opium, the morphine will spread further and render futile all efforts in the direction of opium eradication. "What is to be done?" Three opium conferences have already been held at the Hague—in 1911-12, 1913, and 1914. At the second conference 44 out of 46 Powers of the world had agreed to append their signatures to the convention, and at the third conference the United States, the Netherlands, and China deposited their ratifications so as to act forthwith upon the articles of the convention to restrict the evil effects of opium, morphine, cocaine, and allied drugs. Although the representatives of Great Britain were instructed at the second conference to declare on behalf of their government their readiness to ratify, the matter has so far been delayed. The war has put a stop to many things, but not to the fact that morphine still finds its way into China. Two articles in the convention signed on January 23, 1912, states the contracting powers will enact pharmacy laws and regulations restricting the use of these drugs and their salts to medical and legitimate uses only; secondly, controlling the amount or percentage of these drugs or their salts to be used in official and non-official preparations. If proper pharmacy laws are enacted in China the problem of morphine eradication will be really an easy matter. Unlike opium it has never been declared as an article of commerce, and the Chinese Government has always regarded it as a prohibited drug. Once Great Britain refuses to sanction its export, except directly to friendly governments or legally qualified agencies, the question of smuggling will not be such a serious affair. Wu Lien-Teh offered resolutions to the Joint Medical Conference in Canton, January, 1917, as follows: (1) Drawing the attention of the government to the menace of morphine in China and the importance of taking immediate steps against its illegal use by cutting off the supply from the source. (2) Asking the government to enact without delay proper pharmacy laws to regulate the position of dispensers and pharmacists in charge of drug shops, the sale of morphine, cocaine, and other deleterious drugs and poisonous chemicals. The establishment of a central medical council would facilitate matters immensely in eradicating the trouble, and if requested the two Chinese associations (medical) would depute members to render the necessary assistance in drafting the laws for control of the condition and also for the control of the sale and use of hypodermic syringes, since no

Chinese medical man can procure a syringe for any use, and they cannot be imported into China except in the case of *duly qualified foreign medical practitioners*, foreign chemists and druggists, civil hospitals established by government in any province, military and naval surgeons, and medical colleges complying with certain conditions. This gives an opportunity for impostors to do so without punishment, while the *bona-fide* practitioners have trouble in obtaining the drugs under discussion and hypodermic syringes.

British Medical Journal.

June 9, 1917.

1 Status Lymphaticus from the Clinical Standpoint. H. C. Cameron
2. Obstruction of the Ureter by an Abnormal Renal Vessel. R. P. Rowlands.
3. Three Cases of Ureteral Obstruction. G. S. Gordon.
4. A Sanatorium Roll of Honor. Noel Dean Bardswell.
5. Observations on the Pathology of Barco Root (Veld Sore?) With Suggestions as to Treatment. C. J. Martin.
6. A Simple Device for the Growth of Anaerobes on Plates. Herbert Henry.
7. Melena and Hematemesis Neonatorium. Bethel Solomons.
8. Strangulation Following Reduction en Masse (Left Inguinal Hernia); Laparotomy; Recovery. G. A. Harrison.

1. Status Lymphaticus from the Clinical Standpoint.—H. C. Cameron considers that the status catarrhalis has a very definite relation to that somewhat indefinite disorder of later childhood which we call rheumatism; watching many of the children from year to year he has found it impossible to avoid the conclusion that the rheumatic symptoms are added at the moment when the catarrhal nonpyogenic organisms pass the barrier of the hypertrophied lymphoid tissue and infect the blood stream. Then the child, losing suddenly his watery infantile aspect and taking on a longer and slimmer growth, is said to suffer from growing pains, Cameron sums up the situation as follows: (1) That the lymphoid overgrowth so commonly found post mortem in children is no more than an enlargement from the irritation of chronic catarrh in the corresponding mucous membranes. (2) That such children during life show evidence of faulty nutrition or infection of all epithelial structures, hair, skin, teeth, conjunctiva, and the mucous membranes of respiratory and intestinal tracts. (3) That there is usually present a characteristic wateriness of the tissues, which is dependent to some extent upon excessive carbohydrate feeding, and which is the main cause of the vulnerability to infection. (4) That local treatment of the catarrhs alone is likely to be inefficacious, and must be accompanied by a systematic attempt to achieve dehydration and improve the nutrition of the tissues. (5) That the status catarrhalis in the sense defined is a predisposing cause of rheumatism and tubercle, and carries with it a liability to sudden death at the onset of virulent infections, such as pneumococcal infections, measles, or diphtheria.

La Presse Médicale.

May 3, 1917.

Azotemia in Cardiac Patients.—Josué and Parturier discuss the significance of apparent nitrogen retention in cardiac subjects. Numerous data are upon record, but it is easy to interpret erroneously. Thus with a certain degree of azotemia in asystole the exhibition of digitalis tends to reduce it. However, there is asystole without azotemia, and therefore to explain the latter a renal component should be present. But in certain investigations no such factor has been discovered and a hepatic factor has then been suggested. Naturally, with a pronounced renal lèsion the azotemia is readily understood. It is very common for asystolic patients to exhibit marked water retention, as shown by more or less edema. There is no evidence of impermeability of the kidney in these subjects and the azotemia may be accounted for by the fact that the water in the circulation cannot aid in urea elimination. It is instructive to study cases without known renal lesions, for here the two factors, cardiac and renal, do not coexist. In such cases digitalis disembarrasses the body of some of its water and the amount of N is reduced, say, from 0.7 gm. per liter to 0.4 gm., or normal. If no polyuric crisis—whether spontaneous or internal—occurs in these patients, the azotemia increases. It must be remembered that these patients are usually markedly edematous and that as a result the blood and urine are concentrated. A function of the kidney is to concentrate the blood urea, but this has already been done by the disease; hence the inactivity of the kidneys is physiological. The authors nowhere use the term N retention as equivalent to azotemia, and it is evident that the latter is purely relative. If the kidneys are damaged we also see the association of azotemia and oliguria; digitalis also reduces the degree of azotemia by causing polyuria, but cannot bring it below 0.5 gm. per liter. In other words, azotemia here is in part absolute, and means N retention. Whenever we find azotemia absent in asystole we may surmise that the liver is not equal to the work of producing the normal quantity of urea as a result of changes due to stasis.

La Presse Médicale.

May 17, 1917.

Ignored Hereditary Syphilis.—Sabourand recently described a new, pathognomonic dental sign of inherited syphilis, cited in an editorial note in the MEDICAL RECORD for May 19, 1917, page 861. He was promptly informed by a dentist, Drancé, that the so-called "mamillary eminence of the internal aspect of the first upper molars" is known to the odontologist as the "tubercle of Carabelli," a formation which is not known to carry any significance of a syphilitic taint. Friseau in his "Manuel du chirurgien dentiste" observes (p. 289) that "certain molars even have a fifth tubercle situated in the buccal aspect, etc." Other citations of the same tenor lead Sabourand to remark that his thesis of the syphilitic origin of these malformations is not at all compromised by these literary finds. The gifted author has made a special study of the dentition of all infants who succumb in the first, second, and third years. In many of these the teeth supply the sole evidence of the disease. During the last quarter century of his activities Alfred Fournier described many dental anomalies having this origin, and the author has been able to add to this total. Henceforth no one can undergo a general clinical examination without a complete record of the dentition. The subject with these teeth often presents a doubtful Wassermann. Aside from this fact, perhaps a fourth or third of miscellaneous cases present dental anomalies at least suggestive of possible syphilis. In conclusion Sabourand recalls his assertion that only when well developed does "Carabelli's tubercle" point to hereditary syphilis. The partially developed cases were regarded as proving nothing at all.

Treatment of Diphtheria Carriers.—Benard writes chiefly in the interest of a new insufflation devised at the Pasteur Institute, which contains dried antitoxin, new salvarsan, powdered benzoin and bismuth subcarbonate. This is used on the healthy convalescent and diseased carrier and is in no wise burdensome either to physician or patient. It is especially adapted to military requirements, for tedious segregation is done away with. Suspects can be active in the ranks if due precautions are maintained. We get the impression that war conditions have brought the subject of carrier disinfection to a head.

Journal de Médecine de Paris.

May 19, 1917.

Constipation in Soldiers.—Martinet states that constipation may be endemic in bodies of troops. The causes are self-evident—absence of fruits and vegetables from the diet and presence in the latter of substances like rice and cheese, which leave little residue; sedentary occupation, psychic inhibition, etc. This state of affairs, as far as diet is concerned, cannot be much improved There seems to be no reason for withholding dried fruits, as prunes, raisins, apples, pears, etc. Evaporated potatoes would also be of value in this connection. Bread "on the brown" containing some of the bran of wheat, or an admixture of rye or barley, would seem a logical resource; for white bread has

been ranked with alcohol and syphilis as an army plague. Agar agar is available, for it can be obtained in solid form and is readily transported. Pure cold water on rising is also a practicable resource, at least for a part of the time. A manual of gymnastics consisting chiefly of exercises while recumbent, in both prone and supine positions, for imparting vigor to the abdominal muscles is recommended. Lying on his back the subject alternately flexes the lower limbs on the trunk and the body on the thighs. In the prone position he raises himself on the hands, knees, toes, etc. Internally mineral oils are of use, especially in spastic constipation. Belladonna pills are valuable in atonic constipation. For emergencies castor oil or sodium sulphate is practicable. These four represent about all the available drugs, for others are liable to abuse and would tend to create a drug habit. The author, however, thinks a pill containing rhubarb, cascara euonymin, etc., might be a safe resource.

Dangers of Saccharine Addition to Food Articles.—A discussion of this subject took place last winter before the Therapeutic Society. Owing to the necessity of rationing sugar, saccharine is naturally suggested as a flavor, a course approved of by the government. The society would call the latter's attention to the disadvantages entailed by such a practice. In the first place, saccharine, with no food value, displaces in some dishes a nutritive article—some form of sugar—the addition of which often gives appreciable food value to substances naturally wanting in this respect, as tea. If saccharine could be regarded as a mere condiment it could have its place as a seasoning for nutritive articles, but it is a true drug with a physiological action unfavorable to the human organism, in that it is able to antagonize the action of the digestive enzymes and thus retard digestion. It has been shown to inhibit digestive hydrolysis, especially in the stomach. Its presence in dentifrices has even been made the subject of a crusade. The saccharine addition is for both antiseptic quality and flavor, but prolonged exposure of the teeth to this substance is pronounced injurious. It is true that Germany sanctioned the dietetic use of saccharine, but we have no means of knowing how the Germans feel about it today. At present saccharine is accused of causing hemorrhage of the stomach in the absence of other known factors.

Le Progrès Médical.

May 19, 1917.

War Bread and Maize.—Weill and Mouriquand publish the results of some experiments on the practicability of maize as the chief constituent of bread and the possible relations between maize diet and pellagra. The authors had already shown that decorticated cereal grains and legume when fed to pigeons and fowls as exclusive diet lead to paraplegia and death. The cause of the latter is believed to be the depreciation of a ferment contained in the cortex of the grains, which is as essential to nutrition as sufficient calories, protein, and mineral matter. The authors fed whole maize to a pigeon aged 6 months as sole diet for a period of 240 days. The bird, shut up in its cage, showed great activity and vigor, was in perpetual motion, pecked at its bars and seemed "mad." Control pigeons living exclusively on entire wheat, barley, rice and oat grains were well nourished and vigorous, but showed no such exalted state as the maize-fed bird. The ration of the control birds was cut down to one-sixth or one-seventh, until death occurred from inanition; no beri beri syndrome appeared at any time. This held good of all the grains, but not in the same degree. Rice seemed by far the best value for prolonged survival (80 days as against 31 for wheat, 29 for barley, etc.). The maize-fed bird was now tested and survived 88 days. When a mixture of whole grains was heat sterilized (120° C.) the birds survived 90 days and died paralyzed, but a certain addition of raw grains prevented beriberiism. One-third part of raw grains appeared to give perfect protection. Pigeons were now fed on decorticated, highly-milled maize. The latter was refused and the birds were artificially crammed with it. After a period of sluggishness flight became impossible (33rd day) and death preceded by paralysis soon followed. Emaciation had also taken place. There were changes in the femoral epiphyses and adrenals. Hence, both cooking and decortication deprive the grains of vitamines or ferments. In regard to pellagra we know that recently it has been seen in association with scurvy after maize flour diet. The zeïsm or maize intoxication of Rhodesia appears identical with pellagra. In Belgian Congo beri beri patients showed also a pellagrous syndrome. This association of three deficiency diseases in subjects fed on highly-milled maize cannot be a mere coincidence, but the interrelations of the three are very puzzling. Pellagra is in part a skin dystrophy, perhaps analogous to the shedding of the feathers of fowls with beri beri.

Ratbite Fever. — Laroche and Durozoy described a case of ratbite disease in France. The man was bitten on the wrist. Three weeks later there developed a large nodule as large as a silver dollar, accompanied by lymphangitis, and epitrochlear and submaxillary adenopathy.—*La Presse Médicale.*

Dysenteric Esophagitis.—Ameuille and Périn in the course of an epidemic of bacillary dysentery found two patients with a form of dysphagia so severe as to suggest hydrophobia. Both cases ended fatally and autopsy showed very elongated ulcerations suggesting the ulcers of dysentery.—*Le Progrès Médical.*

Areflexia in a Subject with Head Wound.—Souques relates the case of a soldier wounded in the head by a fragment of shell in which a meningitic syndrome developed. Total areflexion developed, due apparently to compression of the nerve roots or to neuritis of the same.—*La Presse Médicale.*

Treatment and Cure of Myopia.—Bacchi in order to cure myopia advocates progressive pressure on the eyeball in the anteroposterior direction by means of the apparatus of Roger d'Ansan. The value of this procedure is often very convincing and the author has demonstrated cases before the Academy of Medicine.—*La Presse Médicale.*

Wassermann Reaction and Medication.—Picado discovered that intravenous injections of collargol could affect the blood Wassermann test in either direction, intensifying (reactivation), or inhibiting. He believes that it should not be made when the patient is under the influence of any form of medication whatever.—*Le Progrès Médical.*

Twenty-four Chancres in One Subject.—Butte and Simon saw a subject with multiple chancres, some of which were seated on the glans and in the sulcus, while others in close juxtaposition formed a sort of mosaic on the pubes. All appeared simultaneously.—*Le Progrès Médical.*

A New Microbean Cause of Rheumatism.—Chantemesse and others have isolated and cultivated a hitherto undescribed microorganism which can set up in mankind articular rheumatism. The source is not mentioned. In animals it has caused arthritis and endocarditis. The new organism is a socalled mycobacillus, intermediate between the bacilli and moulds.—*La Presse Médicale.*

Progress in Our Knowledge of Alkaptonuria.—In a recently published monograph on this affection by Söderbergh two new facts are given prominence. First a positive Wassermann may be present, not due to associated syphilis or other known cause. Second, the underlying condition may be expressed as a special form of osteitis deformans. — *Correspondenz-Blatt für Schweizer Aerzte.*

Graves' Disease in Italy.—In reply to a question by "Subscriber No. 5071" in reference to the treatment of this affection, the editor—who terms the affection in question the Basedow-Flaiani disease—prescribes country life with prohibition of coffee, tea, tobacco, and alcohol. Much emphasis is placed on stable galvanization of the sympathetic. Bromide and digitalis or strophanthus are useful. Surgery is the last resort.—*Il Policlinico.*

Production of Phenol by Microorganisms.—Berthelot looks forward to the discovery in the human intestinal flora of a bacillus which secretes phenol in relatively large quantities—tenfold that of known phenol producers. With thyrosine as sole nutrient medium it may furnish in a fortnight at 37° C. 800 mg. of phenol per liter.—*La Presse Médicale.*

Book Reviews.

BOTANIC DRUGS: THEIR MATERIA MEDICA, PHARMACOLOGY AND THERAPEUTICS. By THOMAS S. BLAIR, M.D., Editor Medical Council; Author of "Public Hygiene," "A Practitioner's Handbook of Materia Medica and Therapeutics," and "Pocket Therapeutics"; formerly Neurologist to Harrisburg (Pa.) Hospital. Price, $2.00. Cincinnati: Therapeutic Digest Pub. Co., 1917.

BY the cutting off of German products, all countries have been deprived to a great extent of the synthetic medicaments. A great many physicians do not regard this deprivation as an altogether unmixed evil. In the first instance, it will spur the chemists of other countries than Germany to manufacture synthetic remedies, and it may also show how excellently the sick can get on without some of them.

Old-fashioned drugs, and especially plant drugs, have been almost wholly neglected since the introduction and huge development of the manufacture of medicaments by synthetic methods, so much so, indeed, that physicians of today know little about them. In this book Blair has presented in concise form a convincing argument for the restudy and enlarged use of galenicals. The work is peculiarly apropos and moreover it would seem to be the duty of the medical profession to study galenicals scientifically. The author has written a thoroughly practical and reliable work on the subject and one that may be utilized by the practitioner with great advantage to the patients and himself.

THE OFFENDER AND HIS RELATIONS TO LAW AND SOCIETY. By BURDETTE G. LEWIS, A.B., Commissioner of Correction, City of New York. Illustrated. Price, $2.00 net. New York and London: Harper and Brothers. 1917.

THIS work, as its title denotes, deals with the relationship of the offender to law and society. It is written by a man who is intimately acquainted with his subjects, an acquaintance gained by a special *inherent aptitude* for this branch of study, developed and sharpened by experience, and discusses the matter in all its complicated phases. The book may be highly recommended to all those who have the interests of their fellow creatures close at heart. Most of the work is of particular concern to the medical profession.

DISEASES OF THE GENITO-URINARY ORGANS AND THE KIDNEY. By ROBERT HOLMES GREENE, A.M., M.D., Professor of Genito-Urinary Surgery, Medical Department of Fordham University; Genito-Urinary Surgeon to the City and to the French Hospital, New York City; Fellow of the American Association of Genito-Urinary Surgeons; and HARLOW BROOKS, M.D., Professor of Clinical Medicine, University and Bellevue Hospital Medical School; Visiting Physician to the City Hospital and to the Montefiore Home for Chronic Invalids, New York City; Consulting Pathologist to the Muhlenberg Hospital, Plainfield, and to the Hackensack Hospital, N. J.; Consulting Physician to the Beth Israel and to the Union Hospitals, New York; to the St. Mary's Hospital, Hoboken; to the Greenwich Hospital, and to the New London Memorial Hospital, Conn. Fourth Edition, thoroughly revised. Price, $5.50 net. Philadelphia and London: W. B. Saunders Company, 1917.

ALTHOUGH the major portion of this edition is unchanged from the previous issue, yet sufficiently necessary additions and revisions have been made to modernize the work. Notable among the added matter are new chapters or sections on the value of the *x*-ray in urological diagnosis, tests showing the degree of kidney permeability, anesthesia in urology with full description of Heinrich Braun's method of conduction anesthesia with its modifications, syphilis of the bladder, and elephantiasis of the scrotum. The less important additions and revisions are, reference to the Mendelian principles of heredity in the consideration of tumors of the urogenital tract, the description of modern instruments such as the Goldschmidt urethroscope, the diathermic high frequency apparatus for fulguration, and the complement fixation test in gonorrhea. The test dealing with renal lesions has been modernized by giving due attention and consideration to the recent advances in the determination of retained nitrogen blood content. The authors take a very practicable viewpoint when they write: "While there can be no question whatever but that much is yet to be learned from close study by nitrogen partition methods, we are of the opinion that for clinical purposes, and taking into consideration the time and expense necessary for the more elaborate determinations, the simple determination of the total retained filterable nitrogen is quite sufficient." In the discussion of uremia the authors believe the prognosis to be grave when the systolic pressure is low, the diastolic pressure high with a resulting low pulse pressure. Other additions obtrude themselves upon the reviewer because of their absence in contemporaneous works. For example, in the paragraph on the seminal fluid we are cautioned to bear in mind that even though visibly viable spermatozoa are present, ability to impregnate does not follow since certain serum affinities must also be present for the phenomenon. A curious fact, noted in general considerations of tumors of the urinary system, is that a large number of chemical examinations of many urines from patients suffering from cancer showed all to contain a large increase in the amount of neutral sulphur. In general this fourth edition is complete, well balanced and judiciously illustrated.

LA PROTHÈSE DES AMPUTÉS EN CHIRURGIE DE GUERRE. Par A. BROCA et DUCROQUET. Collection Horizon. Prix, 4 francs. Paris: Masson et Cie., 1917.

THIS little work comprises 208 text figures. The accompanying text is not extensive. In the publishers' notice it is stated that the prosthetic apparatus is "more or less American" in origin. The socalled "American nose" a socket for the reception of numerous workmen's tools competes with the old vice system. There is a radical distinction between the artificial hand for general usage—in eating, dressing, etc.—and the special artisan's prosthesis which varies largely with his calling. Such prosthesis is available for gardeners, wine growers, packers, plumbers, leather workers, brush makers, carpenters, chauffeurs, motormen, etc. In addition to "terminal tools" workers who have undergone amputation above the elbow have an extension arm and elbow which serves equally for both kinds of terminal prosthesis.

HYSTÉRIE-PITHIATISME ET TROUBLES NERVEUX D'ORDRE REFLEXE EN NEUROLOGIE DE GUERRE. Par J. BABINSKI ET J. FROMENT. Collection Horizon. Prix, 4 francs. Paris: Masson et Cie., 1917.

ANY work by Babinski, perhaps the logical successor of Charcot in French neurology, should be well worthy of study. The present volume is virtually three monographs in one, of which the first deals with hysteria, the second with reflex disorders and the third with the association phenomenon. Babinski, who coined the word "pithiatism," uses it here as a synonym for hysteria. Literally it means "curable by suggestion." However happy the conception of the term, it has never come into general use, so that the author retains the term hysteria in the title of the work. The volume is a rich one, the 267 pages of text comprising an extensive bibliography. Eight photographed plates represent numerous separate pictures, and these with 37 text figures illustrate the text quite liberally.

THE SURGICAL CLINICS OF CHICAGO. April, 1917. Volume I, Number 2. Published bi-monthly. Price, $10.00 per year. Philadelphia and London: W. B. Saunders Company.

THIS number of the Chicago Surgical Clinics contains presentations of cases from fifteen clinics, some thirty-five cases in all, in about two hundred and twenty pages, including numerous illustrations. It goes without saying that the presentations for the most part are very brief. It is very interesting to see how extensive is the use which is being made of blood transfusion, especially as a prophylactic measure. Of particular interest are the clinics on pernicious anemia and congenital dislocation of the hip. A number of interesting cases are described in this number and many details of operative technique presented in concise and clear fashion.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, Held February 27, 1917.

DR. GEORGE W. KOSMAK IN THE CHAIR.

Attempted Abortion in the Absence of Uterine Pregnancy.—Dr. ARTHUR STEIN reported this case. He stated that in view of the steadily increasing number of criminal abortions all over the civilized world it was probable that not only was attempted abortion in the absence of pregnancy not as rare as was sometimes supposed, but that it was of considerable gynecological importance on account of the associated dangers which were even greater than those of criminal abortion where pregnancy actually existed. In studying this subject it was advisable to make a distinction between the following two groups of cases: (1) Cases of attempted abortion in which the uterus was empty and pregnancy did not exist. (2) Cases of attempted abortion in which the uterus was empty but in which there existed an ectopic pregnancy. The very high mortality which according to recent investigations was about 43 per cent. was explained by the reckless repetition of the disappointed woman's futile efforts to interrupt a fancied pregnancy. In those women who were already endangered by the existence of an ectopic pregnancy the sequelæ of attempted abortion were likely to prove especially serious if not actually fatal. The following case illustrating the dangerous character of attempts to induce the premature expulsion of the ovum in an erroneously assumed pregnancy came under the writer's personal observation at the Harlem Hospital, in Dr. Brodhead's service The patient was 43 years of age, a V-para, who attributed a six weeks' retardation of the menstrual flow to pregnancy which she had attempted to arrest by the introduction of an alum stick into the uterus. This was followed by a chill lasting an hour and then by fever. There was persistent vomiting for a day with general malaise. The patient complained of hypogastric pains. A considerable amount of bloody discharge was passed from the vagina. When first seen, three days after the attempted abortion, the patient was in a serious condition. A diagnosis of infected, incomplete abortion was made and the uterus was curetted under all necessary precautions. A small amount of tissue with a fetid odor was removed. At night following the curettage, the patient's temperature rose to 105.6° F., and three days later she died of general septic peritonitis. Post-mortem examination showed no signs of an existing pregnancy, either macroscopically or microscopically.

Dystocia Due to Large Fibroid of Cervix: Craniotomy—Exhibition of Specimen.—Dr. STEIN reported this case. He stated that the patient, a woman 37 years of age, a primipara, was sent to the Harlem Hospital on January 28, 1917, with the history of having been in labor over 72 hours, the amniotic sac having broken on January 25. The patient had felt no life for twelve hours. High forceps had failed to engage the occiput and the patient had been given two doses of pituitrin of one c.c. each at hourly intervals without inducing strong contractions. At the time of her admission to the hospital she was partly unconscious owing to the fact that she had been under narcosis for several hours previous to her admission. Her pelvic measurements were normal. There was marked edema of both legs and the outer genitals, especially of the labia majora. On inspection a large tear of the perineum was seen, involving the sphincter and reaching into the rectum. The uterus was tetanically contracted, apparently due to the injections of pituitrin. A typical Bandyl's ring was visible. The uterus was found to be lying over toward the right side of the abdomen. No fetal heart sounds could be heard; owing to the tetanic contractions of the uterus no exact diagnosis of the child's position could be made. The head was felt firmly engaged in the brim of the pelvis. In view of the conditions described, perforation of the head and extraction of the child was decided upon. Upon attempt to extract the child, in spite of the application of all kinds of appliances, regular forceps, basiotribe, etc., it was found impossible to move the head as much as one-half an inch. After continuing efforts unsuccessfully for about an hour after perforation Dr. Stein was called to see the patient. An effort to introduce the hand into the uterus and perform version failed utterly due to the tetanic contraction of the uterus. That also was one reason why embryotomy was not performed. Because of the unavailing efforts to extract the child a diagnosis of a large monster or a tumor of the pelvis was made. In view of the many vaginal and intrauterine manipulations that had been resorted to, an abdominal cesarean section was not regarded as the correct procedure in this case. Further attempts to extract the child through the vagina were made which at the end of forty-five minutes were successful. A Simpson forceps, after severe traction and pressure from above, brought the crushed head out of the vulva. At the same time hooks were placed in the axilla and the child was with great difficulty extracted. The child without the brain weighed 7 pounds 5 ounces. The placenta was quickly expressed and a rapid suture of the total laceration of the perineum performed. The uterus was packed. A large tumor was then found to be lying in the right side of the pelvis extending into the larger pelvis where it could easily be felt. The patient was placed in bed, stimulated, and infused with saline solution. In spite of all treatment she died from shock four hours after confinement. The specimen consisted of the puerperal uterus. Attached to the right and posterior side of the cervix there was an extremely hard myoma, 6 by 4 by 3 inches in dimension. The myoma was very hard, firmly attached to the uterus, and had developed upward in between the two layers of the broad ligament.

Dr. GEORGE L. BRODHEAD said he had seen patients of the type reported by Dr. Stein who, not knowing whether they were pregnant or not, decided to take no chances and attempted to produce abortion. At the Harlem Hospital they saw many of these septic abortions and had had a few in women who were not pregnant. The second case presented by Dr. Stein was interesting not only in itself, but also in that it brought out the importance of antepartum diagnosis. If this patient had been thoroughly examined before she went into labor the existence of the tumor might have been revealed and a cesarean section performed. It also illustrated how one might lose a living infant by delay in making an accurate diagnosis. When the conditions were present as Dr. Stein first saw them the problem was merely how to get the child out with the least trauma to the mother.

Dr. ASA B. DAVIS said that some eighteen or twenty years ago a patient came under his care for a short time who gave a history of several previously induced abortions brought on by passing a sound into the uterus. This time this plan had been repeated for several days. He did not examine the patient but sent her to the Lying-in Hospital. The patient was curetted. Evidence of abdominal hemorrhage was found; upon opening the abdomen a ruptured ectopic pregnancy was revealed. The operation was completed as well and as expeditiously as possible. The patient died within forty-eight hours of sepsis, hemorrhage, and shock.

Dr. HIRAM N. VINEBERG said he had seen so many cases of ectopic pregnancy in which abortion had been attempted that he once made the statement that these cases might have been made ectopic by the passage of sounds at a very early stage of conception. It seemed possible that this theory might be correct and that the passage of the sound might have something to do with the passage of the impregnated ovum through the tube. None of the cases of this kind that he could recall had become septic and all as far as he could remember recovered after operation.

Rupture of the Fetal Liver During Breech Extraction.—Dr. GEORGE L. BRODHEAD reported the case of a primipara, 26 years old, with a normal pelvis, and with a child presenting by the breech. The cervix became fully dilated and the breech descended, but as the fetal heart was increasing in rate and as the mother's pulse was more rapid and she was becoming exhausted, extraction was performed. The legs were fully extended and were brought down with considerable difficulty. There was a double nuchal hitch and in the endeavor to extract the arms, the child's body was rotated in both directions

several times. The arms were extracted and the head came out easily. The infant weighed 8 10/16 lbs. and soon cried vigorously. Until a few hours before the child's death, on the third day, its color was good, it nursed well, and seemed to be doing nicely. Then the breathing became shallow, the child became very pale, and death ensued. The autopsy revealed free blood and clots in the peritoneal cavity: there was a rupture of the upper lobe of the liver just under the diaphragm, the capsule being ruptured over an area as large as a half dollar, about ¼ inch of the liver tissue being torn away. With such an extensive laceration and with so much bleeding, it was remarkable that the child was apparently so well for the three days following birth. They were all of the opinion that in all probability the rupture occurred during the manipulation of the body which was necessary in order to extract the arms, but no undue force was used. The trauma in their experience was unique and the case was reported for its rare interest.

Traumatic Injury to Fetal Liver During Breech Extraction.—Dr. GEORGE L. BRODHEAD reported the case of a primipara, at full term, aged 25. She had been in labor 29 hours. The pelvic measurements were normal, the position was R. S. A. and the os was fully dilated. As the pains were few and not strong, the child was extracted. The legs were extended, and brought down, and the extraction was comparatively easy. The child nursed properly and acted like a healthy infant up to within a half-hour of the time of death. There were no signs of hemophilia. About an hour after the last nursing the child became very pale and died within a half-hour. The autopsy was performed by Dr. C. S. Cassasa who gave the following report: The skin and mucous membrane of the lips very pale. Rigor mortis was very complete. Post-mortem hypostasis was scant. The lungs were serated throughout. The left ventricle was contracted. The heart's blood was very scant and fluid. The umbilical cord was normal. The abdomen contained about six ounces of fluid and clotted blood. The entire renal impression of the liver was occupied by fluid blood, the location of which was between the liver substance and the capsule. Examination of the capsule over this area showed a circular defect about one-sixteenth of an inch in diameter. Gentle pressure over this collection of blood caused an escape through the defect. A sagittal section was made through the diaphragm and liver. At the junction of the posterior layer of the coronary ligament to the liver, clotted blood and lacerated liver tissue were found. The laceration extended ½ inch in the direction of the ligament, its depth being about 1/32 inch. The other organs were normal. One of the interesting features in this case, as in the preceding, was that the child lived three days with apparently no symptoms, and then suddenly died.

Dr. HIRAM N. VINEBERG recalled an instance of rupture of the liver in an infant. In this case the delivery was normal, and the baby was otherwise normal. It died three days after birth and at autopsy a large hemorrhage from the liver was found. In this instance the hemorrhage was certainly not due to hemophilia, as there was no such history in the family and the woman had previously given birth to perfectly normal children.

Dr. GEORGE W. KOSMAK said that if they could get more autopsies they would probably find that these cases occurred more frequently than they had thought. He recalled an instance in his private practice in which the baby died suddenly and Dr. Losee performed the autopsy. He found a large hemorrhage into the abdominal cavity. In this instance the delivery had been precipitate and the baby born in the bag of membrane. Dr. Losee attributed the hemorrhage in this case to asphyxia, and his theory seemed plausible. In reference to breech extractions, in view of the frequency with which the arms of the child were extended, a safe rule to follow was to deliver the arms as soon as the tip of the scapula was born. In that way a good deal of trauma might be saved.

Full-Term Abdominal Pregnancy with Macerated Fetus: Streptococcus Infection of the Sac and of the Uterus.—Dr. ASA B. DAVIS reported this case. The patient was 34 years old, gave a good family history, and had never had a severe illness, nor any operation. She was married in 1900, and her first child was born in March, 1902, after a normal pregnancy. Six years ago she was treated with tampons for what was said to have been "falling of the womb." She denied any contraceptive methods. Since the beginning of the present pregnancy there had been a rusty mucus discharge at intervals of a week or ten days and especially at what should have been the dates of menstruation. Full term delivery was expected about January 1, 1917. Fetal life was felt from October, 1916, until January, 1917, but none after this date. After the first three months of pregnancy there was no nausea or vomiting until January 22, 1917, when she had three attacks, and again January 26, 1917, when she had two attacks; she then had also an attack of faintness with partial loss of consciousness which continued about fifteen minutes. A sense of unusual pressure in the abdomen had been noticed for the past two weeks. On January 25, the temperature was 100.2° F., pulse 110, and respirations 28. In the late afternoon of January 26 more distensions of the upper part of the abdomen was observed. On January 27 the temperature was 101.4° F., pulse 140, and respirations 32. The blood pressure was 130. The blood examination showed red cells 3,810,000, hemoglobin 68 per cent., color index 0.6, leucocytes 21,200, polymorphonutrophiles 91. The diagnosis rested between a uterine pregnancy past full term with gas bacillus decomposition, or an abdominal over-due pregnancy with a like decomposition of the fetus. Against the first theory was the fact that no membrane could be felt in the uterus; gas contained under such great pressure should have bulged the membranes downward, so that they could have been felt readily at the internal os or lower. The uterus was curetted. The cavity was roomy and crowded well over into the left iliac fossa. It was empty save for a considerable amount of grumous material, old clots, and fibrin mixed with clots. It had the macroscopial appearance of material removed in a case of incomplete abortion of rather long standing. The uterine wall was soft and the curette did not readily come down upon firm muscle. The abdomen was opened and no intestines or omentum came into view at any time. An ovoid mass, dark, dirty green in color, filling the whole abdomen and adherent to the abdominal wall presented. The wall of this mass appeared to be of considerable thickness and under great tension. During the separation of the abdominal wall from the mass on the left side there was a sudden hissing report, quite loud and similar to those familiar to the automobilist. It was then found that the sac was ruptured at its upper mid-portion anteriorly and a large quantity of dark, thin, foul smelling fluid was escaping. Cultures were taken and, before and after this happened, the laboratory reported *Streptococcus viridans*. No gas bacilli were found. The opening in this sac was enlarged and a well-formed female fetus was found with breech above and to the right, dorsum right, curled down to the left with vertex left and below at the site where ballottement had been found prior to the operation. The fetus was not much decomposed. It was removed and the placenta was found spread out over the lower and right portion of the cavity, adherent to the cecum and neighboring intestinal and abdominal wall. The entire wall of this cavity was of a dark, dirty greenish color. This was probably an early tubal abortion. A history of sterility over a considerable time was quite apt to be found in cases of ectopic pregnancy. At this time, March 7, the patient's blood count showed 2,940,000 red cells, hemoglobin 58 per cent., leucocytes 17,200, polymorphonuclear 75 per cent. An early recovery was now looked for, though it was possible that an abdominal hernia might develop which could be readily dealt with. Had the sac and placenta been removed at the time of the operation, it was probable that the patient would not have survived more than a few hours.

Dr. VINEBERG said he had an experience of this kind in a woman who had gone to full term and beyond. She had been under observation in a hospital of this city for several days where a diagnosis of inoperable malignant growth had been made. A month later she came under his observation. With the history given and the physical signs it was not difficult to make a correct diagnosis. At operation the placenta was found adherent to the abdominal wall and the hemorrhage was

very profuse. By working rapidly he had succeeded in ligating the main blood vessels and controling it. He then removed the entire placenta, but the membranes were inclusively adherent and these he sutured into the parietal peritoneum and packed the cavity with iodoform gauze. The fetus, weighing over nine pounds, was dead. The patient made a satisfactory recovery.

Dr. A. J. Rongy said that Dr. Davis' case recalled an interesting case that came under his observation recently. This woman was about 25 years of age; married four years, and had been operated on for ectopic pregnancy by him about two and one-half years ago. Eight months later she returned, being about three months pregnant. Examination at this time and about three months later showed her condition to be normal. In the seventh month she had a severe attack of sharp pain in the abdomen. A neighboring physician was called and administered a hypodermic of morphine. The following day she felt better, but felt no fetal movements. During the eighth month she consulted the speaker with reference to her condition. On examination she presented a clinical picture of a woman who was in the eighth month of pregnancy; she suffered no pain or tenderness anywhere. He informed her that the fetus was most likely dead and that she should wait ten to fourteen days, and if labor did not set in it should be induced. As labor did not ensue at the expiration of this period, she was admitted to Lebanon Hospital for the induction of labor. The usual procedures for the induction of labor failed of success, and as he did not wish to perform a major operation at that time the patient was sent home and told to return to the hospital as soon as labor pains set in. She was readmitted to the hospital after being convinced that labor would not set in of its own accord. At this time he had informed the family that the fetus might have escaped into the abdominal cavity at the time she suffered the attack of pain in the seventh month. In order to reassure himself, however, he examined the patient under anesthesia. On attempting to dilate the cervix a great deal of bleeding was encountered. The cervix was packed and the patient returned to bed. Two days later, on opening the abdomen, a large amount of fluid escaped and a fully developed fetus weighing about six pounds was found floating in the abdominal cavity. The placenta, hard, dry, pale, and shriveled, was found to be attached in the region of the right kidney. There was no evidence of fetal membranes. The abdomen was closed and the wound drained at its lower angle. The patient made an uneventful recovery. Dr. Rongy said that at the present time he would not enter into a discussion as to whether this condition was primarily a tubal abortion with a subsequent abdominal pregnancy or a rupture of the uterus during the seventh month of pregnancy and the escape of the fetus and the placenta into the abdominal cavity, though he was inclined to the latter view.

Dr. Brodhead said they had had one case of abdominal pregnancy in the hospital that died without a diagnosis having been made. At autopsy an extrauterine pregnancy was found. A case of which he had heard recently showed the difficulty of making a diagnosis in some cases. This patient gave a history of having gone through a normal pregnancy. She went beyond full term and attempt was made to induce labor. The obstetrician tried to introduce de Ribas bags, but could not do so successfully, and it was decided to perform an abdominal section. On opening the abdomen they found what appeared to be an ovarian cyst. It was easily separated from the surrounding viscera, the vessels tied off, and the specimen laid aside as an ovarian cyst. Later someone opened the specimen and found a seven and one-half macerated fetus. That woman was examined by a number of experienced obstetricians and not one had made the correct diagnosis until the sac was opened.

Dr. Vineberg said that in abdominal pregnancy the uterus enlarged to a size corresponding to that of a uterine pregnancy at about the fourth month.

Dr. George W. Kosmak stated that Dr. Cragin had reported another one of these unusual cases of abdominal pregnancy in a recent number of the *American Journal of Obstetrics*.

Dr. Davis said that within the past five or six years he had seen three other full term or over abdominal pregnancies operated upon by other surgeons in the Lying-in Hospital. The first two mothers recovered, and he believed one child. In the third case the child was dead before operation and the mother died shortly after from shock. In all three cases the entire sac and placenta were removed at the time of operation and the abdomen closed. He did not remember whether drainage was used. Apparently none of these cases were infected. Some ten years ago Dr. Davis said he had removed a five-months' abdominal pregnancy with sac and placenta intact, closed the wound, and the mother recovered without event. Local abdominal tenderness under pressure was a rather constant symptom in abdominal pregnancy.

General Observations upon Antenatal Pathology.—Dr. Edward A. Schumann of Philadelphia read this paper. He said that observation, speculation, and study of monstrous infants and of gross developmental errors had occupied the minds of men from the time of the beginning of recorded facts, but until recently the observation had been cursory, the study negligible, and the speculation an absurd mixture of medieval superstition of biological falsehood. Even now the great subject of antenatal pathology was assumed as being entirely contained within the confines of teratology, a grievous error. It must be remembered that the child was by no means a little man, that physiological processes, both normal and pathological, differed greatly in the infant and the adult and that the manifestations of disease varied within wide limits in the developmental and mature epochs of life. It was the grouped study of certain phenomena and occurrences of prenatal and intranatal life, their effect upon the individual, their relation to other departments of biology, medicine, and sociology, that truly constituted antenatal pathology. Examples of the close interdependence of antenatal pathology to postnatal conditions might be multiplied indefinitely. Suffice it to say that its ramifications extended into every department of medicine to a greater or less extent. Antenatal life was so intensive, and was made up of so many almost conflicting factors, that for a proper understanding of its biology it must be divided and subdivided into periods which would correspond with the particular character of the phenomena occurring during these divisions of time. Ballantyne's description of antenatal physiology was scarcely to be improved upon. Disease in the fetal period was comparable to postnatal disease with the modifying factors of the nature of the fetal environment and the influence of the placental circulation. Classification of fetal disease was a complex task, and even the most condensed grouping covered practically the whole subject of medicine. Ballantyne's plan was the one which seemed to be most satisfactory and complete. Syphilis stood out among the transmitted diseases as of special interest. The prevalent idea that syphilis was a frequent cause of early abortion seemed to be disproved, it being found that in most cases the fetus was infected in the latter months of pregnancy, when it might die and be prematurely expelled, might be born alive and show signs of an active infection, or might show no signs of syphilis until some months after birth. The mode of infection was now thought by common consent to be through the maternal blood stream, unless possibly there might be a granular "resting stage" in the life cycle of the *Treponema pallidum*, at which time the granules might pass into the semen. The treponema itself had not been demonstrated in seminal fluid. It was known that certain toxicological conditions of the mother might in some wise be transmitted to the fetus, but here their knowledge was vague and largely based on inference. Alcoholism in the mother, if at all continuous, did certainly have a deleterious effect upon the developing fetus, but the mechanism of its action was not clear. Such intoxications, together with the various chronic metallic poisons, as lead or phosphorus, caused fetal disease, not by a direct action, but by producing a toxic effect upon the ovum or the spermatozoon they predisposed to morbid embryonic states, which, in turn, caused fetal disease. Imbecility, epilepsy, and certain chronic organic degenerations seemed to follow these poisonings. The idiopathic diseases of the fetus might be defined as all these definitive lesions whose cause

was not known. The term idiopathic was at best a poor one and as used in the classification merely grouped the conditions of unknown origin. General edema of the fetus, for example, had been the subject of considerable research. He said he had already expressed it as his opinion that the disease was primarily of placental origin, an end result of maternal toxemia. The remaining groups of fetal disease were largely explained by their names, and to discuss them would lead to a review of practically the whole subject of clinical medicine. They were mentioned simply as an illustration of the enormous field covered by fetal pathology. The injuries and accidents of birth and the irregularities of beginning function in those organs, latent during intrauterine existence but essential to life immediately upon the cessation of placental circulation, constituted the pathology of the intra- and neonatal period. It had been well said that "birth is the traumatic transition from an intrauterine to an extrauterine existence." There now remained for discussion what was really the crux of the entire matter—What practical application were they, as obstetricians, to make of the mass of vague theories, abstract principles and nosological facts contained in a study of antenatal pathology? Their concern was to better the standards of the community, the race, and the species, not so much by an improvement of what they called the normal type (though that was an ideal to be striven for) as to decrease the number of imperfect individuals born, and to lessen in each case the individual imperfection to an irreducible minimum. This was to be done by approaching the subject from several angles. First, an analysis of the history of the parents in much more detail than was the common practice. It was astonishing what a wealth of data, some of it of enormous importance, might be obtained, first by a searching amnesis, and, second, by encouraging the establishment and maintenance of a family record of physical events. First, then, a more careful investigation as to the probability of transmitted abnormalities. Second, more careful study of the obstetric patient from the standpoint of the child. It was routine practice to examine the mother for evidence of organic disease, to determine her pelvic size and contour, to investigate the character of the urine, the blood pressure and the like, but it was unusual for periodic examination of the fetus to be made with regard to the uniformity of growth, the nature of the movements, evidences of faulty circulation, or of interference with nutrition from any cause. Fetal disease was often associated with pain or discomfort on the part of the mother, and investigation of such condition should be made with a view to the possible diagnosis of the cause of the symptoms, not only with reference to the mother, but also to the child. The diagnosis of antenatal disease was still almost virgin ground, the more so by reason of the dearth of detailed observation of the pregnant woman who eventually gave birth to a diseased infant. Certain physical signs had been orientated, however, and formed a nucleus which might develop into a considerable group of diagnostic facts. Hydramnion, for example, might be diagnosticated, and was known to be very frequently associated with monstrous infants or with twins. It was known that weak, irregular, and arrhythmic fetal heart sounds might be present in the case of anencephalic or other monsters in which the cerebral and spinal centers were so ill developed that this regulating action on the heart muscle was lost. A positive Wassermann reaction in a pregnant woman would prove beyond question that her child would be infected with syphilis. The fetal size and state of nutrition might be estimated, the vigor and character of the fetal movements had been found to hold certain significance, and, in fact, the physical signs leading to a diagnosis of fetal disease, if marshaled in order, already formed a respectable group, and with a quickening interest in antenatal diagnosis, must grow to become an important factor in obstetric work. The future offered hope, and it seemed to him beyond question true that more careful study of the pregnant woman from the standpoint of the child, her treatment and observation, not only as an outpatient, but in hospital, whenever there was any reason to suspect any fetal difficulty, a collection of detailed data upon the course of all pregnancies which differed in any way from the normal, and their results as regards the infant, would enable them to shortly have many more facts at their command, and that by the application of their knowledge of the results of abnormal pregnancies to the causes of disease the whole subject of antenatal pathology would attain to a state of workable scientific information, giving to medicine another unit of power for the betterment of their race and species.

Dr. J. R. Losee, after congratulating Dr. Schumann on the completeness of his paper, said we saw many abnormalities of excess and defect, which had been grouped under embryological pathology. This branch of antenatal pathology was being carefully studied by Dr. F. P. Mall of Johns Hopkins. The various observers had all carefully described the anomalies and had made complete histories, but the reason why certain parts did not completely develop had been explained by many different and opposing theories. The pathology of the late fetal period was practically the same as that of the post-natal period, for the disease had been transmitted from the maternal organism in most instances. Syphilis was a well known cause of premature labor and in 40 to 50 per cent. of the cases of syphilis the fetus was dead. How could the remaining 50 per cent. of still-births be explained? It seemed to him that in some instances there was a mechanical cause, or some pathological condition of the decidua, which prevented the placenta from remaining attached to it. Such diseases as fetal anasarca, ascites, and the many congenital bone conditions all awaited a satisfactory explanation as to their cause.

Dr. Samuel Bandler said that if this paper was to be of real value to them or to the advancement of the science of eugenics they must not be satisfied with what they learned from the minute pathology of disease, but they must look at the gross facts and see what they could teach them. If this paper meant only that the embryo had certain defects and told us only why we had an embryonic monster its value would be limited. But syphilis had been mentioned, and alcoholism had been mentioned, and heredity had been mentioned, and they had been told of the importance of getting a family history. That did not mean a history of cleft palate or webbed feet merely and the passing by of the important things. In the science of eugenics one wanted to know not simply whether the parents were syphilitic or alcoholic, but one wanted to know the family tree for several generations, and one wanted to ascertain a great many facts. To know whether the parents had had hypothyroidism, Basedow's disease, or myxedema were all important things which should be considered. Hereditary syphilis was said to be important, yet the embryo might be so well formed and so apparently healthy that no one would suspect syphilis. Dr. Bandler said he could count on the fingers of his hands the children that he had seen that had shown definite signs of syphilis at birth, yet they had been told in college that these children were born with the evidences of syphilis on the palms of their hands and the soles of their feet. These syphilitic children might grow up without definite signs of syphilis; they might only have symptoms of digestive disturbance, a tendency to develop fever easily, or they might simply be delicate and sickly. If the embryo could survive the syphilitic involvement it required more things than one might suppose to affect it. A placenta previa had an abnormal implantation of the placenta and yet he doubted if that made any difference in the way in which the fetus developed. The spermatozoon did not carry syphilis into the ovum. If a woman gave birth to a syphilitic child it was because she herself was syphilitic. It was possible for a man to have syphilis and yet to have perfectly healthy children unless the mother herself was made syphilitic. When it came to alcoholism it was known that alcohol was one poison that injured the embryo and it was also known that alcoholics were not normal individuals, that they were individuals below normal, and consequently they were more likely to become alcoholic than the average person. If, then, the offspring of an alcoholic individual was

defective we attribute it erroneously to the alcoholism of the parent instead of to the defective heredity, although Dr. Bandler said he was of the opinion that alcoholism in the mother had something to do with it. Probably there was a central pathology in these individuals. On whatever line one might study this subject there were two sides; there were the antenatal changes which included the few changes visible in the baby, and when it lived there was the influence that hereditary factors had all through life, even until the individual reached seventy years of age.

Dr. SCHUMANN, in closing, said it was just such questions and speculations as Dr. Bandler had brought forward that showed what they required. The one great need was more data. It had been well said by Dr. Holmes that we should treat the defects of the child by treating those of the grandfather and grandmother. As to the infection of the ovum by the treponema, he had recently looked up the literature and thus far there had been no demonstration of a treponema in the spermatozoon. There was a growing belief that in the life cycle of the treponema there was a granular stage and it had been guessed that possibly the spermatozoa might carry these minute granules into the uterus and thus infect the mother. There was no proof of this, but it was an interesting theory.

SECTION ON MEDICINE.

Stated Meeting, Held April 17, 1917.

DR. HARLOW BROOKS IN THE CHAIR.

The Apparent Dependence of Pathological Variations of the Blood Sugar upon the Diastatic Activity of the Blood.—Drs. VICTOR C. MYERS and J. A. KILLIAN presented this communication. They stated that since Magendie first demonstrated the presence of a diastase or, as it was better known to physiologists, a glycogenase in normal human blood, the various workers in this field had reported results concerning its activity so contradictory that no conclusions, particularly in pathological conditions, were warranted. This contradiction in results unquestionably must be attributed to the lack of a sufficiently accurate method for the quantitative estimation of the activity of the enzyme under all conditions. The procedure the authors had found simplest and most reliable was but another application of the method for the estimation of the blood sugar first introduced by Lewis and Benedict, and later modified by Myers and Bailey. Two 2 c.c. samples of oxalated blood were placed in centrifuge tubes: one was diluted to 10 c.c., the other to 9 c.c., and to this latter tube 1 c.c. of a 1 per cent. solution of soluble starch was added when both tubes had been raised to 40° C. in a water bath. Both tubes were allowed to remain in the water bath maintained constantly at this temperature for fifteen minutes. At the end of this time solid picric acid was added to saturation, the tubes allowed to stand for ten minutes to insure a complete precipitation of the proteins, and then centrifuged and filtered, and the sugar in 3 c.c. portions of the filtrates estimated according to the technique described by Myers and Bailey. The total sugar in the tube to which the starch had been added corrected for the sugar present in the blood and the slight reducing action of the soluble starch, which for any sample remained constant, gave the amount of sugar formed by the diastase in 2 c.c. of blood from the 10 mg. of starch. This quantity expressed as the percentage of the amount of starch added, the writers accepted the figure expressing the activity of the blood diastase under the conditions described. From numerous observations it has been concluded that the activity of the blood diastase toward glycogen was identical with its activity toward soluble starch and further for all samples of blood in their experience, ranging from normal cases to cases of severe diabetes, the 10 mg. of starch formed a sufficient substrate for the action of the enzyme. The figure for the activity of the diastase in normal blood was obtained from the activities in six healthy individuals. The activities in these cases varied between 14 and 17. A large series of miscellaneous pathological conditions were studied and in all of these cases, where a history of diabetes or nephritis could be excluded, and where the blood showed no retention of nitrogeneous waste products nor a hyperglycemia, the activity of the blood diastases never fell below fifteen nor rose above twenty-two. Hence, it might be said that with their method the activity of the blood diastase lay in normal cases between fifteen and twenty, and in pathological conditions it might rise to twenty-five, without indicating diabetes or nephritis. The cases of nephritis examined had been divided into classes—mild cases, where there was a history of albuminuria, a moderate retention of urea nitrogen and of uric acid, a creatinine below five, and a fair phthalein output, and severe cases where there was a marked retention of nitrogeneous products, little or no phthalein output and creatinine above five. In the mild cases there was a moderate hyperglycemia and an increased diastatic activity varying between twenty-one and forty-seven. In the severe cases, all of which proved fatal, the hyperglycemia was more pronounced and the diastatic activity fell between thirty and fifty-one. It was noted that invariably the increase in activity was greater in chronic cases than in acute. Furthermore, in as much as the activity of the diastase in nephritic urines was below normal, the increase in activity in the blood might be due to a retention.

It was in cases of diabetes that they obtained the highest figures for diastatic activity of the blood. In the large series of cases examined the blood sugar ran from 0.23 to 1.23 per cent., and correspondingly, the diastatic activity of the bloods varied from forty-two to seventy-three, that is from three to five times normal. A number of cases were followed over a long period of time, and the blood sugar and the activity of the diastase during this period were represented graphically by curves. In the cases that on treatment showed improvement and left the hospital cured, there was a striking parallelism between the two curves. It was noted also that the activity of the diastase responded more promptly to treatment than did the blood sugar. It was found that the administration of alkali (sodium bicarbonate by mouth) inhibited the activity of the enzyme and when the activity was brought down to normal the diabetic could take carbohydrate without a consequent hyperglycemia. In the case that did not respond to treatment, although the blood sugar was reduced to normal, the activity of the diastase remained high, and whenever the patient received carbohydrate in diet a hyperglycemia resulted. Hence the activity of the enzyme is a more reliable index of the response to treatment than the blood, and consequently it was a prognostic as well as a diagnostic value. Moreover, individuals who gave a history of transient glycosuria or a lowered sugar tolerance showed a diastatic activity of the blood about thirty, therefore an estimation of the diastatic activity of the blood was of greater value in diagnosing latent diabetes than the sugar tolerance test. Many observers had reported a hyperglycemia during general anesthesia. By estimating the sugar, carbon dioxide combining power, and the diastatic activity before and during anesthesia, it was found that the hyperglycemia was accompanied and in all probability caused by an increase in the activity of the diastase with a decrease in the carbon dioxide combining power, indicating a mild acidosis.

Dr. T. STUART HART asked whether there was any parallel between the diastatic activity of the blood and the diastatic activity of the urine. If such a parallel occurred in diabetics and not in nephritics certain conclusions might be drawn as to the difference of the threshold for the excretion of diastase in each of these conditions. In advanced nephritis we have the retention of many substances. Why should we say that the sugar retention was dependent upon the increased diastase in the blood any more than one would say that the increase in the urea nitrogen of the blood was dependent upon the increased blood diastase? Did it not seem more probable that there was a common cause which operated for a retention of all these substances?

Dr. ADOLPH L. RINGER said this was a very beautiful piece of work, but there was one point with which he could not agree, and that was the explanation of the hyperglycemia in cases of nephritis as being due to the fact that there was an increase in diastases. In view of

the power of the normal body to cope with a rise of sugar in the blood and the ease with which it succeeded in getting rid of a tendency to hyperglycemia, he could not believe that hyperglycemia could be explained on the theory of a slight increase in the diastatic activity of the blood. Even where one found an increased diastatic activity and a hyperglycemia he could not say that the latter was dependent on the former unless they ran parallel in all cases; this it seemed from the chart they did not do in every instance. The facts presented, however, were of great value.

Dr. NELSON W. JANNEY stated that it was questionable whether hyperglycemia was to be ascribed to increased diastatic activity in all cases. Thus in experiments with nephritic patients he had repeatedly administered glucose which was followed by a greater hyperglycemia, as shown by hourly blood sugar estimations, than ensued in normal individuals treated in exactly the same way. As in this case, diastatic activity was to be excluded as a cause for this result, it is more likely that the hyperglycemia of nephritis was a retention phenomenon. The blood sugar originated from protein as well as from carbohydrate. Thus the hyperglycemia at times observed in exopthalmic goiter was probably due to sugar formed in toxic protein destruction. Increased diastase in the blood would not be expected here. It would, therefore, be interesting to follow the diastatic activity in such cases in view of this test possibly becoming of diagnostic importance in determining the origin of an increased blood sugar level. We must also bear in mind that no direct proof had yet been brought that the increased diastase in the blood was the actual cause of the hyperglycemia. It might be an accompanying phenomenon. However, the results reported by Drs. Myers and Killian were most striking and suggestive.

Dr. MYERS said that in answer to some of the points brought up he wished to state first that they simply desired to suggest that the hyperglycemia of nephritis might be due to increased diastatic activity. In their earlier investigations (Myers and Bailey) they had not been able to find any explanation of the high blood sugar, although excretion was markedly raised. There might be as much as 0.35 per cent. sugar in the blood and none in the urine. Dr. Ringer had brought up the point that the diastatic activity and the blood sugar did not run parallel in every case. In those cases in which there was a high diastatic activity and a low blood sugar, there was invariably something to explain the discrepancy, as, for instance, a marked restriction in the diet. As to Dr. Janney's point, Dr. Myers said he thought the findings in reference to the diastatic activity fitted in nicely with the results of feeding glucose to nephritics. If we knew the diastatic activity of the blood we could anticipate the type of the blood-sugar curve. Dr. Myers mentioned two cases in which the presence of blood sugar was unsuspected but in which an examination of the blood showed an increased diastatic activity. Upon being questioned these individuals admitted having had sugar in their urine in small amounts at a former time, although at the time of the examination no sugar was present in the urine and the blood-sugar content was essentially normal. This suggested the possibility that the diastatic activity might serve as an early sign of impending diabetes. The rôle of the diastases in the human being and in animals such as the dog and rabbit, is apparently quite different. The diastatic activity of the dog's blood was about twenty times that of the human being, and for this reason animal experimentation along these lines might be of little aid in solving these problems as they affeteed human beings.

Kidney Damage and Recovery after the Acute Fevers.—Dr. ARTHUR BOOKMAN read this paper. He said the effects of acute febrile diseases, and particularly febrile albuminuria, upon the renal function was the subject investigated. Fifteen patients convalescing from typhoid fever, pneumonia, tonsillitis, malaria, typhus fever, staphylococcus meningitis were studied. Most of the tests were made from three to fifteen days after the temperature had become normal. Two patients were followed for several months after recovery. Of special interest was the results obtained on the phenolsulphonephthalein excretion, and the estimation of the renal function by the Mosenthal-Schlayer technique. The majority of the patients had a lower thalein output. Over one-half on the test diet had some nocturnal polyuria. The total output of salt was low in the majority of the cases, and the question was raised whether the excretion of sodium chloride during pneumonia and other acute febrile diseases was not largely due to lowered kidney function. The importance of the repeated functional test was emphasized. The renal function might be very much impaired without albuminuria or other common signs of nephritis. The interpretation of the results of the tests of renal function and the influence of preceding febrile diseases must always be considered.

Dr. CHARLES E. QUIMBY said that with reference to chloride retention in defective kidney function the chloride was not necessarily retained in the blood, but was thrown out through the lungs in pneumonia into the spinal fluid in meningitis. Again the pneumococcus was only destroyed in the presence of chloride. Dr. Quimby said he was not going to admit that the impaired kidney function was due to inability to excrete primarily; it was a question of impaired metabolism back of the kidney that was involved, and that was why he had taken up a study of the problems of metabolism. He believed that impaired kidney function was primarily a question of metabolism and he hoped this would be proved to be the truth, for it was in this direction that the hope of therapeutics lay.

Dr. A. A. EPSTEIN said he also was inclined to believe that there was a form of nephritis dependent upon primary metabolism and that they sometimes got a picture of impaired kidney function for which the kidney was not responsible

Dr. BOOKMAN said that in regard to chloride retention in the lungs in pneumonia the point he had raised was with reference to chloride excretion as an indication of impaired kidney function. In typhoid fever and malaria the cases of which he studied, there was very much more sodium chloride retention than in pneumonia. This work had a double bearing. It told not only about the function, but it told about the reliability of the individual tests, and he believed that work of this kind would help us arrive at a final judgment as to the reliability and availability of tests of renal function.

The Interpretation of Urea Nitrogen Estimations in the Blood in Various Kidney Lesions.—Drs. JOHN LARKIN and I. J. LEVY presented this communication, which was illustrated by lantern slides. They stated that in studying the renal causes for nitrogen retention they had not forgotten that the extrarenal factors for such retention must be given due consideration. The first and most important of these was diet; second, certain metabolic conditions, which were little understood at the present time; third, they had observed in cases of edema with marked diuresis that there was a tendency for the nitrogen content of the blood to increase, but it soon returned to the normal limit after the elimination of the fluid; fourth, in some cases just before death, irrespective of the type of kidney lesion, in fact in fairly normal kidneys, there was definite rise in the nitrogenous elements of the blood. Many cases were loosely diagnosed as nephritis which were not, *per se*, nephritic, and pathological changes in the kidney were designated with such ambiguous terms as "interstitial nephritis," "parenchymatous nephritis," etc. These terms gave no inkling as to the type of nephritis meant. No wonder, therefore, with a diagnosis of interstitial nephritis one obtained all sorts of nitrogenous estimations in the blood in this type of lesion. With these facts in mind they had found it necessary to adopt a classification in which the clinical diagnosis could be checked up with a fair degree of uniformity with the pathological findings. They had therefore adopted the essentials of the Vollhart and Fahr classification: First, the glomerular type; second, the arterial type, and, third, the tubular type. The glomerular type they had designated as glomerulitis and had subdivided into acute and chronic. The acute type, which was a definite clinical entity, was characterized by a true inflammatory reaction, exudation, swelling of the epithelium of the tuft, increase of cells in and upon the tuft. This was a lesion which might go on to repair and in fact usually did. This accounted for the fact that it was seldom seen at the autopsy table. The chronic type was characterized by the fact that the kidney lesion was beyond repair. It might begin with an acute onset

and run its course in a few months; or with an insidious onset, which might not present any marked evidence of trouble until years later. Most of these cases died of true uremia. The glomeruli presented inter- and extracapillary changes, some having gone on to various stages of hyalinization. The blood vessels became secondarily involved. The interstitial and tubular changes were secondary to the arteriosclerosis. If the arterial and interstitial changes were marked, we had the socalled contracted kidney. With one exception, in acute glomerulitis there was no increase in the nitrogen retention in the blood. In some cases, as in scarlet fever, after anesthesia, anoliguria might be so extreme that the nitrogen increased in proportion with the degree of retention and the length of time it was present. In acute glomerulitis convulsive seizures were seen at the onset or during the course, but were independent of true uremia in that the patients recovered, and during the period of the attacks or months later, when they were apparently in good health, the nitrogen in the blood was within normal limits. When these seizures occurred in the course of chronic glomerulitis the nitrogen in the blood was definitely increased. It was a fair conclusion, therefore, that the nitrogen estimation in the blood in socalled eclamptic uremia was of great prognostic importance and differentiated an acute glomerulitis with a favorable course from a chronic glomerulitis with an unfavorable prognosis. Of 12 cases of chronic glomerulitis observed by the authors, 8 had died and 4 were living. The nitrogen estimation in this group gave varying results. In the advent of uremia there was a distinct and marked increase in the blood nitrogen, the amount increasing until death. Normal nitrogen estimations might be found in cases with intra- and extracapillary glomerular changes in the kidney. In an attack of eclamptic uremia in which there was an increase in the nitrogen content of the blood they had found, with few exceptions, that if the estimate on successive days showed definite increase, the patient was gradually passing into a condition of true uremia and the immediate prognosis was unfavorable. If, however, the successive estimations gave a lowered reading, the immediate prognosis was more favorable. An increase in the nitrogen content of the blood in the course of a chronic glomerulitis generally was a bad prognostic sign. The patients succumbed, probably within a few years, most of them in a much shorter time. Illustrations of the three types of chronic glomerulitis were presented. In the first type the kidney presented a picture of severe extracapillary glomerulitis, hardly a normal glomerulus being seen in the section. The parenchyma was replaced by fibrous connective tissue, with areas of round celled infiltration. The second illustration was of the typical contracted type. Practically every glomerulus in the section had undergone hyalinization as the result of earlier inflammatory changes in the glomeruli. There was dense connective tissue replacement and arteriosclerotic changes. The third type of chronic glomerulitis presented had occurred in the course of an acute infectious endocarditis. This showed the glomerular changes and normal nitrogen figures. Some glomeruli showed distinct inflammatory reaction, others were fairly normal; there were some interstitial changes. In the second type under this classification, the arteriosclerotic kidney, the changes found were those primarily of vascular origin, the glomeruli and parenchyma becoming secondarily involved, depending upon the grade of arteriosclerosis. The various grades of atrophy and hyalinization of the glomeruli and moderate or marked interstitial changes could be seen, depending upon the age of the patient and the severity of the process. The end result was the socalled primary contracted kidney. The patients did not die of their kidney lesion, but from arteriosclerosis, cardiac failure, apoplexy, or an intercurrent affection. There were 15 cases in this series, all with autopsy findings. The blood nitrogen during the course of the disease gave normal readings. Twenty-four to forty-eight days before death there was marked increase in the nitrogen content of the blood. The markedly arteriosclerotic kidneys gave a much higher figure. Ten to fifteen days before death, however, there was a definite increase in the nitrogen content of the blood in cases with marked arterial changes, but how soon this change became apparent they were not prepared to say. In kidneys with mild sclerotic changes there was very little rise in the nitrogen content. In the third type, the tubular or socalled nephritic kidney, usually diagnosed by edema, the focus of involvement was in the convoluted tubules. The clinical symptoms associated with this type were due to extrarenal causes. There was a characteristic fatty degeneration of the tubules, which was doubly refractive. There were no glomerular changes, unless this was an added complication, and the blood nitrogen was within normal limits. Extrarenal factors were of paramount importance in interpreting nitrogen readings in the blood.

Dr. T. Stuart Hart said that he had been much interested in the paper of Dr. Larkin. Dr. Larkin was fortunate in finding kidneys which represented comparatively such distinct types. Dr. Hart had been able to study the kidneys in a considerable number of cases of nephritis in which, during life, very careful studies had been made of the constituents of the blood and the functional activities of the kidneys. He had been unable to correlate the changes in function made out during life with the pathological condition found at autopsy. The difficulty seemed to be that the terminal changes which one saw in the kidney at autopsy did not show a single distinct type of structural change; the condition was so far advanced that practically all the kidney structures were more or less involved and it was almost impossible to tell which one of these structures was the first to show a pathological change.

Dr. Ringer said we might have very marked disturbance in the kidney without getting any changes in the blood whatever, and the reason was that the factor of safety in the kidney was very large. We might remove one kidney and a part of the other and yet get no disturbance in the blood. The same was true with reference to the pathology. We might find a large part of the kidney tissue destroyed and yet get no signs of decompensation by the functional tests. Until we have worked out a method to find the maximum function of a kidney we could not know anything definite of the pathology. The chemistry of the blood might be normal in the presence of nephritis, and we have no means of telling the degree of kidney destruction until there is beginning of decompensation. The term uremia should be reserved for those conditions in which we find a damming back of products of metabolism and an increase in the concentration of urea in the blood. When patients with nephritis went into coma or had convulsions, and did not show any increase in the nonprotein nitrogenous constituents of the blood, we should look for other causes and not call them cases of uremia.

Dr. Levy, in closing the discussion, said that in regard to nephritic kidney they had had but one case of this kind that came to autopsy. In this instance the man had lost from eighty to ninety pounds and had died of an unusual metabolic disturbance. As to the diagnosis of the terminal sclerotic type, this could usually be distinguished from the terminal glomerular type by the two hour concentration test and studying the water elimination. Sometimes there would be something in the history suggestive, as a tonsillitis, that would point to the glomeruli as causing the kidney disturbance, and the finding of a normal blood nitrogen reading would be of assistance. In marked sclerotic kidneys where there was very little parenchyma one might get normal nitrogenous findings and some glomerular changes, but all the changes were secondary to the arterial changes; it was in just this type of kidney that one got normal nitrogen findings until ten or fifteen days before death. In regard to calling the convulsive seizures of the glomerular type of kidney eclamptic uremia, they admitted that was a bad term, because the seizures were not due to nitrogen retention but to some extrarenal cause. The blood pressure during these seizures is usually between two and three hundred mm., so that the convulsion would seem to be due to edema of the brain, which was the result of the increased blood pressure, and not to any retention of nitrogen.

The Rôle of Splanchnic Stasis in Atony of the Alimentary Canal.—Dr. Fenton B. Turck read this paper. He stated that prevalent as were disorders of the gastrointestinal tract, they were the least understood

of all ailments by both the internist and the surgeon. If the phenomena underlying these conditions were understood and viewed in the light of functional disturbances and altered motility, as dependent upon dynamics rather than as anatomical or morphological abnormalities, fewer of these cases would reach the surgeon and fewer surgeons would make the confession recently made by Temoin, who said, "The return of symptoms after gastroenterostomy or stomach resection are of such frequent occurrence that I now make it a practice to do an extensive resection." An understanding of the etiology of gastrointestinal disturbances would explain the phenomenon of dilatation and the surgeon would no longer ask the question, "How a stomach with two openings, the patent pylorus and a working gastroenterostomy at the most dependent part of the stomach, could be so distended with fluid?" The surgeon would, if he understood the fundamental causes of these conditions, operate only for mechanical obstruction and not for functional resistance. Dr. Turck reviewed experimental work which he had from time to time presented which showed that changes in the intestinal wall resulting from alteration in the blood supply increased the permeability of the mucosa to microorganisms, and that the colon group seemed more capable of migration than many other forms of intestinal bacteria. He described the diffusion of bacteria from the intestinal tract and discussed the conditions predisposing to the migration of bacteria and other proteins. He showed the influence of shock, fatigue, obstruction, stasis, atony, and overfeeding in lowering the bacteriolytic function of the submucous zone of the intestinal wall. He dwelt on the part played by hypersensitization of the muscle cells predisposing or preparing them for anaphylactic reaction which was bound to take place when the bacteria and colloidal proteins were brought into the area of these sensitized cells. Such a hypersensitive status of the muscle cells might be hereditary and was resident in the cells and not in the fluids of the body. He related his experiments in feeding animals with bacteria, irritants, and food in large amounts, and showed the effects of meat extractives and fatty acids, both of which favored splanchnic congestion and the diffusion of bacteria. All the factors considered were operative in establishing a vicious circle and in maintaining it. It should therefore be borne in mind that if treatment in these conditions was to be effective it must consist in a combination of methods directed to the various causes operative in the production of the pathological condition. Treatment must first be antianaphylactic; secondly, it must be biological, and, thirdly, it must be physiological. In establishing antianaphylaxis atropine sulphate and a combination of calcium chloride, calcium lactate, and calcium carbonate had proven effective. If the anaphylactic status was due to a food idiosyncrasy, that would have to be treated in the accepted manner for overcoming such a condition, by the administration of the particular article of food that was causing the trouble in very small doses until a tolerance was established. The biological treatment was an important factor and consisted of the autogenous vaccines made from a combination of the organisms derived from the patient's feces, urine, and stomach contents and grown on his own blood serum. The physiological treatment consisted in colonic and gastric lavage for the relief of tension and the production of intergastric hyperemia; the institution of intergastric and intercolonic pneumatic gymnastics and a system of physical exercises which had been shown to be effective in diminishing the amount of blood in the splanchnia area by driving it to the peripheral parts of the body. In the dietetic treatment, Dr. Turck emphasized the importance of avoiding meat extractives and fatty acids and of administering only two meals a day rather than the more generally accepted plan of frequent and small feedings. (See MEDICAL RECORD, June 24, 1916.)

Dr. T. STUART HART said that Dr. Turck had covered such a wide field that it was difficult to select any one point for discussion. There was one point of similarity in the change which had taken place in recent years in the viewpoint held in regard to the heart and the viewpoint which Dr. Turck had presented in regard to the abdominal veins. Nowadays the theory was pretty well accepted that in the activities of the heart, the muscle cell was the important element; the nerve mechanism the less important. In other words, the myogenic theory was replacing the neurogenic theory. Dr. Turck had said very little about vasomotor influences, but much more of changes in the muscle cells of the walls of the blood vessels. Of course, as in the case of the heart, the correctness of the myogenic theory was still not absolutely settled, but we had found that this point of view of looking on the changes in the muscle cells, as the fundamental thing, gave us an hypothesis which was exceedingly valuable as a practical working basis. Dr. Turck had given some very striking evidence suggestive of the effect of changes in the muscle cells similar to the conditions which Dr. Longcope had described in anaphylactic shock. Some years ago, Popielski, while studying the effect of Witte's peptone in relation to anaphylaxis, was able to isolate a substance which was not peptone proper but was extremely poisonous and acted, he though, mostly on the blood vessels. So prominent was this feature that he proposed for it the name *vasodilatin*. It was universally agreed that in anaphylactic shock the heart was not at fault. It did not give out, but instead there was probably a dilatation of the small peripheral vessels so that the subject was practically bled into the veins of the abdomen. These questions were not purely of academic interest. The subject had a most important practical bearing. He felt that we had been grouping many cases under the term of nervous exhaustion when, as a matter of fact, the patients were suffering from exhaustion of the muscle cells; we had called them neurasthenics; they were probably in a large measure myasthenics.

Dr. RUSSELL CECIL said he was much interested in Dr. Turck's interpretation of the changes in the intestinal walls as possibly due to some form of anaphylaxis. Friedberger and Victor Vaughan have both shown that it was possible to sensitize animals to bacteria. Weil had shown that anaphylaxis was largely a cellular phenomenon. He showed that in anaphylaxis in guinea-pigs and dogs a destruction of the liver cells took place very much like that shown by Dr. Turck in the cells of the intestinal wall. It would be interesting to know whether the changes which Longcope described in the liver and kidneys after repeated anaphylactic shocks were shown in the muscle cells of Dr. Turck's cases. Dr. Cecil said he was interested in hearing what had been said about the colon bacillus and the fact that this condition could be produced by prolonged feeding with this organism. He wondered if the same condition could be produced by feeding the animals with other kinds of bacteria.

Dr. TURCK stated that there were usually other bacilli in symbiosis with the colon bacilli.

Dr. CECIL said Dr. Turck had not told them much about his technique. Some of the changes that had been shown were often seen in tissue that had undergone autolysis before fixation. Unless some such error of technic had caused the autolysis it was evidently possible for bacteria to diffuse through the mucosa and to produce destruction of the smooth muscle cells.

Dr. C. C. LIEB stated that smooth muscle was capable of carrying out contractions only when it received impulses from the nervous system. Apparently peristalsis was a perfectly coordinated act and it would be impossible to have a contraction unless Auerbach's ganglia was intact. Another interesting thing was that it seemed that experiments done by Magnus showed that peristalsis went on quite independently of Meissner's plexus and one got a perfectly typical peristalsis on isolated intestine. This would suggest that the action of the bacteria was not of vital importance so far as the changes that are effected by Auerbach's plexus. Dr. Lieb said that of course he was speaking of true stimulation and relaxation and not considering the segmental movements described by Cannon; such movements were due to tension and were brought about by distention. The more smooth muscle was distended the greater was likely to be the effort at contraction, and this increased as the optimum tension was approached. When the optimum tension was reached the muscle weakened and relaxation followed. Contraction was out of the question in some of Dr. Turck's specimens taken from dogs.

Dr. Charles E. Quimby said he thought they should not lay too much stress on toxins or any other one factor. Arterial contraction had been spoken of; if there was some back pressure in the veins and there was a bit of slowing of the circulation there would be interference with nutrition, and one then got the effect of the bacteria and their toxins. The blocking of the circulation had as much to do with the production of the effect as the other factors. Withdrawal of food or restricted diet did not interfere with the nutrition of the muscle cells of the stomach wall because these derived their nutrition not directly from the food in the stomach but from other parts of the body. By washing out the stomach and removing the pressure one got a response of the exhausted muscle.

Dr. Turck said in closing that, as Dr. Hart observed, the involuntary muscle cells showed distinct lesions in both experimental and clinical work on the heart and circulation, so in dilatation of the alimentary tract, both acute and chronic, the primary cause was found to be due to physico-chemical changes in the unstriated muscle cell. These lesions, as the speaker had demonstrated, in muscle cells were the direct cause, not hypothetical "nervous exhaustion." Acute dilatation of the stomach and intestines associated frequently with "shock" had been assumed to be of nervous origin. In shock Crile attempted to prove the "nerve exhaustion theory," but Kocher, and also according to Smallwood and Phillips, by carefully controlled experiments, concluded that this was "a nerve assumption." Duchesschi showed by isolation of the stomach and intestines from all nerve influence that the motor power of the stomach and intestines resumed normal activity. Dr. Turck stated that he had shown that in both acute and chronic conditions the muscle cells underwent degeneration by "toxic" influence or anaphalactic reaction resulting in atony and dilatation. Since his earlier publications in 1897-1899 and 1903 he had made many experiments and clinical observations which were being better understood in the clinical relations to the great number of symptoms classed as "neurasthenia" and supposed to be due to some obstruction by "kinks" and other assumed causes, which we now found were primarily muscle degeneration, sometimes designated as Zenker's degeneration of fatigue. Dr. Lieb, who had done such excellent work on unstriated muscle, recognized the important rôle of the muscle cell in work and fatigue. While the nerve ganglion aided in coordinating the muscle cells capable of independent rhythmical motion, as soon as the muscle cells underwent these changes with disturbance of the venous splanchnic area we had clearly defined pathologic physiology to be corrected by physiological and biological methods. The point raised that the starvation method (to inaugurate treatment) might cause muscle degeneration, was not founded on fact. It must be remembered that the animal or patient fed on his reserve fat during starvation, and when this was finally exhausted the voluntary muscles were utilized, not the visceral involuntary muscle cells.

Gas Edema in a Woman.—Kummer reports the case of a woman of forty kicked in the right leg by a horse. She escaped fracture. In forty-eight hours she showed edema of the entire extremity and part of the trunk. Death occurred from collapse. The vibrio of sepsis was found in cultures.—*Revue médicale de la Suisse romande.*

Brudzinsky's Sign.—This is produced as follows: One of the inferior extremities is flexed, the leg upon the thigh and the latter upon the pelvis so that it rests upon the abdomen. In meningeal affections this maneuver causes a reflex movement of the thigh of the opposite side, either of flexion or extension upon the pelvis. It may be necessary to flex the thigh with the leg in extension.—*Policlinico.*

Elimination of 606.—Strzyzowski states that neosalvarsan-Ehrlich, novarsenobenzol-Billon and Gálvl-Mouneyrot are identical for all practical purposes. A preparation known as Danysz-102, which contains antimony and silver, is said to be superior throughout to the arsenic synthetics. As far as priority goes, Bechamp was the first to prepare anilarsenic acid in 1863. Its sodium salt, known as atoxyl, was introduced in 1902.—*Revue médicale de la Suisse romande.*

Books Received.

The Medical Record *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading, but it must be with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

The Starvation Treatment of Diabetes, with a Series of Graduated Diets. By Lewis Webb Hill, M.D., and Rena S. Eckman, with an introduction by Richard C. Cabot, M.D. Third Edition. 134 pages Published by W. M. Leonard, Boston, Mass. 1917.

Clinical Studies in Epilepsy. By L. Pierce Clark, M. D. 151 pages. Illustrated. Published by State Hospitals Press, Utica, N. Y. 1917.

The Twenty-Third Annual Report of the Managers and Officers of the Craig Colony for Epileptics, Sonyea, Livingston, Co., N. Y. 128 pages. Illustrated. Published by the J. B. Lyon Co., Albany, N. Y. 1917.

The Institution Quarterly. Vol. VIII, No. 1, March 31, 1917. Illustrated. 231 pages. Published by The State Board of Administration, The State Charities Commission, The State Psychopathic Institute, Springfield, Ill.

The Internal Secretions, Their Physiology ani Application to Pathology. By E. Gley, M.D. Trans lated from the French and edited by Maurice Fishberg, M.D. 241 pages. Price, $2.00 net. Published by Paul B. Hoeber, 69 East 59th Street, New York City.

Les Psychonevroses de Guerre. Par G. Roussy et Jean Lhermitte. 187 pages. Illustrated. Price 4 fr. Published by Masson & Cie., Paris, 1917.

Traitement et Restauration des Lésions des Nerfs. Par Mme. Athanassio-Benisty. Preface du Professeur Pierre Marie. 178 pages. Illustrated. Price, 4 fr. Published by Masson & Cie., Paris, 1917.

Les Fractures de la Machoire Inférieure. Par M.M. Leon Imbert et Pierre Real. 151 pages. Illustrated. Price, 4 fr. Published by Masson & Cie., Editeurs, Paris, 1917.

Localisation et Extraction des Projectiles. Par L. Ombredanne et R. Ledoux Lebard. 346 pages. Illtrated. Price, 4 fr. Published by Masson & Cie., Paris, 1917.

Forty-Fifth Annual Report of the Roosevelt Hospital, New York. 1916. From Jan 1, 1916, to Dec. 31, 1916. Exclusive of Medical and Surgical Statistics. 64 pages. Illustrated.

Physical Chemistry of Vital Phenomena for Students and Ivestigators in the Biological and Medical Sciences. By J. F. McClendon. 240 pages. Illustrated. Price, $2.00 net. Published by Princeton University Press, Princeton, N. J. 1917.

Textbook of Ophthalmology. By Hofrat Ernest Fuchs. With 462 illustrations and 1067 pages. Price, $7.00. Published by J. B. Lippincott Co., Philadelphia and London.

Botanic Drugs. Their Materia Medica, Pharmacology and Therapeutics. By Thomas S. Blair, M.D. 394 pages. Price, $2.00. Published by The Therapeutic Digest Publishing Co., Cincinnati, Ohio. 1917.

Medical State Board Questions and Answers. Fourth Edition. Thoroughly revised. By R. Max Goepp, M.D. Octavo volume of 724 pages. Cloth, $4.25 net. Published by W. B. Saunders Co., Philadelphia and London. 1917.

The Practical Medicine Series. Comprising Ten Volumes on the year's progress in Medicine and Surgery, under the general editorial charge of Charles L. Mix, A.M., M.D. Volume I, General Medicine. Edited by Frank Billings, M.S., M.D., assisted by Burrell O. Raulston, A.B., M.D. Series 1917. Price per volume, $1.50. Price of the series of ten volumes, $10.00. 383 pages. Illustrated. Published by The Year Book Publishers, Chicago, Ill.

The Sense of Taste. By H. L. Hollingworth, Ph.D., and A. T. Poffenberger, Jr., Ph.D. 200 pages. Price, $1.25 net. Postage, 12c. Published by Moffat, Yard & Co., New York City. 1917.

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A CONTRIBUTION TO THE HISTOPATHOLOGY OF HUMAN AND EXPERIMENTAL POLIOMYELITIS.*

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The histopathological changes in acute anterior poliomyelitis are not always the same. In an old case where the onset of the disease dates back many years they will be different from those to be found in a recent case of but a few days' duration. Prior to Rissler's[1] investigations the histopathological studies of this disease were carried on on old cases (Cornil,[2] Prévost,[3] Charcot and Joffroy,[4] Parrot and Joffroy[5]), the youngest case having been that of Damaschino and Roger,[6] two months old. As early as 1878, W. Erb[7] wrote: "We have a right to demand that only the most recent cases obtainable should be examined, with a view to determining the true essence of the pathological process present. Cases which are examined from 20 to 60 years after the first attack certainly cannot give safe and positive data for judgment with regard to this disease."

Since Erb wrote these lines numerous reports appeared on the pathology of recent cases of this disease, the latest and most exhaustive ones being those by Wickman,[8] Harbitz and Scheel,[9] Strauss,[10] Pettersson, Kling and Wernstedt,[11] and Walter.[12] The general conclusion arrived at by the various authors is that in fresh poliomyelitis cases there are present vascular, or interstitial, and parenchymatous changes. The former are to be found in the entire nervous system and the meninges, the latter in the ganglion cells of the gray matter of the anterior and less so of the posterior horns. Parenchymatous changes in the white matter and glia are recorded completely only by Walter[12] and partially by Kling, Pettersson, and Wernstedt,[11] but are ignored even in the classical works of Wickman, Harbitz, and Scheel. Further, it was found that the poliomyelitis virus does not confine its activity to the substance of the spinal cord only, but may also affect the substance of the medulla, of the brain proper, giving rise to clinical pictures known in the literature as bulbomyelitis, encephalitis, polioencephalitis anterior, etc. Finally successful inoculations of various animals with this disease enable one to study the pathological changes on very fresh material and compare them with those found in human beings. These three problems—poliomyelitis in fresh human cases, poliomyelitis with the cerebral localization, and experimental poliomyelitis in various animals, I had the opportunity to study on the material of Cook County Hospital and its pathology laboratory. In my studies I paid much attention to the parenchymatous changes not only of the gray matter but also of the white substance and to possible changes in the glia. Altogether 15 cases have been studied chiefly with the methods used by the Alzheimer school. Of these 15 cases four were human, four in rabbits (two of which were inoculated with Shiga bacilli), two in monkeys, and five in sheep. In some of these cases only the spinal cord was studied, in some both the brain and the spinal cord were examined, the experimental animal material having been kindly furnished to me by Drs. John Nuzum, M. Herzog, and F. Francis.

To avoid repetitions I will report in detail but one case, the most typical one, and of the others I will give just the necessary findings.

Case I.—DuL, man, 26 years old, a salesman by occupation, entered Cook County Hospital on August 23, 1916, with paralysis of all four extremities, shortness of breath, speech disturbances, and stiffness of the neck. The disease lasted about three weeks and started with a severe "cold." The patient was coughing, had a headache and fever. About seventeen days after the onset he began losing power in the left upper limb which became the next day totally helpless. Three days later, August 20, the right arm became paralyzed, during the following two days the lower limbs were involved, and on August 23, only the toes could be moved. During the last few days there was difficulty in breathing and talking. There was no pain or numbness. Previous history: malaria, measles, and gonorrhea.

Examination: Inability to move the extremities. The respiration is shallow, accelerated; the skin hot, the face flushed, conjunctivæ injected, speech indistinct, mentality preserved. The pupils were equal, normally reacted to light and accommodation. The limbs were in a state of flaccid paralysis with the loss of all the tendon reflexes, while the abdominal and the pharyngeal reflexes were present, the plantar absent. Spinal puncture: pressure increased, 70 cells, positive Nonne. The temperature (rectal) was 102°. Urine normal, pulse 120, respiration 46. The patient died the next day, and autopsy was performed one hour after death by Dr. John Nuzum.

Findings: Macroscopically there was a marked passive hyperemia of the pia-arachnoid over the cerebral cortex and of the spinal leptomeninges; the spinal fluid was turbid.

For microscopical studies only the dorsal region was available and the motor area of the brain, as the rest of the nerve tissue was used for experimental work by Drs. Nuzum and Herzog. The cellular changes and infiltrations were studied with hematoxylin-eosin, toluidin blue (Nissl's method), methyl green-pyronin, Alzheimer's methods VI (acid fuchsin-lichtgrün) and IV (hematoxylin (Mallory's) and copper acetate). The gray and the white matter of the spinal cord appeared under the low power, vacuolated, cribriform, the anterior horns were quite swollen and increased in volume. They contained numerous foci of infiltration, hyperemic

*From the Pathological Laboratory of Cook County Hospital.

and dilated blood vessels, and foci of necrosis. The foci of infiltration were especially numerous in the ventromedial and ventrolateral portions of the anterior horns, and were diffuse as well as perivascular. The latter occupied the so-called adventitial lymph spaces of Virchow-Robin, and mainly consisted of lymphocytes and few leucocytes; plasma cells, so-called "Stäbchenzellen" and Maximow's polyblasts were but occasionally present. The parenchyma of the gray matter was covered with numerous cells that in some places formed dense masses, and the perivascular infiltration was so pronounced that it sometimes caused occlusion or obliteration of the vascular lumen. The infiltration was also quite pronounced in the posterior horns and in the white matter, where it was confined to the bands of the connective tissue carrying the infiltrated vessels, but the parenchyma, i.e. the white substance itself, was spared, being free from infiltrations.

The ganglion cells of the anterior horns showed, as a rule, profound changes. Some cells appeared somewhat swollen, without any Nissl bodies, or showed the latter in the form of dust. The nucleus was densely stained, pycnotic. Pycnosis and chromatolysis thus were the principal changes in the ganglion cells. Other cells appeared shrunken, eaten away, and infiltrated by various cells—neuronophags. The latter consisted, in little damaged cells, principally of glia cells, but in those, with far gone destruction, other varieties, as leucocytes, etc., could be found. As a rule, very few ganglion cells could be found in the gray matter of the anterior horns, and in some places it was possible to find only fragments of ganglion cells surrounded by a mass of neuronophags of various types.

The foci of necrosis were mainly confined to the medial portion of the anterior horns. One focus was adjacent to the right posterior horn and formed a cavity.

The condition of the white substance and the glia was well shown on specimens stained with Mann (methyl blue-eosin), Bielshowsky, Marchi, and combined Marchi-Mann stains.

The dendrites of the anterior horn cells were uniformly swollen, greatly increased in size, the axones also swollen, tortuous, and club-shaped in many places. In some areas the myelin was broken up in globules, but as a rule it was retained, and well preserved in every column of the spinal cord. The glia tissue was rich in small protoplasm-poor glia cells scattered among dense glia fibers. Some glia cells had large protoplasmic bodies, frequently containing vacuoles, which on Marchi-Mann specimens showed the presence of minute particles of fat.

In the marginal glia some glia cells were large, homogeneous in appearance, devoid of any processes, but with a densely stained, pycnotic nucleus—so-called ameboid glia. As a whole, the central portions of the white substance, around the gray matter, appeared more involved than the external, marginal area, where a normal array of the axones, myelin, was present. The meninges showed hyperemia and infiltrated vessels. The infiltration consisted mostly of lymphocytes. The brain changes, though present, were considerably milder than in the spinal cord. Thus, the ganglion cells of the brain showed a slight chromatolysis, vacuolated bodies, absence sometimes of their processes, but none showed neuronophagic phenomena. The vessels appeared sometimes hyperemic, but without any infiltrations, and the glia showed no changes whatever.

This case was clinically one of Landry's paralysis, of the descending type; pathologically it was a typical poliomyelitis. The pathological changes were found in the spinal cord and somewhat in the brain tissue and also in the meninges. They were very much pronounced in the latter as well as in the gray matter of the spinal cord; were slight in the white matter, and marked in the glia (ameboid transformation). The changes were thus both parenchymatous and interstitial, and especially severe in the gray matter, where they resulted in formation of necrotic foci, while the white matter changes were comparatively insignificant. An emulsion from the spinal cord and the brain of this patient (and of other patients) injected in monkeys caused a poliomyelitis, and in the spinal fluid there were found by Nuzum peculiar diplococci, which are evidently specific for this disease.

This case furnishes additional proofs that Landry's paralysis is most probably a form of poliomyelitis, as suggested by Wickman, Harbitz, and Scheel, and pathologically proven long ago, among others, by Dr. Bassoe.[13]

Case II.—Fr. A., 2 years old, entered Cook County Hospital, August 28, 1916 (service of Dr. Francis) in a drowsy state, helplessly lying on his back. No history could be obtained. There was marked paresis of all the muscles of the neck, total paralysis of the shoulder muscles, and a bilateral páresis of the muscles of forearms and hands. The muscles of the lower limbs were either totally paralyzed (adductors of the thighs, extensors of the legs), or merely paretic. The skin was universally hypersensitive, and active movements of the limbs, neck, and back were very painful. The patellar, tendo Achillis, and abdominal reflexes were lost; the plantar, biceps, triceps, as well as Kernig and Babinski, clonuses were absent. Rigidity of the neck and back was also absent. The spinal fluid was under increased pressure, with 35 cells per cmm., and negative Nonne. The patient developed convulsions the next day, and died the following day in spite of intravenous and intraspinal injections of convalescent serum and diphtheria antitoxin. The postmortem was made while the body was still warm by Dr. John Nuzum. There was found marked hyperemia of the pia-arachnoid membrane over the cortex, the brain stem, and the lateral surfaces of the spinal cord. There was slight edema of the brain and spinal cord, a purulent nasal discharge, and a hyperemic state of the viscera. As the largest portion of the brain and spinal cord was secured under sterile conditions for cultures and animal inoculations, I could obtain but a small portion of the brain which was partly hardened in 95 per cent. alcohol (for Nissl stain) and partly in 10 per cent. formalin for glia stain (Mann's mixture). The spinal cord changes were followed up on hematoxylin-eosin specimens kindly furnished to me by Dr. Nuzum.

The cerebral meninges showed hyperemia, dilated vessels, and very mild vascular infiltrations. The brain tissue itself appeared cribriform, with enlarged pericellular and perivascular spaces; the vessels were slightly hyperemic, but very few showed infiltrations. The Mann stain showed a very mild glia reticulum. The ganglion cells, however, were deeply changed. Their cell bodies, in many instances, were reduced to mere fragments surrounding a very large chromatin-rich nucleus. The Nissl bodies were totally gone, and in some cells even the nucleus was dissolved, a mere nucleolus remaining of a former neucleus. Very few cells showed distinct processes which usually were very thin and granular in appearance. The changes mainly consisted in total disintegration of the protoplasm of the ganglion cells and caryolysis. Proliferation of the satellites, neuronophagia, vascular and marked glia changes were absent. The most proper pathological diagnosis in this case would be degenerative encephalitis. In the spinal cord there was in evidence a paucity of ganglion cells, some of which appeared to be normal, some showed neuronophagic phenomena. The cellular infiltration was diffuse and perivascular, and consisted of lymphocytes, very few leucocytes, plasmacells, and polyblasts. The pia showed marked infiltration, especially in the anterior fissure. The white matter and the posterior horns showed hardly any infiltrations which were exclusively confined to the vessels.

The microscopical picture of the spinal cord in this case was that of poliomyelitis, that of the brain a degenerative encephalitis, which, however, was not very marked. The condition of the parenchyma of the white matter could not be ascertained, as the proper methods could not be employed. The most prominent features, however, were some paren-

chymatous changes in the gray matter of the spinal cord and the brain, coupled with pronounced vascular changes in the anterior horns. In the white matter even the vascular, or interstitial, changes were quite insignificant.

This case, clinically a typical poliomyelitis, pathologically shows almost exclusively ganglion cell changes in the brain tissue, aside from the pronounced infiltrations of the vessels of the anterior horns and hyperemia of the pia-arachnoid.

Case III.—G. W., age 24, entered the Cook County Hospital, September 12, 1916, in a dying condition. Was sick but one day; had repeated vomiting and convulsions. Respiration—shallow, labored, and rapid. The head was turned to the left with the eyes diverted to the right. The left arm and leg were in a condition of spasticity, while the right leg and arm were flaccid, with the los of reflexes; the left patellar reflex was exaggerated; the abdominal reflexes were lost. Death occurred fifteen minutes after entrance to the hospital. Postmortem was made twenty-five minutes after death by Dr. J. Nuzum.

The macroscopical findings were marked hyperemia of the pia-arachnoid, moderate hyperemia of the gray matter of the spinal cord; encapsulated abscesses in both tonsils.

Microscopically there were insignificant vascular or perivascular changes, the infiltration having been presented by but one row of cells (lymphocytes). Many ganglion cells in the anterior horns were preserved, had a normal configuration, and normal size; Nissl bodies and processes were clearly present. Some cells appeared shrunken, invaded by "neuronophags," mostly glia cells (protoplasm poor); other cells appeared vacuolated, and some were represented by mere fragments surrounded by neuronophags; some again, though normal in appearance, were greatly swollen, with Nissl bodies in the form of dust. The central canal was markedly dilated, with a regular arrangement of the ependyma cells. The spinal ganglia showed no changes, the meninges presented a moderate cellular infiltration. The posterior horns showed the same changes as the anterior ones.

In the dorsal region the changes were less pronounced; the infiltration was not diffuse, but local, and consisted of lymphocytes, very few plasma cells, and polyblasts.

The glia tissue and white substance were stained with Mann's mixture. The nerve fibers showed normal axones and myelin, but the glia tissue was replaced by so-called ameboid glia and "füll bodies" of Alzheimer. The ameboid transformation of the glia was equally pronounced in both the white and gray matter appearing as homogeneous cell bodies of various sizes and forms, mostly round without any processes, and with a densely stained pycnotic nucleus. Some of the glia cells were preserved, but the glia fibers were transformed in small particles, quadrangular in shape, uniform in appearance, the so-called füll bodies of Alzheimer.

In this case, the parenchymatous changes of the ganglion cells were combined with those of the glia tissue, while the vascular changes were comparatively slight, and those of the white matter totally absent. The picture resembled that of an incomplete myelitis, which, however, could not be diagnosed with certainty because of the preserved condition of the white substance. The ameboid transformation of glia was demonstrated by Alzheimer in many central nerve lesions, caused by severe intoxication or infection, and is quite typical of myelitis. In poliomyelitis, it was described by Walter in one case, and it is probably what Pettersson, Kling, and Wernstedt in their collective report call "hypertrophied glia cells," and Leyden[14] described as "epitheloid" cells.

Case IV.—Boy, 7 years, took suddenly ill, September 24, 1916, at about 2 A.M. with severe headache and vomiting. He was seen by me seven hours later, when he had a temperature of 102°. He showed a normal mentality, was oriented, had no paralysis, no cerebral nerve lesions, no Kernig or Brudzinsky, no neck rigidity. The reflexes were present. A couple of hours later he became worse; the temperature rose to 104°; the headache and vomiting increased in severity; he became apathetic, and had complete aphasia. Slight clonic twitchings appeared in the extremities, but no paralysis or neck rigidity or Kernig was present. The boy died on the way to the hospital at about 1 P.M., *i.e.* eleven hours after the onset of the disease which started, as I said, suddenly without any prodromes.

The postmortem was done by Dr. Le Count, and only the brain and the upper portion of the cervical region of the spinal cord were allowed to be examined. Upon opening the skull there was a marked bulging of the brain, which appeared very edematous and without any particular changes in the membranes.

The microscopical examination of the spinal cord showed: dilated spinal canal, moderate hyperemia of the capillaries, no perivascular infiltration, no neuronophagic phenomena, but the majority of the ganglion cells were slightly swollen (methods: Nissl and Pappenheim's stain, Methyl green-pyronin). The brain was examined with the usual methods (Nissl, Mann, Bielshowsky). The pia was infiltrated, the vessels were dilated and hyperemic. The majority of the ganglion cells were found normal in size and shape, but they frequently showed a pronounced neuronophagia, especially in the deeper layers of the cortex. The neuronophags were exclusively glia cells. Some ganglion cells were broken up, showed mere fragments, and some appeared cystic. Neuroglia tissue showed dilated mashes, a distinct glia reticulum which was especially marked on Mann specimens. In some areas, as the frontal, there was an enormous number of vessels present, the entire visual field having been covered with dilated and hyperemic capillaries which were as numerous as the ganglion cells. The marked glia reticulum, the excessive vascularization, the hyperemia and infiltration of the pia, the neuronophagia, all confined to the brain tissus, indicated an acute meningoencephalitis, while the spinal cord changes were very mild.

The course of the disease in this case was so rapid that a detailed clinical examination could not be done. The spinal puncture done by Dr. Le Count on the cadaver revealed a clear fluid in which Dr. G. Mathers found the gram positive cocci, which he himself, Nuzum, Herzog, Rosenow, and others consider typical for poliomyelitis.

We must, therefore, diagnose this case as a poliomyelitis with its localization in the brain tissue, or as an encephalitis of poliomyelitic origin. The pathological picture did not differ from other forms of encephalitis produced, for instance, by influenza, and without the bacteriological examination it would have been difficult to classify the type of encephalitis in this case.

Aside from its pathological, viz., bacteriological importance, this case also shows some clinical peculiarities. It resembles those cases frequently occurring in private practice, some of which I described some time ago, and which resemble the acute hemorrhagic non-suppurative forms of encephalitis.[15] They run a very rapid course, sometimes but a few hours, and usually die. If they do recover they show signs of permanent brain lesion, as spastic paralysis of one limb or half of the body, aphasia, visual or auditory disturbances, epileptiform convulsions, etc. Cases of this kind used to be diagnosed as encephalitis, bulbar myelitis, encephalo-bulbomyelitis, etc., and their most common etiology was looked for in some infection, as influenza, or intoxication.

There is no doubt, as Strümpell[16] suggested long ago, and as Medin,[17] Harbitz and Scheel and Wickman pointed out later, that these various

cerebral lesions are nothing but a poliomyelitis with cerebral localization, a cerebral poliomyelitis, as it were. Definite proofs, proofs based on pathology and bacteriology, however, were lacking, the only case, that of Harbitz and Scheel (Case XVII of their series), having been observed in an adult, not in a child, while this case of mine furnishes pathological and bacteriological evidence of the correctness of Strümpell's view.

From the short review of these four cases we may form some conclusions as to the possible pathological changes in human poliomyelitis. These changes I could demonstrate in the meninges, in the vessels, in the ganglion cells, in the nerve fibers of the white substance, and finally in the glia tissue. In other words, the histopathological changes in human poliomyelitis may be confined to every tissue that makes up the spinal cord, and roughly are classified as *parenchymatous* changes, of the ganglion cells and white substance, and *interstitial* ones (vascular infiltrations and glia changes). The parenchymatous changes were mostly in the ganglion cells, which were found involved in every case, though not to the same extent. In some cases (I and III) they were much more in evidence than in others (Case III), and in Case IV they were very mild (in the spinal cord). The nerve fibers forming the various columns of the spinal cord were less involved. Nowhere were they found broken up in fragments, as is the case in secondary degeneration, nowhere did they show such destructive signs as in myelitis. In short, their involvement was insignificant, much less pronounced than that of the ganglion cells of the anterior horns, while in the marginal areas of the spinal cord they were practically always normal. The vascular changes, as infiltrations with various cells, were present in almost every case, but again in some very much, in others very little. The glia changes were the most inconstant ones, only in two cases (I and III) were they marked, in the form of ameboid glia.

It follows that, aside from meningeal changes, the most significant and constant ones to be found in acute anterior poliomyelitis are those of the ganglion cells of the anterior horns, and vascular infiltrations. The white matter and the glia also may be involved, but much less frequently. It will be of some interest to compare these findings with those in experimental poliomyelitis produced in various animals—monkeys, rabbits, and sheep, and to see what possible conclusions might be drawn in regard to the essential features of the pathology of this disease.

Case V.—A ring tail monkey was injected by Dr. John Nuzum, on September 28, 1916, intracerebrally, with one c.c. of a suspension of five different cultures from human brains and cords of poliomyelitis cases (including those of the first three cases reported above.) Paralysis (flaccid) developed the following day, and death a day later, September 30, 1916.

The post-mortem examination revealed an enormous congestion and round-cell infiltration of the cerebrospinal meninges. The infiltration consisted almost exclusively of lymphocytes. There was also a very marked congestion with an abundance of capillaries in the gray matter of both anterior and posterior horns, and of the brain tissue proper, but it was much more pronounced in the cervical and dorsal regions. In the lumbar region there were also punctate hemorrhages. Ganglion cell changes in the anterior horns of the spinal cord were in some places quite marked, as well as neuronophagia which frequently was represented by marked satellitosis, some ganglion cells having been surrounded by 5 or 6 protoplasm-poor glia cells, while white matter and glia changes were totally absent. Even the vascular changes in the white matter were not marked in some areas (lumbar cord for instance). In the intervertebral ganglion Dr. Nuzum noted, in this animal, marked neuronophagia.

Case VI.—Another monkey (*Macacus rhesus*) received, October 16, 1916, 0.5 c.c. of a subculture, second generation, from the spinal fluid of two human poliomyelitis cases. Paralysis developed a week later, followed by coma and death.

The post-mortem findings were similar to those in the former monkey, but somewhat less pronounced. In addition, the axones showed marked tumefaction with the myelin preserved.

In both of these monkeys the interstitial changes, the hyperemia of the meninges, the infiltration and congestion of the gray matter strongly resembled the same phenomena in human poliomyelitis, but the parenchymatous changes in the ganglion cells and neuronophagia, though present, were comparatively less in evidence, while neuroglia and white matter changes were either totally absent, or were very mild (swollen axones in the second monkey).

Case VII.—One rabbit, No. 3, was injected intraperitoneally with 15 c.c. of a culture from the spinal cord of patient No. 2 of this series, September 9, 1916. Found dead September 27, 1916. Post mortem: Slight hyperemia and cellular infiltration of the meninges and of the gray matter of both horns of the spinal cord. The ganglion cells were usually swollen, some were preserved, and few showed a slight neuronophagia, in the form of satellitosis, viz., abundance of neuroglia cells. The posterior horn cells appeared more frequently involved than those of the anterior horns. The white matter and the glia showed no changes.

Case VIII.—Rabbit No. 21, was injected intraperitoneally, September 15, 1916 with 3 c.c. of a 24 hour culture from a tonsil of a poliomyelitis patient. Paralysis and death set in six days later. Microscopical examination showed quite marked hyperemia of the pia vessels, very mild vascular infiltration; some ganglion cells showed pronounced neuronophagia and were greatly changed. They appeared vacuolated, shrunken, some again were swollen, the dendrites were usually lacking, but the Nissl bodies were mostly well preserved. The white matter showed swollen axones and very slight vascular changes, while the glia was entirely normal.

The histopathological changes in these two rabbits were much less pronounced than in the monkeys, and were principally of the degenerative or parenchymatous variety, *i.e.* the hyperemia and the perivascular infiltration were considerably less in evidence than in monkey poliomyelitis. Yet the parenchymatous changes, though present, were not sufficiently characteristic to permit of a microscopical diagnosis of poliomyelitis, since similar changes can be produced in rabbits by some other virus, dysenteric, for instance, as can be seen from the report of the next two cases.

Case IX.—A young rabbit was injected by Dr. Frank Francis intraperitoneally, October 3, 1916, with a pure culture of Shiga bacilli. Two days later a flaccid paralysis developed in the front legs, followed one day later by flaccid paralysis of the other extremities, and of the respiratory muscles.

Case X.—Another rabbit was similarly injected intraperitoneally, October 7, 1916, and paralysis of all the extremities set in the next day when the animal died.

In the former animal (Case IX.) no particular changes were noticed, except slight hyperemia of the pia and of the vessels of the gray and white matter, while in the second animal, in addition to the vascular there were changes in the ganglion cells. The majority of them appeared swollen, but preserved their Nissl bodies and nucleus which often contained two nucleoli.

Some ganglion cells of both horns were very much disfigured, especially on Mann specimens—they showed numerous vacuoles within their cell bodies, appeared fenestrated, and frequently broken up in fragments surrounded by numerous glia cells. Other ganglion cells showed excavations filled with glia cells (neuronophagia) some of which were of the ameboid type. The posterior horn changes were more in evidence than the anterior ones. The glia of the white substance was without changes.

We find in these two cases some of the features peculiar to poliomyelitis—hyperemia of the vessels of the pia and the gray-white substance, parenchymatous changes in the ganglion cells, also neuronophagia, but perivascular infiltration was totally absent. Neither the hyperemia nor the neuronophagia, nor even the ganglion-cell changes were pronounced to the degree we usually see it in human poliomyelitis, and a diagnosis of the latter in these two cases could hardly be made with certainty. In other words, Shiga bacilli, or dysenteric antitoxin, as proved especially by the excellent work of Lotmar.[18] in certain doses, may produce changes in the central nervous system, which, however, usually have the features of a myelitis.

Sheep poliomyelitis was studied on the central nervous system of five sheep. Three of these were experimented upon by Dr. Maximilian Herzog and two by Dr. John Nuzum.

Case XI.—Sheep No. 1 was injected (Dr. Herzog) intracerebrally October 10, 1916, with an emulsion of three human brains of patients who had died from poliomyelitis, mixed with three cultures obtained from the spinal fluid of various poliomyelitis cases. Paralysis developed six days later followed by death on the seventh day.

Microscopical examination showed marked hyperemia in the pia and dura; adventitial infiltration was present, and consisted of lymphocytes and leucocytes, but was not of frequent occurrence. There was also hyperemia of the vessels and capillaries of the gray matter; the ganglion cells of the spinal cord especially on Mann specimens were greatly vacuolated, disfigured, and partly broken up; neuronophagia was absent, as well as glia and white matter changes. The brain showed dilated and hyperemic vessels with insignificant adventitial infiltration which was to be found only in few sections, in short was exceptional. The glia tissue was cribriform in appearance with dilated pericellular and perivascular spaces. The cortical cells were broken and showed marked neuronophagia, in some sections. The changes in the brain were more marked than in the spinal cord and justified the diagnosis of encephalitis.

Case XII.—Sheep No. 2: Same injection (Dr. Herzog) as in the previous case, but intraperitoneally, October 10, 1916 (2 c.c.) There was but slight weakness noticed, no paralysis. The animal was killed 12 days later. Microscopically there was found an extensive hyperemia of the gray and white matter, hemorrhagic foci in the gray substance of the anterior and posterior horns, tumefaction of some white fibers and of the dendrites of the anterior horn cells. The ganglion cells and the glia tissue were apparently normal.

Case XIII.—Sheep No. 6, inoculated intracerebrally, October 25, by Dr. Herzog, with an emulsion of the brain of sheep No. 1. The animal was very sick for 10 days, developed convulsions and died November 7. For three days she was dragging the left hind limb and could hardly get up. Microscopical examination showed marked hyperemia of the pia-dura and of the gray matter, but a very slight one of the white substance. Perivascular infiltration was totally absent. The ganglion cells mostly appeared swollen with preserved Nissl bodies, and dentrites well stained. Some ganglion cells manifested deep destruction, appeared vacuolated, broken up; neuronophagia was usually slight and inconstant. The white substance also showed changes—myelin was broken up in fragments and scattered over the visual field, but the axones were retained, though swollen. The glia showed deep changes—both in the gray and white matter, it showed the ameboid transformation.

Case XIV.—Sheep, a small lamb, injected intraspinally by Dr. John Nuzum, October 15, 1916, with 2 c.c. of a polyomyelitic, cerebrospinal fluid culture. Two days later flaccid paralysis developed followed by convulsions and death on October 18, 1916. Microscopical examination showed hyperemia and cellular infiltration of the pia and dura all along the spinal cord. The ganglion cells, as a rule, had preserved their size and configuration, though they showed chromatolysis; other cells were shrunken, broken up, and often represented by mere fragments. Many cells, especially on Mann's specimens, were vacuolated. Other ganglion cells were packed with glia cells, and some appeared granular. Small vessels and capillaries were very hyperemic, and showed perivascular infiltration (many plasma cells). The axones were swollen, but the glia tissue was unchanged.

Case XV.—A small lamb was injected intracerebrally by Dr. John Nuzum with 1 c.c. of a spinal fluid culture from a poliomyelitis patient, October 15, 1916. Two days later flaccid paralysis developed followed by death 64 hours after the injection. Microscopical examination showed capillary hemorrhages in the gray and white matter, slightly swollen axones, and no other changes.

Thus the histopathological findings in sheep poliomyelitis are by no means uniform. The last one, Case XV, showed hardly any changes whatever, except hemorrhages in the gray matter; one, Case XII, showed principally infiltrative changes in the presence of very slight degenerative ones, the rest (XI, XIII, and XIV) showed both degenerative and infiltrative changes. The mild changes in Case XII might be attributed to the mode of injection (intraperitoneally), or probably to the slight virulence of the poison, or to the greater resistance of the animal. The general impression of the sheep poliomyelitis is that sheep present less marked anatomical changes than monkeys, yet they are very susceptible to the virus, as successful inoculations usually cause rapid death, the general infection sometimes killing the animal before distinct anatomical changes obtain in the central nervous system.

Comparing the pathological changes in the experimental and human poliomyelitis we can see that the classical signs of the latter, as perivascular infiltration, pia congestion, degenerative or parenchymatous changes in the ganglion cells, neuronophagia, etc., being more or less constant in fatal human poliomyelitis, are not always to be found equally represented in the experimental form. They are more or less frequent in monkeys, but in rabbits principally degenerative changes are to be found, and in sheep, as I said, either may obtain.

I wish again to point out the fact that a definite or *sure* pathological diagnosis of acute anterior poliomyelitis in any of the animals of this series could not be made by any means. A diagnosis of meningomyelitis, or degenerative myelitis, would be quite suggestive and not far from the truth. In fact, the pathology of human poliomyelitis is, according to the majority of investigators, nothing but a myelitis, in view of the marked interstitial changes to be found in every case of a fresh poliomyelitis. Such interstitial changes were noticed by some of the earliest students of this disease, as Roger and Damaschino. They looked upon poliomyelitis as a central myelitis with foci of softening, combined with atrophy of the ganglion cells of the anterior horns. They thus somewhat broadened the famous teaching of Charcot that anterior poliomyelitis is a

primary disease of the ganglion cells of the anterior horns, and is therefore exclusively a parenchymatous, degenerative, not inflammatory, process. The subsequent investigations of Redlich,[19] Wickman, and others practically confirmed the correctness of the opinion of Roger and Damaschino, that Charcot's teaching, though basically correct, must be somewhat broadened, at least for the majority of cases. Yet Rissler and others insist on the primary atrophy of the anterior horn cells as being the basis of poliomyelitis, and the vascular changes are looked upon merely as secondary phenomena. In opposition to this teaching, Goldscheider[20] proclaimed just the opposite views—vascular changes are the primary, the parenchymatous, *i.e.* ganglion-cell, changes are the secondary ones.

Since the experimental cases demonstrate that in some animals (rabbits) the parenchymatous, in others (monkeys) the interstitial (or infiltration) changes prevail, and in sheep, again, either form may obtain, we must admit that neither of these teachings is absolutely correct, that both parenchymatous and interstitial changes are independent phenomena, caused by the same virus.

REFERENCES.

1. Rissler: Zur Kenntniss der Veränderungen des Nervensystems bei Poliomyelitis ant. acuta, *Nord. Med. Arkiv.*, 1888. XX. No. 22, Abstr. in *Fortschr. der Medicin*, 1889, VII, 500.

2. Cornil, V.: Paralysie inf., cancer des seins; altérations de la moelle épinière, etc., Compt. rend. et mémoires de la soc. de biol. de Paris, Année, 1863, Paris, 1864, p. 187.

3. Prévost, J. L.: Observ. de paralysie inf.; lésions des muscles et de la moelle, Compt. rend. des scéances et mémoires de la soc. de biol. Année, 1865, Paris, 1866, p. 215.

4. Charcot, J. A., and Joffroy, A.: Cas de paralysie infantile spinale, avec lésions des cornes ant. de la substance grise de la moelle épinière, *Arch. de phys. normale et path.*, 1870. III., 134.

5. Parrot, J., and Joffroy, A.: Note sur un cas de paralysie infantile, *Arch. de phys. normale et pathol.*, 1870. III. 309.

6. Roger, H. and Damaschino: Recherches anatomopathol. sur la paralysie spinale de l'enfance (paralysie infantile), Compt. rend. mémoires de la soc. de biol, Année, 1871, Paris, 1873; Also Des altérations de la moelle épinière dans la paralysie spinale de l'enfance, etc., *Rev. de Med.*, 1881. I. 81.

7. Erb, W.: Diseases of the sp. cord, in Ziemssen's Cyclopedia of the Practice of Medicine, Am. Ed., W. Wood & Co., 1878, III. p. 670.

8. Wickman: Weitere Studien uber Poliomyelitis acuta, etc., *Deut. Zeit. f. Nervenh.* 1910, XXXVIII. p. 396; also in Handb. der Neurologie by Levandowsky II, p. 807, Berlin, 1911.

9. Harbitz, F. and Scheel, Q.: Pathol.-anatomische Untersuchungen über akute Poliomyelitis und verwandte Krankheiten, Christiania, 1907.

10. Strauss, J.: Pathology of poliomyelitis, *Journal of the Am. Med. Assoc.*, 1910. July 2, p. 48; also Report of the Collective Investigation Committee or the New York Epidemic, 1910.

11. Pettersson, Kling and Wernstedt: Investigations on Epidemic Infantile Paralysis, 1912. Stockholm, Report from the State Medical Institute of Sweden.

12. Walter, R.: Zur Histopathologie der akuten Poliomyelitis, *Deut. Zeitschr. f. Nervenh.*, XLV, 1912, p. 79.

13. Bassoe, Peter: Some Observations on Acute Ascending Paralysis, *Journal of Infectious Dis.*, II, 1905.

14. Leyden, E.: Beiträge zur. Path. Anat. der atrophischen Lähmung der Kinder und der Erwachsenen, *Arch. f. Psych.*, 1876. VI, 271.

15. Hassin, G. B.: Acute Encephalitis with Report of Cases, MEDICAL RECORD, 1909, Feb. 8.

16. Strümpell, A.: Uber die acute Encephalitis der Kinder, Jahrb. f. Kinderheilkunde, 1885, pp. 173-178.

17. Medin, O.: Uber eine Epidemie von spinaler Kinderlähnung, Verhandl. des X. intern. Medic. Congr., Berlin, 1890, Vol. II. Abth. VI. p. 37.

18. Lotmar, Fritz. Beiträge zur Histologie der akuten Myelitis, Nissl-Alzheimer's Arbeiten, 1913, VI.

19. Redlich, Emil: Beiträge zur Path. Anatomie der Poliomyelitis ant. acuta infantum, *Wiener klin. Wochenschr.*, 1894, April 19, p. 287.

20. Goldscheider, A.: Ueber Poliomyelitis, *Zeitschr. f. klin. Medicin*, 1893.

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THE EFFECTS OF CIVILIZATION ON THE MORBIDITY AND MORTALITY OF TUBERCULOSIS.*

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KRAFT-EBING once said that civilization and syphilization go hand in hand. I am tempted to say the same of tuberculosis, for civilization and tuberculization do seem indeed to go also hand in hand. Before our Indians came in touch with civilization tuberculosis was unknown among them; now they are dying fast from this disease. The Negro, prior to his tasting the freedom of so-called civilization, was virtually free from tuberculosis; now this race presents the greatest morbidity and mortality rate from this same malady.

There is nevertheless a great difference between tuberculosis and syphilis in their relation to civilization. It is today universally admitted that the vast majority of the people who have lived for generations in cities and towns have at some time had a tuberculous infection. Modern pathological science corroborates this, for the majority of individuals who have died from accidents or other diseases than tuberculosis have shown, when their bodies were autopsied and all organs macroscopically and microscopically examined, that they had had a tuberculous infection at one time or other in their lives. Many authorities maintain that this infection even conveys a certain immunity to future infections and that only when a new invasion of tuberculosis germs becomes overwhelming, or when privation, malnutrition, exposure, intemperance, lack of air and sunlight, or overwork undermine the natural resistance, does the latent tuberculous focus which was the result of the primary infection, suddenly become active and we have a tuberculous disease.

Although tuberculosis was known and quite prevalent in antiquity and Hippocrates has given us an admirable description of the symptoms of the disease, which he called phthisis, it has become the typical disease of the masses more particularly during the last and present centuries when the very large migration from country to city took place and the various industries became established. Factory hygiene was and is yet in many instances deplorable. Long hours of work and congested life in unsanitary tenements cause a deterioration of both physical and moral stamina among a large propor-

*Read before the American Academy of Medicine, at its forty-second Annual Meeting in New York City, June 4, 1917.

tion of the urbane population. The best example in our own country is perhaps shown by the Italian and Irish immigration. The Italian laborer prior to his coming to this country has usually been engaged in farm work, and owing to the mildness of the Italian climate he has lived much in the open air. When he comes to this country he submits himself to contract labor of the hardest kind and lives in the most unsanitary way in crowded and congested tenement houses. A large number of the Irish population offers the same problem and as a result the tuberculosis morbidity and mortality of both the Italian and Irish population is very great.

To all this must be added intemperance, that is to say excessive indulgence in strong alcoholic drinks which, with all its dire consequences, is a symptom of so-called civilization. In my work as physician in charge of a large tuberculosis service in the largest city of our country, I have found alcoholism one of the most prevalent and most serious predisposing factors of tuberculous disease, and we have a large population of men and women who contract tuberculosis anew or develop an active disease from a latent tuberculous infection because of bad hygiene, malnutrition, intemperance, syphilis, and other vices of civilization.

What progeny can we expect from parents who are tuberculous? What chances have the children of such parents? Before giving you an answer to the sociological aspect of the question, permit me to say that whether we believe in direct hereditary tuberculous transmission or not there is no doubt that if a tuberculous mother is ill enough to secrete tuberculous toxins, these toxins will effect the cell-life of the fetus with the result that a child will be born with a physiological poverty and a strong predisposition to tuberculosis. The chances that this child will become tuberculous by postnatal infection are so numerous and so well known that I do not deem it necessary to enumerate them here. The more close and more prolonged is the contact of the infant with its tuberculous mother, the more surely will the child become infected. If the father is tuberculous and the mother must do the work, while the family increases in number as is usually the case, we have one of the sociological aspects of tuberculosis and civilization.

As an example of this condition I do not believe I can do better than to cite a pathetic incident incorporated in an address on Preventive Medicine and Birth Control, which I had the honor to deliver last March upon invitation before the New York Society of Medical Jurisprudence. The Hon. Judge William H. Wadhams of the Court of General Sessions had freed upon a suspended sentence a woman accused of burglary, and his own words tell the story: "The woman's tuberculous husband is not permitted by the authorities to work because of his being ill with tuberculosis. It would be dangerous for him to work on children's garments. It might spread the consumption to the innocents. There is a law against that. As a result of this law the husband has had no work for four years. Nevertheless, he goes on producing children who have very little chance under the conditions to be anything but tuberculous, and themselves growing up, repeat the process with society. There is no law against that. But we have not only no birth regulation in such cases, but if information is given with respect to birth regulation people are brought before the bar of justice for it. There is a law they violate. The question is whether we have the most intelligent law on this subject we might have. These matters are regulated better in some of the old countries, particularly in Holland, than they are in this country. I believe we are living in an age of ignorance, which at some future time will be looked upon aghast. So here we have a family increasing in number, with a tuberculous husband, with a woman with a child at her breast, with other small children at her skirts, and no money. There is a report which I have from the Charity Society showing that the defendant, this woman, had to have assistance from time to time to keep from actual starvation, and in order to give her family bread she steals. I will not send her to jail. Sentence is suspended."

Had I the time, I could tell you any number of similar stories out of my own practice. In my work in the tenements and overcrowded hospitals I have again and again witnessed the sufferings of many a tuberculous mother whom I could not help because it was too late to prevent. The despair of the poor, frail creature at the prospect of another inevitable confinement, the likelihood of her early decease as a result of this newly added pregnancy, the thought of her other children who would be deprived of a mother's care at ages when they need it most, and later the sight of a puny babe destined to disease, poverty, and misery, opened my eyes to the utter immorality of thoughtless procreation, not only of the tuberculous, but of all the physically and mentally diseased and impoverished. Yet there are some people who have criticized men like Drs. Biggs, Jacobi, Holt, Reed, Professor Sprague and many others of equal prominence and your humble servant because of our belief in birth control to prevent the thoughtless procreation of the physically and mentally unfit.

In my research work for a paper on the "Period of Life at which Infection from Tuberculosis Occurs Most Frequently,"* I discovered that the age at which a tuberculous infection contracted in infancy or childhood usually becomes active is at or after 15 years. I can only account for this by the prevalence of child labor causing an excessive physical strain on the delicate growing organism which loses its natural resistance to a new invasion of the bacilli or the awakening of a latent infection. Child labor, which is still the curse of our nation in many States, is a factor of our modern civilization largely responsible for the high morbidity and mortality rate from tuberculosis among our young people, particularly at the period of adolescence.

Child labor, unfortunately, is not confined to factory, cannery, or workshop, it is also met with in the homes of the poor and even the middle classes. The homes of the poor are often made into sweatshops and children frequently of tender age are forced to participate in the making of artificial flowers or the sewing of garments for many hours,

*"The Period of Life at Which Infection from Tuberculosis Occurs Most Frequently. How May We Diminish the Frequency of Those Infections and Prevent Them from Becoming Tuberculous Diseases?"—MEDICAL RECORD, January 8, 1916.

sometimes late into the night. In some homes, the older children, particularly the girls, are worn out by being forced to assume the rôle of little mothers and caring for the younger children in the absence of the parents or when there are too many little ones to be taken care of otherwise. Boys are often forced to attend to chores beyond their physical endurance, and this practice is by no means confined to the families of the poor. I also venture to say that the curricula of many of our schools resemble child labor, particularly when they demand a great deal of home work, and they have the same effects inasmuch as they are certainly detrimental to the physical development of the growing organism of the child.

Modern civilization with all its industrial advances has thus far, with a few exceptions, neglected the physical examination of apprentices to trade or commerce so that the tuberculous or those predisposed to tuberculosis might be weeded out and referred to institutions for treatment, and not constitute later on sources of infection for their fellow workers.

There is also much tuberculosis among the rural population in both children and adults which is probably due not so much to overwork as to the unhygienic way of living in home and at school. Many country school houses are notoriously unhygienic; heating and ventilation are of the crudest kind, and country housewives are noted for excluding the good country air by day and by night and saving it for the city visitors in summer.

Insufficient ventilation in factories, workshops, stores, and offices, not excluding even our federal institutions, schools, and colleges, must be considered one of the most important indirect causes of tuberculosis in our present state of civilization. Insufficient knowledge on the part of many housewives of how to cook well and economically and at the same time provide nutritious food, is one deplorable cause of underfeeding which in turn predisposes to tuberculosis.

It is particularly the school child of the poorer classes who suffers from malnutrition. It has been shown that of the 1,000,000 school children attending the public and parochial schools of this great city of New York, 160,000 are underfed. Here is an opportunity for practical philanthropy to provide nutritious midday luncheons at a minimum price for these children, not only while school is in session but also during the vacation.

Another reason for the large morbidity and mortality from tuberculosis among the children of the poor as well as of the more well-to-do classes is the inability or disinclination of many mothers to giving the breast to their infants. The poor working woman employed in factory or workshop, often not well nourished herself, has to snatch away a few moments from her daily task to give her child the breast. It finally becomes too great a burden and the child is no longer brought to the factory, but fed artificially by an older child or kindly neighbor. The society woman is occupied with what she thinks more important matters which her rank and standing demand, so the poor rich baby is as badly off in this respect as the poor poor baby. So-called civilization prevents both mothers from performing the most important duty which nature has imposed upon them. Physicians who have paid any attention to child development and subsequent diseases during adolescence will bear me out when I say that the breast-fed child, as a rule, will withstand the invasion of pathogenic germs much more readily than the artificially fed infant. In countries where military conscription is in vogue it has been found that many more of the candidates who have a history of having been breast-fed infants are fit for military service.

Many occupations, trades, and industries of today involve the inhalation of vegetable and mineral dust which irritates the mucous membranes of the respiratory organs and offer suitable culture mediums for the ubiquitous tubercle bacillus.

Dust collectors and the best possible factory sanitation are the only means to do away with this indirect source of tuberculosis, but not only the laborers in their factories but the ordinary citizen is often exposed for days and days to the inhalation of all kinds of dust. The tearing down of houses which is a daily feature of nearly all of the great cities, is productive of any amount of dust of a most irritating kind. An equally annoying and almost as dangerous practice is the old fashioned way of beating carpets. The contractors undertaking the wrecking of a house should be obliged to wet thoroughly the walls, ceiling, and floors before beginning the wrecking operation, so as to reduce the dust nuisance to a minimum. Carpet beating should not be permitted in a densely populated community when pneumatic cleaning by the suction process can be done so much more hygienically. Let us also hope that this modern way of collecting the dust from within the houses will, in the near future, be made applicable to our methods of street cleaning.

A penalty should be imposed upon any one who intentionally or carelessly places bottles or broken glass in the streets. Leaving aside the danger from cuts, when broken glass is ground to powder by the traffic it certainly adds to the irritating quality of the dust in the city air we must breathe. Collecting ashes and garbage should be done with the aid of two sets of receptacles with tightly fitting covers so that the air may neither be polluted by ash dust nor offending smells from garbage. Whenever possible, the use of hard coal should be made obligatory, and where soft coal must be burned some of the many and constantly improving smoke consumers should be installed. They will not only prove a great hygienic advantage to the citizens, but also an economic advantage to the consumer.

The conditions of modern industries requiring that many workers shall congregate in one place to perform their work, make a periodical examination of all laborers in our modern factories a necessity. According to the statistics which I have been able to gather, the age at which tuberculosis is diagnosed and apparently contracted most frequently in adult life is between 20 and 35 years. It is because the periodical examination of laborers for tuberculosis is neglected in most of our modern industries and the early cases not recognized nor treated that tuberculosis has become most prevalent at that period of the life of the laborer.

All this shows that with the increase of population and consequent congestion the very conditions which modern civilization has created, with the object of widening the scope of life and making

man master of the earth he inhabits, are such as to foster the spread of many diseases which were not prevalent in a more natural condition of life. But in bending nature to his will and uses, man must not forget that he himself is a part of that same nature. Thus, civilization must go one step further and improve the conditions which itself has caused to exist. Thus shall it indeed be worth of the name.

Among the first things, we must have a more intensive antituberculosis education among the masses, including the Indian and Negro races. We must teach tuberculous parents not to procreate while actively diseased; encourage breast feeding; do away with child labor as a curse of the nation; replace the old type of school curricula by a modified Gary system, including more open air classes;* improve factory hygiene and prevent sweatshop labors. We must institute sanitary supervision of tenement and lodging houses; encourage the migration from city to country by making farm life more profitable and attractive through wise statesmanship and philanthropy; and last but not least, we must have compulsory insurance for all working people, including maternity insurance and insurance for tuberculosis.

Our present war is justified because it is a war for liberty and true civilization, and it is my firm conviction that it was a false idea of civilization which is responsible for this world catastrophe the magnitude of which in its relation to tuberculosis can hardly be realized at this time. Only a faint idea of the terrible results on the increase of tuberculosis in the civilized world during the past three years may be gained from the fact that in one of the warring countries alone, in brave and beautiful France, not less than 150,000 soldiers have had to be returned from the fighting line because they had developed an active tuberculosis which incapacitated them for further service. As a result of the privation and suffering which this terrible war has entailed, there are now no less than 400,000 to 500,000 active open tuberculosis cases in France alone. In Poland, Serbia, Roumania, and in the other warring countries conditions are identical if not worse. The United States, its government and its people must prepare for similar calamities, or rather seek to prevent them by wisely husbanding our food supply, our supply of coal, wool, and cotton, preventing speculation in the necessities of life and maintaining a high standard for housing the masses. If want of any of these necessities arises, it is sure to be followed by an increase of tuberculosis. But above all else, we must keep up our vigilance against the dissemination of the great white plague. We must increase our facilities for the prevention of tuberculosis and for the care of the tuberculous; increase our hospital and sanatorium accommodation; increase the number of clinics for early diagnosis and the care of ambulant cases; insist on more open air schools or at least open air classes; and last but not least, I say it again, keep up our educational propaganda.

In addition, we must at this time prepare ample sanatorium and hospital accommodations not only for our own soldiers who may return to us tuberculous, but also for prisoners from the central powers who may come to us afflicted with tuberculosis. Lastly, we should consider all the young men who are rejected from military service because of physical weakness, particularly those with a slightly incipient tuberculosis or those who are considered arrested cases. They should be given an opportunity to enter a sort of reserve army to be mobilized for agricultural work and other outdoor industries that would be beneficial to them in building up a weak constitution. If such agricultural and outdoor industries, most urgently needed at this time, could be organized on a military basis and the men allowed a uniform similar to that worn by our Home Defense League, I have reason to believe that many would gladly avail themselves of this opportunity to be of service. By the formation of such an industrial army these young men will be helped physically and morally and would render an invaluable service to the country at large by the increase of its agricultural, horticultural, and other products. Medical officers should, of course, form a part of these industrial units so that they could watch over the health of the men composing the colonies and even regulate the hours of work so that relapses of the former tuberculous patient or the breaking down of the incipient invalid may be avoided. I have reason to believe that after six to twelve months training in such a colony perhaps quite a number of young men would graduate therefrom physically and morally well and fit to enter the regular army.

Civilization, such as it is, is doubtlessly responsible for much if not for all the tuberculosis in existence. But there is still hope, for this same civilization has also awakened in man his sense of duty in the combat against the great white plague. In nearly all countries of Europe and America antituberculosis work has been in progress and our own country has not been behind. In Europe the present war has not only, as already pointed out, increased the fearful morbidity and mortality of the disease, but it has also stopped all educational propaganda and all municipal and state philanthropic enterprises which were directed against tuberculous invasion. Let us hope that when the strife will at last be ended there will be a reawakening throughout the civilized world and a renewed activity of all the agencies which have been heretofore so helpful in the antituberculosis crusade. Civilization, such as it should be, can do away with this as well as other diseases of the masses. Tuberculosis can be prevented, it can be cured, it can even be eradicated by true civilization; but to be truly civilized, we must replace ignorance and superstition by education and enlightenment, social injustice by social justice, selfishness and greed by love and generosity, egotism by altruism. In short, we must realize that health and happiness and peace cannot be truly enjoyed if they are the property of a few, for true civilization in its divine interpretation means a happier, healthier humanity for all peoples and nations and peace and good will on earth.

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*I should like to see the Gary system so modified that there should be given at least one-half to three-quarters of an hour of relaxation to all the children and teachers, preferably in the middle of the day.

Silent Peritonitis.—Minet reported three cases of almost sudden death in the absence of symptoms. Autopsy revealed the presence of acute peritonitis.—*La Presse Médicale.*

NON-SPECIFIC PROTEIN TREATMENT OF INOPERABLE CANCER.

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THE writers have called attention in previous publications to a method of treating inoperable cancer by injections of extracts prepared from a group of plant substances. At the time of the first publication the work had not progressed to such a degree that it was possible to offer a satisfactory theoretical explanation as to why the observed effects occurred. During the last two years both the experimental and clinical work have brought important new facts and observations so that it is now possible to state what appears to be a possible hypothesis for the therapeutic action noted and to correlate the results obtained with the work of other students in this field.

It is unnecessary to repeat the origin of the writers' interest in this method. The earlier work was, in many respects, unsatisfactory and difficult. It involved the use of a therapeutic agent which was prepared from a series of herbs that are little used in medicine and never before by the method proposed. Moreover the method seemed to have no relation to the accepted theories regarding cancer or the previous methods of treatment. "Essentially, however, the material used for injection was a saline extract rich in a variety of vegetable proteins, organic salts, extractive materials, and contained some chlorophyll, chromophyll, and lipoids in an emulsified condition." It was observed very early in the course of these experiments that injections of the extract produced characteristic protein reactions and as the work progressed it was this factor which more and more attracted attention. The other substances in the extract were believed to be not only useless, but disadvantageous and the experience of the last year has demonstrated such to be the case. Moreover, if this is a protein reaction it is inconceivable that the plant substances at the basis of the original extract are the only ones which afford a suitable type of protein for this purpose. Our experience of the last year indeed demonstrates such to be the fact. The present paper is a brief outline of the progress from an extract prepared from a congeries of herbs, many of which we know contributed no protein, and contained irritating substances to standardized solutions of proteins prepared by simple methods from common seeds.

It is unnecessary and space will not permit outlining all of the experiments made with the original mixture to locate the essential factor in the extract, nor is it necessary to rehearse at this time the long series of experiments made with proteins prepared by various methods from other common seeds. The result of this work is that during the last year we have selected a method of preparation that is simple in execution and gives a protein solution readily sterilized and standardized, that is non-irritating on injection, in suitable doses causes no disturbing general reaction, is comparatively cheap and from the therapeutic standpoint is effective in stimulating the blood changes which we believe to be the basis of its action. We have experimented with a variety of seeds but most of the work has been done with proteins obtained from alfalfa meal, alfalfa seed, sweet clover seed, hemp seed, rape seed, and millet seed. The proteins vary somewhat in their action and we have found the proteins from alfalfa meal (the whole plant ground to a fine powder), alfalfa seed, and millet seed the most satisfactory. The method of preparation is extremely simple.

Fifty grams of the seed meal are placed in a flask with a reflux condenser; 1,000 c.c. of distilled water and 40 c.c. of 10 per cent. hydrochloric acid are added. The mixture is boiled for three hours and the coarser particles strained out through gauze. The filtrate is concentrated to 200 c.c. approximately and the excess of acid neutralized with 10 per cent. solution of sodium hydroxide. It will be found that an abundant precipitate of acid albumin forms when the extract is neutral to litmus. It is best to add sufficient sodium hydroxide to get a very faint alkaline reaction to litmus. A portion of the first precipitate formed will redissolve under these circumstances. The faintly alkaline solution is filtered and the filtrate concentrated to such a point that its nitrogen content is 0.3 per cent., as measured by a Kjeldahl determination. The concentration needed for this purpose varies somewhat in each case but the final bulk of the standardized protein solution from this amount of material is about 100 c.c. If the reaction is very faintly alkaline the solution may readily be sterilized by boiling. The solution contains alkali albumin, proteoses, and a small quantity of peptone. It is a most excellent culture medium for a variety of organisms and ought to find extensive use in bacteriological laboratories for this purpose, but for therapeutic use the only safe way to preserve it is to seal the solution in small glass ampoules which are then sterilized by the discontinuous method.

The method outlined above applies to both millet seed and alfalfa seed. For the alfalfa meal extract it is best to add only 10 c.c. of the 10 per cent. hydrochloric acid and boil for one-half an hour. Otherwise the same procedure is followed as for the seeds.

The saline extract of alfalfa seed or millet seed prepared by simple extraction in the cold and containing native heat coagulable proteins is quite toxic to the human subject and seems in no way to be more effective than the solutions of partially hydrolyzed proteins prepared by the method outlined above.

All of our recent work has been done with such proteins and the method has the advantage of giving a stable sterile solution, non-irritating, and comparatively non-toxic in character. The dose varies somewhat with each patient. As a rule we begin with a dose of 5 to 8 minims and increase gradually to 15 to 25 minims. The injectons are made subcutaneously with an ordinary hypodermic syringe. Injections are made at varying intervals, in some cases daily, and in others at two or three day intervals. As a rule we see no advantage in giving the injections intravenously nor is it necessary to cause the severe constitutional reactions accompanied by chill, fever, nausea, vomiting, herpes, labialis, etc., that have been described in some of the articles

on non-specific protein administration. The partially hydrolyzed protein which results from the method described does not cause the marked anaphylactic reactions which have been observed to follow the administration of the native proteins obtained from the same seeds, and that were occasionally noted in giving the original extract. This is what might be expected from the work of Osborne and Wells.

We believe that the beneficial therapeutic effects which have been noted are a consequence of the marked blood changes occasioned by the protein injections. These changes are briefly: increase in the hemoglobin and red cell count; marked improvement in the shape, size, and staining qualities of the red cells; marked reduction in the total white count in those cases showing a leucocytosis; relative reduction in the percentage of polynuclear leucocytes in some cases diminishing to as low as 40 to 45 per cent. in a total count of 7000 to 8000; marked relative increase in the large mononuclear leucocytes reaching not infrequently a percentage of 30 to 35 in a normal total count; increase in the size and improvement in the staining qualities of the large mononuclears. These changes are definite in character, are produced gradually over a period of some weeks or months, and persist for a long time; in some cases noted for a period of nearly two years, and continue for months after the injections are either stopped altogether or are given at long intervals. These blood changes are not immediate consequences of a single injection, like a marked polynuclear leucocytosis following the administration of a bacterial vaccine, but are gradual changes developing during a period of weeks or months.

We have observed that those patients showing the most marked clinical improvement show also the most decided blood changes. Space will not permit a discussion of the mechanism by which such blood changes are operative in producing the therapeutic benefit. These changes have been noted by other investigators, notably Vaughan, after the administration of cancer vaccines or leucocyte extract, and by Klinger following the injection of organ autolysotes, though not to the same degree as we have observed to follow the injection of non-specific vegetable proteins.

The degree of therapeutic benefit that may be expected in a given case cannot be predicted in advance. The patients subjected to this treatment up to the present time have been for the most part the far advanced inoperable cases beyond the reach of accepted methods of treatment. The following outline of results is based upon the personal treatment of more than 500 patients and upon the results reported by correspondence from other physicians on approximately 2,500 additional patients. Space does not permit details of case histories but a wide variety of types of malignant growths are included in the treated cases. In a small percentage, approximately 20 per cent., no benefit either subjectively or objectively was observed. With the remainder the improvement noted was evidenced by the following changes:

1. Diminution in pain. Morphine can be either entirely eliminated or reduced to comparatively small doses.

2. Foul discharges associated with ulcerating surfaces and infected growths, notably the uterus, are very markedly modified for the better.

3. Improvement in appetite, gain in weight, diminution or complete disappearance of the cachexia and anemia.

4. Diminution or complete cessation of bleeding from ulcerating growths.

5. Diminution in the rate of growth or its complete cessation followed by regression; in some instances amounting to complete absorption and seeming recovery.

A variety of biological agents have been suggested and used during recent years in the treatment of inoperable cancer and in every case the therapeutic agent, regardless of the theory upon which it was based has been some form of protein. Among these are Coley's toxins, various types of animal serums, specific or otherwise; various types of bacterial vaccines; a variety of vaccines prepared from cancer tissue such as those proposed by Coca and Gilman, the Vaughan residue, the Fichera emulsion, Klinger's autolysates, numerous fluids from serous cavities of either normal or cancer subjects, notably Hodenpyl's ascitic fluid, normal human blood serum, hydrocele fluid, spermatocele fluid, pleuritic transudate; extracts of various of the ductless glands; Gwyer's X substance prepared from a variety of organs but preferably from the thymus; digestive ferments such as trypsin and amylopsin suggested by Beard. All of these agents have had active partisans and there is considerable evidence to show that all of them have to some degree produced beneficial results in a certain number of cases, and some of them are still employed and championed by a number of physicians. Is it not probable that such beneficial action as they have shown is occasioned by the reaction to the injection of a foreign protein?

The treatment of the inoperable cancer patient by injections of vegetable protein is not suggested to displace present accepted methods of therapeutics. It is an addition which permits varying degrees of relief to patients for whom other methods of treatment offer little or nothing. The injections must be continued over long periods of time. We have patients in good general physical condition who have been under treatment for two years and have received as many as 250 injections in that time. To get the best results we believe that it is necessary to change occasionally the type of protein administered.

The method of preparing the protein as outlined in this paper is extremely simple and can be carried out by any physician with comparatively small laboratory facilities. The equipment afforded by the clinical laboratories of most hospitals are adequate for this purpose. The protein so prepared is suitable not only for the treatment of the inoperable cancer patient but also for other conditions in which it is desired to administer this form of therapy. It is our belief that better results will be produced by giving the proteins in small doses subcutaneously over considerable periods of time and without provoking the decided and unpleasant general reactions that follow larger doses given intravenously.

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ALCOHOLISM IN RELATION TO EPILEPTOID STATES AND EPILEPSY.*

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The not infrequent occurrence of epileptoid attacks in the course of alcoholism points to a certain relationship between the two conditions. Alcoholism, like other intoxications, such as saturnism and ergotism may be accompanied by sudden attacks of *cramp-like* sensations. The suddenness of appearance and disappearance of the latter places them logically among the epileptoid attacks. In one of such patients in my series, sudden violent muscular contractions would occur in the calf muscles of the right leg at irregular intervals lasting but a few seconds, after which he would feel exhausted. Another chronic alcoholic had similar attacks in the left side of his face. He thus describes the seizure: suddenly he would feel nauseated, a cramp-like sensation would be felt in the muscles of the face on the left side but would disappear at once, then he felt drowsy for 10 or 15 minutes. The epileptoid character of such a condition is self-evident.

Vertiginous attacks present another variety which may occur in chronic alcoholic intoxication.

A patient, aged 30, who was addicted to alcohol for ten years, by consuming daily several glasses of brandy had on occasions of excess attacks of delirium tremens. Within the last two years he developed attacks of vertigo. The latter did not occur on any special physical effort, but might take place without any premonitory sign when the patient, being a reporter for a local newspaper, was quietly engaged in writing his articles for the editor. An attack consisted of a sense of falling off the chair so that he actually had to hold on to the table, and of the objects before him being displaced. The suddenness of the onset, the extremely brief duration, the sudden termination of the attack were all indicative of its epileptoid character in the form of petit mal.

In another patient an analogous attack occurred only while walking. He was 39 years of age, a banking clerk by occupation. His alcoholism dates from the age of 22 and commenced at the time of the death of his mother. At first he drank very heavily and continuously for a period of two months. Subsequently he developed a frequent desire for periodic intoxication. Every three or four weeks he would be taken with an irresistible desire to isolate himself and abandon himself to drink. The attack lasted from two to six days. In the intervals he suffered from vertiginous attacks only during locomotion on the street. At no time did he have these attacks during his work or while in a sitting posture. The attacks were so brief, appeared and disappeared so abruptly that they left no doubt as to their epileptoid nature.

Psychic states of a sudden onset without motor manifestations may occur in alcoholism. Besides acute hallucinosis, Korsakoff's psychosis, and delirium tremens, all characteristic of alcoholism, there are also varieties of psychic states which have a strong resemblance to the psychic states of genuine epilepsy. We find in the former the same sudden disturbance of consciousness and amnesia concerning the disorder as in the latter. Not infrequently the disturbance is of an explosive character and of such a nature that it is totally foreign to the individual's disposition.

A middle-aged woman who for years had used alcohol and sometimes to excess, was subject in the intervals to sudden attacks of unusual irritability. Ordinarily of a most amiable and gentle disposition she would suddenly be seized with an outbreak of sudden excitement and anger, employ the most abusive vocabulary toward her children and husband for whom she usually had the greatest admiration and respect. After the attack was over she had a most hazy recollection of it and, when reminded, she would shed tears and in the most pathetic manner express her regrets to those whom she happened to attack in her pathological state.

The disturbance of the psyche in alcoholic individuals may manifest itself in a manner somewhat different from the one just described, but nevertheless essentially analogous.

A man of 40, electrician by occupation, chronic alcoholic, with a history of delirium tremens on several occasions, presented short periods of *second personality*. He would suddenly imagine and feel that some one within himself interfered with his work. In adjusting and connecting electric wires he had to discontinue his work a number of times, as every time he placed the wires in their proper position "an invisible force" would move his hands in an opposite direction. He had no visual hallucinations as he did not see the foreign force, but, he said, he felt as if some one actually moved, materially speaking, his hands away from the wires. This was done so quickly by "someone in himself" that he had no time to resist. He frequently asked for explanation of such occurrences; while he could not understand them he nevertheless realized their existence. They were so tormenting to him that for hours he had to discontinue his work. The other interesting feature about these phenomena is their occurrence shortly after his recovery from the periodic alcoholic excesses. The longer were the intervals free from drink, the longer was the psychic state of the second personality absent.

Another patient, a woman of 32, of high intellectual attainments, authoress and musician, became addicted to the use of alcohol following a strong disappointment. She drank periodically and in the intervals she presented not infrequently the following attacks: Suddenly she would commence to mutter unintelligible words, have a vacant look, apparently not being able to recognize surroundings, take a few steps in an aimless direction; then she would sit down and the attack was over. The entire picture was that of a Dämmerzustand which may resemble a hysterical state, but it was not, in view of the brevity of the attack and because of the total amnesia of the event. Besides, there were no hysterical stigmata.

The three observations just cited are examples of variations of pathological psychic states which by the mode of onset and of termination, by the amnesia following each individual attack, by the brevity of the duration and the patient's behavior during the attack—are all highly suggestive of epileptoid manifestations and could be considered as equivalent of the latter.

The next important problem in the subject under discussion is the occurrence and relationship of alcoholic intoxication and *epilepsy* proper. If the essential feature of the latter is found in the convulsive seizures, several possibilities are to be considered. First, epileptic convulsions may occur in acute alcoholism in individuals otherwise sober. Here we meet with two groups of cases. In one we find individuals free from any pathological hereditary predisposition and in the other individuals who have had attacks of epilepsy. Second, epilepsy may occur in the course of chronic alcoholic intoxication either à propos of a sudden excess or else without the latter. Here also one must bear in mind the possibility of personal or hereditary morbid predisposition or the existence of epilepsy long before the alcoholism.

*Read by invitation at the annual meeting of the National Association for the Study of Epilepsy, held at Skillman, N. J., May 28 and 29, 1917.

In the first of these groups of cases the epileptic attacks are merely accidental provided the individual was not subject to convulsive seizures prior to his intoxication. While cases like these are not frequent, nevertheless they have been observed and the logical conclusion is that when an individual habitually free from epilepsy becomes intoxicated and while under the influence of alcohol develops convulsive seizures in all respects identical with those encountered in genuine epilepsy—alcohol must be classified as an epileptogenous agent. Moreover it has also been noticed that when in such cases total removal of acute intoxication is strictly observed, no recurrence of convulsive seizures takes place. In one of my patients, a young man of 29, a convulsive attack occurred in the course of each debauch. He was removed to a sanatorium where he was kept under observation for several months, free from alcohol and there was no recurrence of the seizures. A year later he resumed the use of alcohol and again was there a return of convulsive attacks. Although in this case there was no previous personal history of epilepsy or of any other nervous disorder, nevertheless there seemed to be a special predisposition to an epileptogenous effect of alcohol. Thus the direct relationship of alcohol and epilepsy appeared to be firmly established. Another patient, male of 23, has had epilepsy since the age of 7. It was of both major and minor types. When he reached the age of 18 the convulsive attacks diminished greatly in intensity and frequency, so that an attack of grand mal occurred once in three or four months. The patient commenced to use alcohol in the form of beer. He observed that since then the convulsive seizures became more frequent. Moreover he relates that an attack would occur more frequently after a drink than when he would not drink. When he decided upon abandoning the acquired habit and observed strict abstention for the following eight months, he eventually noticed great improvement in his general condition and diminution of the number of convulsive attacks. This case also presents strong indications in favor of epileptogenetic character of alcohol. This contention finds its corroboration in the observations of men of great competence such as Magnan who as far back as 1869 described epilepsy from acute absinthism. In 1852 Delasiauve observed epilepsy as a complication of delirium tremens and he described it in the *Revue Médicale* under the name of "Une forme grave de delirium tremens." While the epilepsy is, so to speak, accidental in the cases without a previous history of epilepsy, nevertheless it appears to be caused directly by the alcoholic intoxication. The correctness of this view is seen particularly in the fact that when the toxic material is eliminated no attack takes place. The condition is analogous to the convulsive seizures in children in the acute stage of infectious diseases.

In considering the second category of cases, namely, those of chronic alcoholism, we must discriminate several varieties: in one we meet with cases in which epileptic convulsions occur after an excess of drink. Here the convulsion is probably due to a temporary congestion of the cerebrum. In another group we find cases in which, without incidental excesses, and many years after the habit had been acquired, epilepsy develops. It is evident that the latter makes its appearance only at a certain age, usually between 40 and 55. Contrary to what we observe in the acute alcoholism, which by itself is apt to cause convulsions, which occur at a young age, in which during abstention from alcohol no convulsions occur, here in chronic alcoholism the convulsive attacks continue to occur at intervals and generally speaking are not the result of any tangible cause. Evidently it is a case of a special convulsive predisposition which eventually becomes constitutional. The patient evidently is a carrier of organic alterations upon which the convulsions depend. This is the most serious form of alcoholic epilepsy. The convulsions are probably due here to the sequelæ of meningo-encephalitis, caused by chronic alcoholic intoxication. Shrinkage of the brain due to an increase of connective tissue and an atrophy of cerebral tissue; pachymeningitis degeneration of blood-vessels leading to miliary aneurysms, and cerebral softening from embolism or hemorrhages—those are the common findings in chronic alcoholism. The latter form of alcoholic epilepsy in which the convulsions occur intermittently and which are irremediable was first emphasized by Magnus Huss (*Annales Médico-Psychologiques*, 1853, p. 80) and later by Bratz (*Allegemeine Zeitschrift f. Psych.*, 1899, t. lvi., Juni 3). The authors claim that this is precisely the form of alcoholic epilepsy which is transmissible through heredity. That chemical changes produced in the germ cells by alcohol are capable either to create abnormalities in offspring or else loss of power of reproduction is now pretty well established. The latest work of Ch. R. Stockard and G. Papanicolau seem to place this problem on a firm basis. They show experimentally that the offspring of the third generation are more decidedly injured than those of the first. These experiments suggest that the chief bearer of the hereditary qualities which they call chromatin is pathologically affected in alcoholized parents. The descendants of alcoholized males include a large proportion of degenerates, deformities, abortions, early death of the young, and sterility begins to manifest itself in those which survive. The structural defects affect mainly the central nervous system and special sense organs. These important data indicate very strongly at least one of the reasons of epileptic convulsions in chronic alcoholism.

The opinions on the pathogenesis of alcoholic epilepsy are divided: some believe that autointoxication from the abdominal viscera, such as liver and kidneys, is the primary cause. Such is the opinion of Donath, Guidi, and especially of Ceni. But autointoxication may originate in the chemical processes of glands with internal secretions. Lévy and Rothschild in France, Parhon and Goldstein in Rumania have recently advanced this view. Disturbances in the internal secretions influence cellular metabolism and thus toxic material is elaborated. If the main problem is in autointoxication, the sources of the latter may be abdominal viscera, ductless glands, and cellular metabolism. In chronic alcoholism the entire economy is fundamentally disturbed. Toxic material therefore is constantly being elaborated. There is another view held by Jauregg according to which the chronic alcoholic individual possesses a certain poison which may be

called alcohologenic toxin by analogy with the bacterial toxins elaborated in the course of infectious diseases. In the course of and because of prolonged alcoholic intoxication, this special toxin is being accumulated and produces epileptic discharges.

In the foregoing pages two groups of cases of chronic alcoholism have been considered, one in which epileptic convulsions occur à propos of an incidental excess, the other in which they develop after many years' use of alcohol and without any apparent exciting cause. There is a third group of cases in which the seizures appear when, for therapeutic purposes, the patient is suddenly deprived of his habitual dose of alcohol. As an illustration, the following two cases are cited:

Case I.—Middle-aged business man, used alcohol for 25 years, at first in large quantities, but later more moderately. He began to suffer from gastrointestinal disturbances; there were also cylindroids and casts in his urine. For these reasons attempts were made to withdraw the alcohol abruptly. On the first day of the treatment the patient received no drink whatever. That night he was restless and could not sleep. He was slightly delirious. His pulse became rapid and he perspired very freely. Alcohol was then given him in half of the amount he was used to, namely, three tablespoonfuls of whiskey a day for the following week and then again an attempt was made to withdraw it abruptly. At the end of 12 hours he suddenly became unconscious and had a typical attack of epileptic convulsions. During the following month he was given again three daily rations of whiskey, but in a smaller quantity. Another attempt of sudden withdrawal was made and again the patient was seized with a convulsive seizure. From that time on the patient was given for three months a daily quantity of whiskey, but in a gradually diminishing proportion so that one teaspoonful was the dose reached at the end of that time. While the gradual reduction was going on he was kept on small doses of strychnine. No more convulsions occurred after the last withdrawal of alcohol. For six months the patient was under observation and he did not drink. Soon, however, while away from the city, he resumed his old habit. He was then brought again for treatment. Cautiously after a delay of a week his whiskey was suddenly withdrawn, that is, he did not receive the first two drinks of the forenoon. At 3 P. M. he was seized with a convulsive attack. Alcohol was resumed. Since then the patient has been lost sight of. The patient's previous history reveals the fact that at the age of 3 and 7 he had several attacks of convulsions. It is therefore possible that a convulsive aptitude or predisposition existed in this individual, and that the withdrawal of alcohol acted as a break in the continuity of the acquired alcoholic habit; hence it acted as an exciting factor.

Case II.—Woman of 50 had been using stimulants since the age of 30. Several times during that period she was placed in a sanatorium for treatment. While she was willing and even anxious to get rid of her alcoholism, she nevertheless was in a constant state of fear to bring on attacks of convulsions which occurred during the first attempt at forced abstinence. For this reason she did not remain long enough in a sanatorium and instead of a long and continuous period of treatment, she left the institution several times. The first trial consisted of a sudden withdrawal of all alcohol. This was followed within a few hours by a convulsive seizure with loss of consciousness. The second attempt was made after a period of three weeks, during which time a reduced amount of drink was given. Four attempts were made and each was followed by a convulsion. During each interval smaller and smaller quantities of stimulants were allowed to the patient. The latter finally refused to continue the treatment. The patient's previous personal history was negative, but her grandfather on her mother's side, and a brother of her father, were profoundly alcoholic.

An analysis of all the facts concerning the occurrence of epilepsy in alcoholism leads logically to the conclusion that there must be a direct relationship between epilepsy and chronic alcoholic intoxication. On the other hand, since epilepsy or epileptoid states do not occur in all cases of alcoholism, a question arises as to the underlying reason for such a disparity. If, as some believe, a morbid predisposition is an important factor in the pathogenesis, such a conception can be applied to some cases but not to all, as there are cases of alcoholic epilepsy in which no pathological predisposition can be traced. It is more logical to admit that alcoholic intoxication produces cerebral alterations more or less pronounced. In the acute variety, as in acute infections, cortical alterations are capable of producing convulsive seizures, but they are only transient. In the chronic variety of alcoholic intoxication we find permanent lesions of chronic meningitis or meningo-encephalitis with superficial sclerosis of a diffuse nature, which are the direct causes of epileptic attacks, and in view of the permanence of the lesions we observe attacks of convulsions even without incidental excesses. The rôle of developmental defects in the central nervous system produced in the germ cells of alcoholized parents has been sufficiently emphasized in the above mentioned experimental work of Stockard and Papanicolau. Statistical studies concerning the direct relation of alcohol to epilepsy reveal the following instructive data. Magnan (*Annales Médico-psychologiques*, vii, 1872, p. 52) finds 11 per cent. of alcoholics having attacks of epilepsy. Drouet calculates 10 per cent. (*Annales Médico-Psychologiques*, xiii, March, 1875). Echeverria finds 38 per cent. (*Journal of Mental Sciences*, 1881). Moeli gives 33 per cent. (*Neurologisches Centralblatt*, Nov., 1885). Furstner figures 38.8 per cent. (*Archiv für Psychiatrie*, xxviii, Feb., 1896). Stepanoff speaks of 46 per cent. (*Revue Neurologique*, 1900). The views concerning the presence of toxic elements and the material changes produced in the cerebral tissue in alcoholized individuals, also profound congenital deficiencies derived from morbid alterations in the germ cells of parents suffering from chronic alcoholic intoxication—are all sufficient data for the elucidation of the pathogenesis of alcoholic epilepsy.

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THE MEDICOLEGAL ASPECTS OF RADIUM-THERAPY.*

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All remedial agents used in the art of healing are subject to various forms of application which may result through proper use in a relief of the condition treated or by improper application may bring about disastrous results to the patient and to the practitioner alike. Damages accruing from faulty instructions of a mechanical engineer may quickly cause a financial loss enormous in proportions. It is rare that we find mistakes evidenced in the chemical formulas evolved by the operators laying out work in our great commercial organizations. In that branch of science which has for its purpose the

study and treatment of the human body we unfortunately find all too frequent evidence to show that mistakes, errors in judgment, and lack of technical knowledge play sad havoc in their results. It is therefore most fitting that we bring to your attention the true status of affairs that may relate to the application of radium in medicine and surgery.

The Local or External Application of Radium.—Possibly, no subject in medicine or surgery has so widely interested the lay public as has radium. This interest is stimulated by belief that there may lie in this substance that which will ultimately bring us a cure to the most horrible of all diseases, cancer. That we can reasonably look forward with an ever-increasing degree of hope in this agent is made clear by the remarkable success that is being attained in the treatment of malignant conditions purely superficial in type. The clinical improvements and apparent cures in those cancerous masses to which radium can be directly applied run well over 80 per cent. and are increasing in proportion with our knowledge of better technique and an understanding of accurate dosage. It will further interest you to know that those deep-seated growths located in the interior of the body, in its cavities, etc., held as incurable, are giving increasing promise as we find means of applying this active element directly to the mass. It would not be proper in making such statements as this to lay the entire claim for this beneficient influence on radium alone. We must clearly understand that radium is but one of the means at the command of the surgeon and we must rely upon his ability to know when to discontinue his work with the knife and take up another instrument whose application is far more humane and yet deeper and more effective in its power. The space allotted to me will not permit me to go into the various forms of technique used in the treatment of the types of cancer that come to the surgeon for remedy.

Internal Use of Radium.—More than ten years of clinical achievement at the great hospital centers of Europe where radium has been used internally give us certain definite knowledge as to its value for the treatment of many diseases dependent on early degeneration of the kidneys, heart, and blood-vessels associated with imperfect elimination of the body's waste products causing self-poisoning of the patient. Such diseases as nephritis, arteriosclerosis, and various forms of arthritis or rheumatism, so called, which we commonly know to incapacitate so many men in early years are now held as curable or controllable to a large degree by radium-therapy, properly administered. Innumerable are the channels of hopeful therapy that follow the administration of the emanation of radium in cases evidencing faulty cell activity and circulatory changes.

Let this suffice as a general classification for the more common indications for the use of radium in its various forms and from such a theme, let us make our deductions as to the medicolegal aspects resultant from the use of radium. When radium is applied locally we look forward to certain anatomical and physical changes. If the type of the mass and the character of its cell structure are thoroughly understood we will hope to see its activity of growth checked, the tumor being decreased in size, either without any apparent breaking down of its structure or by degeneration of the mass and a general sloughing off of its substance. Under successive treatments the classic result shows a disappearance of the growth entirely. Where such results are not to be obtained due to the uncontrollable activity of the cancer cell we may be justified in answering that as yet there is little to hope for in the way of promised cure, but we may apply radium in such a case, because of our definite knowledge that radium will largely control the hemorrhage, reduce the odor, hold in check the symptom of pain, modify to a large extent the active congestion present, and restore to the patient hope. These briefly are the possibilities for local application.

The medicolegal aspects of such treatment will depend on two general classifications, the ability of the surgeon in diagnosis and statements relating thereto and the quality and quantity of the radium element at his command and his ability to estimate proper dosage. It is most natural to assume that the practitioner would hesitate to specialize in the treatment of malignant diseases either with the knife, caustic pastes, or radium unless he had derived extensive knowledge as a clinician and was backed up with suitable laboratory facilities to insure correct diagnosis. It is the duty of the operator for his own protection and for the benefit of the patient to know as far as possible the exact type of the growth to be attacked. Certain types of cancer present tremendous activity in growth and require a large amount of radium coupled with long periods of application. Other structures exhibiting cell growth of lower vitality can easily be treated with smaller dosage. Then again there are certain locations in the human body, such as in the region of the mouth and throat, wherein we are possibly not justified in making any operative procedures even for microscopic examination. In this region active growth most grave in its type frequently follows surgical interference.

So far as radium itself is concerned there are four possible channels of danger from its applications; namely, from a dosage applied in regions like the bladder, stomach and esophagus resulting in a burn following which might come penetration, infection, and death; secondly, from the possibility of activating the growth of cancer cells by an insufficient dosage; thirdly, the possibility of danger from the action of radium directly on the walls of large blood-vessels lying in the immediate vicinity of the mass treated, causing a rupture of the blood-vessel and fatal hemorrhage following the effects of a burn; fourthly, the possibility affecting the ovary when radium is applied in regions in close proximity to it. Radium burns in general have no terrors. A troublesome burn at times will occur where an extremely large dose of radium has been given and screened with most careful technique. There are certain cases, such as those of extreme malignant type met in the throat, that we treat with the heaviest dosage possible with the full expectation that we will get a deep severe burn. We would not be giving sufficient dosage did we not get such a manifestation. The one hope in a desperate case of cancer of the tongue is to give the man the heaviest dose of radium possible and screen it in such a manner as to permit him to secure practically all the available energy of the radium. He

is therefore told that a burn will probably develop and every such radium patient should be similarly warned. There is absolutely no danger in a radium burn other than penetration. The surface heals slowly, sometimes taking weeks and months to recover. At times following heavy ray treatment we find a resultant heavy layer of fibrous tissue which may remain permanently.

Undoubtedly, insufficient dosage of radium at times tends to increase the growth and activity of cancer structures. This cannot be held, however, in condemnation of radium because in all probability at the stage reached any interference, whether it be a knife, caustics, or radium, would possibly exert the same influence. However, it is extremely important that a proper dosage be administered. The serious consequences coming from the application of radium without every precaution in the neighborhood of large blood-vessels would undoubtedly be a reasonable subject for medicolegal consideration. Properly administered, radium has been used in this country in local application with doses varying from two milligrams to one thousand milligrams without effecting burns which would have any medicolegal aspects. Of course, such treatments were carried on with perfect technique. In working in the vicinity of such organs as the eye, one must naturally protect, by sufficient screenage, that portion not affected by the cancer. Nature has considerately protected the radium worker by giving resistance to normal tissue of many times that of the cancerous structure and therefore it is possible for us to apply very large dosage, destructive in type, to the cancer mass and not do serious damage to adjoining tissue. Radium should in no wise be considered a cautic or tissue-destroying agent. Its destructive properties come from the action of radium directly on the blood-vessels of the structure. There may possibly be a further action on the intercellular substances; the nutrition being cut off from the mass causes its death and degeneration. There are but few opportunities for a scientific worker with radium to make mistakes and we trust that so powerful and energetic an agent as radium will not be placed in hands improperly schooled. The dangers of the gamma ray from *x*-ray treatment are of common knowledge to everyone, and we find some people confuse the gamma ray of that apparatus with radium. They are analogous but not at all similar, and where the *x*-ray burn at times develops into cancer the radium burn is inert and is itself used to cure the *x*-ray malignancy.

With, then, practically nothing to fear from the proper use of radium and but few opportunities for mistakes, the medicolegal aspects rapidly dwindle to practically nothing. The sins of radium are more of omission than of commission.

Just a word relating to the internal administration of radium. This branch of radiumtherapy is of equal importance with the local application and its responsibilities are often greater. With radium it is possible at times to restore to usefulness the man who in the prime of life is crippled to invalidism by a rheumatic affection.

Radium may serve to control certain of the dangers of high blood pressure commonly met in the arteriosclerosis case or markedly influence the metabolism and elimination in cardiac and nephritic patients. If such results are forthcoming from the use of radium emanation then it is truly a most important remedy. With this in view, let us ask ourselves the question, What is the danger or medicolegal aspect as relates to the internal administration of radium? In answer to this I would say that experience has shown that radium is accepted as harmoniously in the body as is sunlight by the withering plant. Doses have been administered to use a common unit of from 500 M. U. to 27,000,000 M. U. of emanation without danger or harmful influence. Radium injected into the blood can easily be traced in its elimination, and while it is active for many weeks, its complete disappearance from the body is assured. Definite measurements governing elimination are at hand. There seems to be no evidence that would point to any danger from radium when used internally. One point of warning, however, must be offered. Unqualified practitioners, poor diagnosticians, and men lacking clinical experience could, of course, make mistakes and cause damage even with radium. It is to be regretted that there are still men in the practice of medicine who are not qualified by an experience or ability to be treating human kind. If we have an extremely high blood pressure of the compensating type, such pressure possibly should not be reduced. It is accomplishing its purpose. The only reduction that should be attempted in such a case would be that secured by a combined treatment of both cause and effect. That radium does exert a remarkable influence in the treatment of arthritis, gout, and diseases of faulty elimination in general must be acknowledged, and the time will soon be at hand when the practitioner who does not use all measures of treatment at hand before failing in his arteriosclerosis cases, in administering aid to his desperate rheumatic patients, and who does not relieve those diseases of the heart and kidneys by advanced measures of therapy when indicated, will be guilty of malpractice, and so charged.

46 West Fifty-fifth Street.

GAS BACILLUS INFECTION IN A CHRONIC MASTOIDITIS WITH CHOLESTEATOMA; OPERATION, RECOVERY.*

By WILLIAM WESLEY CARTER, A.M., M.D., F.A.C.S.,

NEW YORK.

The following is a report of a case occurring in my service at the Gouverneur Hospital:

The patient, a large, powerfully developed Russian, 32 years of age, was admitted March 16, 1917. The family history is unimportant. Aside from the ear condition leading up to his present illness, patient has always been strong and healthy and says that he was never really sick before in his life. He denies venereal history and says that he neither drinks nor smokes.

Following an attack of grip two years ago he had an abscess in his right ear. At intervals since this time he has had pain and a discharge of pus from this ear. He has never received treatment for this condition. At times the pain in his ear has been very great, but it has always subsided after a profuse discharge of pus.

For three months he has had a bad cold in the head, and for the past month he has had almost constant pain in the right ear. Several days ago the discharge from his ear increased greatly. On the day before his admis-

*Read before Otological Section of the N. Y. Academy of Medicine, May 11, 1917.

sion to the hospital he had a chill, followed by fever and sweating. The tissues around the ear became swollen and painful, and this condition gradually extended over the whole side of his face and head.

Examination shows the following condition.: General appearance of patient is that of a very sick man. Tem., 102°; pulse, 90; resp., 24. Right side of the face is paralyzed, right eye almost closed, entire right side of face, neck, and head greatly swollen and skin is dark red in color. The limit of the swelling is fairly distinct, but it has not the prominent line of demarcation characteristic of erysipelas; then, too, the swelling is bulging in character, the most prominent point being over the mastoid antrum. There is a foul, purulent discharge from the right ear. No attempt was made to inspect the drum, as the canal was closed by the swelling. On account of the pain and swelling the patient can scarcely open his mouth wide enough to take nourishment. The entire swollen area is very painful to the touch. Firm pressure with the fingers gives a sense of fine crepitation, which is combined with that of fluctuation over the mastoid. Blood examination: White cells, 12,000; polymorphonuclears, 78 per cent.

Operation: The usual incision for mastoiditis was made. As soon as the knife penetrated the deep layers of the skin a most unusual phenomenon was observed; the blood oozing from the wound appeared to be charged with gas which was escaping in fine bubbles. The incision was made fully an inch and a half deep through the edematous, emphysematous tissues before the periosteum was reached; as soon as this was incised there was an almost explosive discharge of foul-smelling gas, followed by thin fetid, greenish-yellow pus. The odor of this discharge was said by all of those present to be identical with that of other cases of gas bacillus infections treated in the hospital. Subperiosteal elevation of the tissues extended over the entire right side of the head.

There was a large perforation in the mastoid cortex, at a point corresponding to the antrum. The entire mastoid process, with the exception of the extreme tip, was occupied by a cholesteatoma, which extended also into the middle ear. The posterior bony wall of the auditory canal was completely destroyed. The small vessels lying upon and entering the bone over the entire affected area presented a very unusual appearance; they were thrombosed and resembled fine black hairs.

The cholesteatoma and the tip cells, which were filled with pus, were thoroughly removed and all overhanging bone was curetted away. Free counteropenings for drainage were made through the scalp; one near the parietal eminence and one near the occipital protuberance. The wound was irrigated with hot normal saline solution and packed with iodoform gauze.

A culture made from the wound pus showed a mixed infection, including large numbers of giant rod-shaped gas bacilli. These bacilli are Gram-positive, are about 5μ in length and about the thickness of anthrax bacilli. They correspond to the description of the Welch bacilli, which have been described also by Nutthall, Flexner and others. Following the operation the patient showed almost immediate improvement. The temperature in two days dropped to normal; his recovery was uneventful, and he was discharged from the hospital on April 5, nineteen days after admission. The wound has since healed entirely. The gas bacillus is anaerobic; it cannot live in oxygenated circulating blood. It would seem, therefore, that an old cholesteatomatous mastoid would offer ideal conditions for its propagation when once it has gained an entrance.

Interesting features of this case are:

1. The rarity of gas-bacillus infections of the mastoid.

2. The unusual route through which the infection gained an entrance; namely through the middle ear; the usual mode of entrance of this bacillus into the body being through an open wound or abrasion into which earth has been ground.

3. The prompt recovery following the operation, an unusual sequel to gas bacillus infections, for these cases usually succumb very quickly.

69 West Fiftieth Street.

Medicolegal Notes.

Result of Patient's Refusal to Follow Advice.—The Minnesota Supreme Court holds in an action for malpractice against a surgeon that where a patient refuses to submit to the reasonable treatment prescribed by a surgeon, from that time on the fault is with the patient and not with the surgeon, and the surgeon may give in evidence his opinion of what the result would have been had the treatment which he prescribed been followed. The plaintiff had sustained a fracture of both bones of the right forearm between three and four inches from the wrist, and was treated by the defendant. The ends of the ulna failed to unite. The evidence conflicted as to the character of the services actually rendered, and the surgeon claimed that a complete cure did not follow the treatment because of lack of bone-producing power in the arm. He stated that he had advised the plaintiff that further methods were necessary and that he would have to give him another anesthetic and treat the ununited ends of the ulna so that they would unite, and that the plaintiff refused to submit to such treatment. Upon the trial six physicians were called and testified as expert witnesses for the defendant, and each testified that the treatment of the plaintiff as outlined by the defendant was proper and in accordance with modern surgery. The court said: "If defendant's claim of freedom from fault is well founded, a question he had a right to have submitted to the jury, it was his duty, upon discovery of the nonunion, to advise plaintiff of the necessary and proper treatment to be thereafter pursued. Proper advice is part of proper treatment, and if from that time on there was fault in any one, it lay with plaintiff, and not with defendant. It was defensive matter going directly to disprove the charge in the complaint, and not in mitigation of damages or to establish contributory negligence. Defendant claims that in this respect as well as in all others he performed his whole duty toward plaintiff, and in connection with his advice he had a right to state to the jury his opinion as to the result of the treatment he prescribed had it been followed. The testimony sought to be elicited was admissible under the pleadings, and it was error to exclude it." Judgment for the plaintiff was reversed and a new trial was ordered.—Peterson vs. Branton, 162 N. W. 895.

Privileged Communications.—The Nebraska Supreme Court holds that under the statute relating to privileged communications, when a plaintiff has permitted a physician to make a radiograph of his injured foot for the purpose of ascertaining the extent and character of his injuries, the radiograph so made is not admissible in evidence over objection of the plaintiff based upon the statute.—Stapleton vs. Chicago, B. & Q. R. Co. 162 N. W. 644.

Practice of Medicine by Corporation. — In an action against a medical society for malicious prosecution of the plaintiff for practising medicine without a license the New York Appellate Division holds that a business corporation cannot administer in its own name medicine in treating disease or physical condition, which under New York Public Health Law, Section 160, is practising medicine, even if it does so on the advice or prescription of a licensed physician in each individual case. The administering of treatment which included the giving of pills and of some liquid substance for the purpose of curing the liquor and drug habits, was held to be the "practice of medicine." A corporation which treated persons afflicted with the liquor habit and employed a physician whose compensation was paid at stated intervals, without regard to the number of cases, and who prescribed the treatment which the corporation was administering without having any knowledge of what the treatment consisted of, was held to be guilty of practising medicine without a license, since the employment of the physician was manifestly only a sham to evade the law, so that there was probable cause for prosecuting the corporation for practising medicine without a license. Evidence that the physician employed to prescribe the treatment administered by the plaintiff had made no inquiry or examination to ascertain the ingredients of the medicines prescribed was held competent to show that the physician's prescription was a mere pretence. Judgment for the plaintiff was reversed and the complaint dismissed.—Godfrey vs. Medical Society of New York County, 164 N. Y., Supp. 846.

Military Medicine.

Blood Pressure During Operations on the Wounded Abdomen.—Geoffrey Marshall states that during the course of an ether vapor anesthetic the blood pressure shows a tendency to rise, but if there is much manipulation of gut and mesentery, it will gradually fall. The process may continue for hours without the pressure falling to a dangerous level. Exposure of gut outside the abdominal cavity produces a much more serious effect; if more than two or three feet are exposed, the blood pressure will commence to fall after a few minutes, and will continue to do so rapidly until the gut is replaced. This is seen when stomach and omentum are exposed and even with great omentum alone. The indication is that surgeons should make big incisions and work with the gut lying inside the abdomen as far as possible. Covering the exposed gut with hot saline does not prevent the fall of blood pressure. Exposure of the gut produces far less effect if the patient is not under an anesthetic. Men arrive with several feet of intestine prolapsed through a wound, yet their blood pressure is within normal limits. In one case more than two-thirds of the small intestine had been outside the abdominal cavity for at least four hours, yet this man's blood pressure was 142 mm. of mercury and his pulse rate only 108. The patient recovered.

Apart from copious hemorrhage, there is one other procedure which causes rapid fall of blood pressure in cases of abdominal operations. This is turning the patient on his side. The effect is only seen if the patient has been under the anesthetic for a considerable time before being turned. At the end of an abdominal operation the patient may be in good condition; he is then turned on his side so that the surgeon may excise a wound in the back. In a few minutes there is a fall of blood pressure and the radial pulse disappears. It may be hours before the patient recovers this lost ground. If possible wounds of the back should be dealt with before laparotomy, as turning the patient has no ill effect during the first half hour of an ether anesthesia.

If chloroform be used in these abdominal operations, the blood pressure will fall during administration and for some hours afterwards. The intrathecal administration of stovaine is unsafe, and should not be employed.—*British Medical Journal*, June 2, 1917.

Results of Clinical and Experimental Study of Three Hundred Perforating Wounds of the Abdomen.—There has already been given the experimental work carried out by J. Fraser and Hamilton Drummond with reference to this series of cases (MEDICAL RECORD, April 14). In their work on these cases at the hospital the following features were observed and carried out with reference to operative procedures upon the various injured abdominal organs: In wounds of the stomach, while entrance and exit wounds of the body are very similar in size, an exit wound in the thicker musculature of the pylorus is generally larger than the entrance wound and if bile has escaped from the stomach wound the peritonitis is much more severe. Sickness is usually more pronounced than in wounds of the other abdominal viscera, and blood is usually present in the vomitus; while the degree of collapse is less marked than that found in intestinal injuries, whether the small amount of hemorrhage influences this is not known. While the pulse and respiration rates are both increased, the respiration rate has increased proportionately more rapidly than the pulse rate. Naturally the situation of the wound influences the degree and variety of the symptoms. Pain is more intense when the cardiac and pyloric ends of the stomach are involved, than when the body is the seat of injury; while wounds of the curvature are associated with severe symptoms of collapse, due to the greater amount of destruction of tissue. Again the clinical features are more intense if the injury occurs when there is food in the stomach.

In the treatment, a routine examination of the posterior wall of the stomach should be made, as a wound in this region is apt to be overlooked. Wounds of the cardiac region which are inaccessible for suture may be safely left unless the tear is a large one, since natural healing will occur with little or no leakage.

In wounds of the pelvis, the writers remark how seldom there is a massive escape of contents from the lumen of the gut. Apparently there is a complete inhibition of peristalsis for some time subsequent to the injury. Often when a bullet passes through the pelvis the loop of intestine lying in the path of the bullet will be found riddled with holes over a very limited area. A serious type of injury is when the intestinal contents have escaped between the layers of the mesentery. They have been in cases where the projectile has not actively perforated the gut, but, by passing near it, has exerted such a force that the gut wall ruptures in that portion which is unsupported by peritoneum —between the layers of the mesentery.

In the operative treatment, there would seem to be very few wounds of the small intestine which do not prove amenable to suture. There are three possible contraindications to its use: Extensive damage to the mesentery; a wound, which when sutured results in marked narrowing of the gut, which is usually a wound running obliquely across the long axis of the gut; and, when the perforation is associated with resulting necrosis of the surrounding bowel, a condition more common in the colon than in the small intestine. In their suture operations they have not excised the edges of the wound and have used a linen thread for stitching. Where resection is to be done, lateral anastomosis is the favorite method of procedure, and no complications occurred with recovery as the invariable result.

In wounds of the duodenum there is a high mortality before surgical assistance can be rendered, due to the proximity of large and important organs. The injuries usually occur to the second part of the duodenum with an associated wound of the right kidney. Hemorrhage is not generally severe. There is intense shock and sickness is usually present. Operative treatment consists in suture of the torn bowel, with the possibility at the same time of performing a gastroenterostomy.

In wounds of the colon there is effusion which has a tendency to become shut off and localized, more especially in wounds of the ascending or de-

scending colon. Effusion often extends into the retrocolic and retroperitoneal tissues, and is fatal when it occurs. Colon wounds appear to be liable to secondary hemorrhage, due to septic change in the gut, and it generally appears on the third or fourth day after operation.

Because of the localization of the effusion it is a wise procedure to enlarge the original wound in the operation on the possibility that the infection is becoming localized, if the patient is seen longer than twenty-four hours after the injury has occurred. At an earlier period than this it is probably better to open the abdomen through a separate incision. There is danger of overlooking wounds in the colon and the risk is greatest when the wound lies in one or other of the flexures of the gut. The actual operative treatment may be summarized in the following methods: (1) Simple suture; (2) suture with a proximal colotomy; (3) colotomy at the site of injury. The operation of resection may be left out of account; it is rarely advisable to practise it in this type of surgery.

All wounds of the colon should receive very thorough local drainage. In wounds of the ascending and the descending colon they have been impressed with the advisability of draining the retrocolic space by a tube passing into the loin. The establishment of efficient local drainage is the means of lessening the likelihood of development of infection of the retrocolic tissue and the establishment of colon septicæmia.

Wounds of the rectum occur usually through entrance in the buttocks. The most common type is the wound of the anterior wall of the rectum, low down and immediately above the floor of the pouch of Douglas. The wounds are nearly always complicated by compound fracture of the pelvis or wounds of the small intestine or bladder. There may be much bleeding, but it is unusual to find intestinal contents escaping in any degree, unless the wound is very large. In the early stages the symptoms are ill-defined and easily overlooked. There may be recent hemorrhage from the rectum, retention of urine, or pain near the bladder on micturition.

Treatment demands an exploration of the abdomen. If an intraperitoneal wound exists, it should be sutured with a primary layer of catgut and a series of linen thread Lembert sutures. Temporary colotomy is to be considered. If the wound is extraperitoneal, the entrance wound is opened up and efficient drainage established. In every wound of the rectum it is advisable to open up the entrance wound very thoroughly as it diminishes the risk of a subsequent pelvic cellulitis. Colotomy in this type of wound depends on the character and position of the wound.—*British Medical Journal*, March 10, 1917.

Antiseptic Solutions for the Dressing of War Wounds.—The editor of the *Revista de Medicina y Cirugía* (May 10) discusses in succession Dakin's solution, the Carrel technique, Duret's solution, the Vincent treatment, the new Browning antiseptic, the iodized chloroform of Chassevant, and the ambrine of de Sandfort. The first two and the last of these are well enough known to the average reader. With the others, however, we are not so familiar. Duret's isotonic solution contains from first to last magnesium hypochlorite, chloride, carbonate, hydrate, and oxychloride. The basis of the solution is prepared by triturating in a mortar 28 parts of calcium chloride and 18.2 parts of magnesium sulphate and adding little by little 1000 parts of water. The mixture is at once filtered through cotton, the filtrate containing nascent magnesium hypochlorite while the insoluble sulphur salt is left behind. When completed, the solution is both antiseptic and isotonic with blood serum. When applied to wound surfaces chlorine is given off from the hypochlorite, eventually combining to form chloride, hydrate, and oxychloride of magnesium. The solution warmed to 35° C. is used for irrigating the wounds just after the application of hydrogen peroxide solution, one part to nine. The innumerable bubbles liberated by the latter penetrate into the deepest recesses of the wound surface, giving a mechanico-chemical detergent effect. The surface is thereby prepared for the hypochlorite solution, which also washes all the foam from the wound surface. Professor Vincent of Val de Grace Hospital uses a solution of calcium hypochlorite and bone acid originally tested by him many years ago for hospital gangrene in Madagascar. The new antiseptic of the Middlesex Hospital, London, prepared by Browning of the Bland Sutton Institute of Pathology from aniline colors is a powerful germicide which stimulates wound healing and does not injure the phagocytes or irritate the tissues. Chassevant's solution of iodine in chloroform was recommended by him as an antiseptic as far back as 1905. Since then iodine has come to be known as one of the most practicable antiseptics. Dissolved in chloroform it is quite free from irritant properties if the proportion does not exceed 1 to 30 by weight. Manifestly the alcoholic tincture and the iodoiodide aqueous solution are unsuitable for the purpose and it is evident that the germicidal power of iodine does not run parallel with its irritating properties. The reviewer fails to mention Mencière's solution, the basis of which is ether, for the routine treatment of wounds. It is significant that Dakin, Duret, and Vincent have all selected a hypochlorite as the most available antiseptic.

Gas Masks on Warships.—Every American naval vessel which sails for the war zone carries a full equipment of gas masks. Gas shells have been used by the German naval gunners, and it was deemed necessary to equip American boats against such devices. A type of mask adopted for the emergency was turned out quickly after approval by a special committee of the National Defense Council.

Red Cross Director.—Harvey D. Gibson, president of the Liberty National Bank, New York, has been appointed general manager of the Red Cross. Part of Mr. Gibson's duty will be to develop chapters and add to the membership of the society. John D. Ryan, president of the Anaconda Copper Company, has been assigned as director-general of military relief of the Red Cross. He will be in charge of all the relief work for the fighting forces, succeeding Col. Jefferson R. Kean, who has been ordered to take command of the 160 United States Army ambulance sections in the war theater.

Women Physicains of the Coast Ready for War Work.—Many of the women physicians of Los Angeles, Cal., have signed a petition signifying their willingness to undertake medical service at the front. The petition is as follows: "We, the undersigned, offer our services to the War Department as members of the Medical Reserve Corps, and will serve wherever sent, providing that opportunity of medical service be given to medical women equal to opportunity given to medical men, both as staff members of base hospitals and otherwise, and that women who serve be given the same rank, title and pay given to men holding equivalent positions."

Medical Unit Proposed by the American Electrotherapeutic Association.—This association has arranged a plan to carry out their bit in connection with the injured soldiers in the war. Dr. William Benham Snow announces that the purpose of the unit is to furnish facilities and men to carry out in a thoroughly scientific manner treatment by electrotherapeutic and other physical methods of diseased conditions arising from injuries and from other causes associated with exposure of our men in the army at the front. The scope of the work will include the treatment of infected wounds, delayed repair following injury, beginning gangrene, sprains, contusions, atrophies, various forms of arthritis, erysipelas, frost bites, trench foot, flat foot, and neuritis. In order to do this work properly sufficient funds will be provided thoroughly to equip and maintain a unit. The committee recommends that such a unit form a part of every base hospital in this country and abroad. There are qualified physicians in readiness to fill these positions. The equipment should include transformers and diathermic apparatus, *x*-ray machines, therapeutic lamps, sinusoidal machines, and constant-current apparatus.

Training for Medical Corps.—The doctors in the Medical Training Camp at Fort Benjamin Harrison are put through a rigorous program each day, the strenuousness of which is lessened somewhat on Sundays. The daily routine is as follows: 5:30, reveille, followed by a "setting-up" drill; 6, breakfast; 7, military drill; 8:30 to 9:30, lecture or conference on military medical work; 9:30, drill; 11 to 12, conference; 12, dinner; 1:30 to 2:30, conference or lecture; 2:30 to 3:30, road march. The remainder of the afternoon and evening is devoted to study for the next day's work, and at 9:30 "taps" is sounded by the bugler. The lectures are given by instructors, and ofttimes by doctors who are members of the companies. Each company has a medical officer of the Regular Army as its captain, but the other offices in each company are filled from the ranks of the men themselves. All of the doctors wear officers' service uniforms. They have no dress uniforms. While within the limits of the reservations they do not wear any shoulder bars to denote their rank, because of the idea prevailing in the army that all men are on equal footing while in training. The doctors are just plain "rookies," but when they leave the reservation and go to town they are permitted to wear the insignia of their rank, and are saluted in military fashion. All of the men must be smooth-shaven. They are quartered in small frame barracks, each building accommodating from forty to fifty men. Each man on his arrival has to be his own orderly and arrange his own belongings.

Hospital Donated for War Cripples.—To meet the need of the men who will return from the front crippled, the Government has arranged for three reconstruction buildings to be either built or made out of private homes given by men of wealth. The first to be ready will probably be the home of Mr. and Mrs. Charles D. Freeman at Iselin, N. J., a 600-acre estate on high ground, wooded and with country fields, an ideal place in which men may be brought back to health. It is estimated that the house will accommodate 250 patients when it is opened under the auspices of the Red Cross the last of August, and bungalow wards will be built in sufficient number to take care of 2000 patients. The hospital will be under the care of Dr. Fred H. Albee of New York.

Demonstration War Hospital Now Ready.—Following inspection, the first war demonstration hospital in the United States, now on the grounds of the Rockefeller Institute at Sixty-fourth Street and Avenue A, New York, is about ready for service, and will be shortly opened. Here army surgeons and Red Cross nurses will be taught advanced methods of surgery and caring for wounded, in preparation for work in American base hospitals behind the lines in France.

Sixteen Tented Cities for Guardsmen.—The War Department has authorized the construction of sixteen wooden cities for the new National Army. The sites already determined are: Fort Worth, Tex.; Fort Sill, Okla.; Deming, N. Mex.; Waco, Tex.; Houston, Tex.; Linda Vista, Cal.; Greenville, S. C.; Augusta, Ga.; Macon, Ga.; Montgomery, Ala.; Anniston, Ala.; Fayetteville, N. C.; Palo Alto, Cal., and Spartanburg, S. C. These camps will be laid out to accommodate approximately 35,000 men in each, and possibly as many as 10,000 horses and mules. Building waterworks and sewers for a population of 35,000 in about a month is a rapid undertaking and such work is merely a single detail of many similar pieces of work that must be done in each of these sixteen camps. The sanitation of these camps has received careful study. Special care is being paid to securing an ample supply of good water, to providing sewerage and sewage-disposal systems, and to the disposal of garbage. A number of sanitary specialists have been cooperating in the general plans for such work.

Red Cross Preparation for American Troops.—The American Red Cross, in Paris, has moved into new quarters in the Place de la Concorde, and has begun the establishment of canteens, restaurants, and dispensaries at railroad stations and junctions where the American troops will pass en route to the front. The canteens will supply food, and the dispensaries will have nurses and doctors in attendance. The same courtesy will be offered to the French troops, but such canteens are already in existence for the French soldiers. Many American women, all volunteers, are conducting this work.

Treatment of Trench Foot by the Subcutaneous Injection of Oxygen.—Captain H. Oswald Smith's article on this subject, an abstract of which was published in this department on June 23, appeared originally in the *British Medical Journal* of April 21. The credit was accidentally omitted.

APPLICATION FOR APPOINTMENT IN THE MEDICAL RESERVE CORPS, UNITED STATES ARMY

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....., 191

To the Surgeon General, U. S. Army,
Washington, D. C.

Sir:

I hereby make application to be examined for appointment in the Medical Reserve Corps, U. S. Army, and inclose testimonials as to my character and habits.

I certify that to the best of my knowledge and belief I am laboring under no mental or physical infirmity or disability which can interfere with the efficient discharge of any duty which may be required of me if appointed in the Medical Reserve Corps, U. S. Army, and that the answers given to the interrogatories below are true and correct in every respect.

I furthermore state my willingness to proceed to such point for examination as may be designated by the Surgeon General, with the understanding that the journey entailed thereby must be made at my own expense.

INTERROGATORIES

Where were you born? (Give State and city or county; if foreign born, give country.).....

.....

What is your name *in full* (including your full middle name):.....

What was the date of your birth?.....

When and where were you naturalized? (For applicants of alien birth only).....

Are you married or single?.....Have you any minor children; if so, how many?.....

What is your height in inches?.....Your weight, in pounds?.....

Give the nature and dates of all serious sicknesses and injuries which you have suffered:.....

.....

If either parent, or brother, or sister has died, state cause and age in each case:.....

Do you use intoxicating liquors or narcotics; if so, to what extent? .....

Have you found your health or habits to interfere with your success in civil life?.....

What academy, high school, college, or university have you attended? State periods of attendance from year to year, and whether you were graduated, giving date or dates of graduation:.....

.....

Name any other educational advantage you have had, such as private tuition, foreign travel, etc.:.....

.....

Give all literary or scientific degrees you have taken, if any, names of institutions granting them, and dates: .....

With what ancient or modern languages or branches of science are you acquainted?.....

How many courses of lectures have you attended? Names of colleges and dates:.....

.....

When and where were you graduated in medicine?.....

(Fill this out and send it to the Surgeon General, U. S. Army, Washington, D. C.)

Have you been before a State Examining Board? If so, state when, where, and with what result:*.....

.....

Are you a member of any State medical society? If so, give its name.....

Have you had service in a hospital? If so, state where and in what capacity, giving inclusive dates of each kind of service:.....

What clinical experience have you had in dispensary or private practice?.....

.....

Have you paid particular attention to any specialty in medicine; if so, what branch?.....

What opportunities for instruction or practice in operative surgery have you had?.....

.....

Have you previously been an applicant for entry into the United States service? If so, state when, where, and with what result (if rejected, state why).....

Are you a member of the organized militia? If so, state with what organization and in what capacity:

.....

Have you been in the military or naval service of the United States as cadet or otherwise? If so, give inclusive dates of service with each organization, designating it.....

What occupation, if any, have you followed other than that of student or practitioner? .....

What is your present post-office address?.....

What is your permanent residence?.....

Signature.....

The correctness of all the statements made above was subscribed and sworn to by the applicant before me this.....day of.....A.D. 191

[SEAL] .....

*This application must be accompanied by a certificate from the proper official that the applicant is duly registered to practise medicine in the State in which he resides.

Form 149
W. D. S. G. O.
(Revised May 3, 1917)

MEDICAL RECORD
July 21, 1917

.....*M.D.*

OF

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APPLICATION FOR APPOINTMENT

IN THE

MEDICAL RESERVE CORPS,
U. S. ARMY

.....*Inclosures*

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

PUBLISHERS

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New York, July 21, 1917.

FIRST IN THE FIELD.

As soon as our country had ceased to hesitate, had drawn the sword, and was sweeping to the aid of our allies across the sea, a generous rivalry sprang up among Americans of all classes and callings to see who could serve the cause the most. One point which was dwelt upon largely by the lay press was the race to see which organization or branch of the service would be the first in battle. Leaving out of the question the American Ambulance Corps and Hospital in France, and the Red Cross surgeons, whose services are as old as the war itself, the Medical Corps outstripped them all. As the *Military Surgeon* says editorially in its June issue, "While others have been talking and preparing the Medical Corps of the Army has been *doing*, as a result of previous preparation. It had numerous representatives abroad as official observers and on leave before the declaration of war by this country. Its representatives have for some time been at the front in large numbers, and they will be there in much larger numbers before any other branch of the service sets official foot on the continent of Europe." From civilian life, too, many physicians have volunteered their services in succoring the wounded in the battles yet to come. They have recked little that perils awaited them at sea on their way over, or that death in all its horrid forms was stalking over Flanders. They have seen only the bloody wounds, the maimed and twisted forms, crying aloud from the stricken field for help, and they have gone the road to France.

But there is another side to which we must not let our complacency blind us. Although first in the field, the American doctors are not there, and until recently were not offering to go there, in anywhere nearly sufficient numbers. Indeed, so reluctant did they seem to volunteer their services to their country that a dreadful fear began to shape itself that the medical men of the United States, who have so often shown their courage in war and in times of pestilence, had forgotten their high ideals, and with prosperity had grown soft or even cowardly. When the American Medical Association met in this city some of its officers proudly offered the services of 140,000 doctors to the country; but the 140,000 failed to respond when they were called, and the army then appealed for help to the medical press. At the annual dinner of the American Medical Editors' Association in this city, Major Noble of the Medical Corps of the Army and Dr. Bloodgood of Baltimore exposed the urgent need of the Government for some 20,000 surgeons, of which number the Medical Corps was short more than 17,000, with but a paltry few offering themselves each week, and they begged the editors present to make these needs known and to do what they could to bring their readers to a realization of their duty. The publicity given to these requests by the members of the Editors' Association has, we rejoice to say, had good results, and we are informed that the applications for appointment to the Medical Corps now number nearly a thousand a week.

This is good, and shows what the well-directed efforts of the medical press can accomplish, but it is not enough. More surgeons are wanted, and they are wanted immediately, for it takes time to train a civilian physician to perform properly the duties of a military surgeon, and the doctors will be needed when the new men obtained by the draft are collected in their training camps. They will be needed to care for these men while they are in camp and to accompany them across the sea when they go to help our allies cut out the foul Prussian cancer from the breast of suffering Europe.

We would, therefore, again urge the medical men of the Union, especially recent graduates and those without dependent families, to heed their country's call and to give themselves freely and without delay. On pages 109 and 110 will be found an application blank which can be filled out and sent to the Surgeon General's office in Washington. This is all that the applicant has at first to do, and, having done it, he will be able to go about among his colleagues with head erect and a grateful feeling that when the war came he was able to do his bit, and a big bit, for his country.

It is a glorious chance the young American surgeon is taking. He is going forth to meet, perhaps, the Great Adventure. He goes, joking it may be, as is the custom of our countrymen in time of danger, but with steadfast purpose in his soul and dauntless courage in his heart. He may return wearing the Red Badge of Courage, or he may find a resting place somewhere in France, but our prayers are with him. So ever, when humanity bleeds or danger threatens, may the doctor be first in the field!

CO-OPERATION BETWEEN THE PHYSICIAN AND SURGEON IN GASTROLOGY.

FINNEY, in his address at the recent annual meeting of the Medical Society of the State of New York (*N. Y. State Journal of Medicine*, May, 1917), strongly emphasized the need for efficient co-operation in the diagnosis and treatment of affections of the stomach, and brought out many truths in his

usual rugged and forceful style that could not fail to impress his audience with the fact that, for the average practitioner, playing a lone hand in these cases, is, or at least may be, a dangerous game. How thoroughly Finney practises what he preaches in this respect is indicated by his statement that he never operates upon a supposed stomach case without having first had it thoroughly studied and reported upon by a competent internist, or until he is satisfied that nothing more is to be expected from a continuance of medical measures. But, one may say, it is not always possible to obtain the services of a skilled internist for the study of these cases, especially in a country practice. Finney effectively disposes of this objection when he says: "It is equally true, a fact that should not be lost sight of, that questions of operative treatment of stomach diseases are not for the country doctor, who only does a little surgery of necessity, to decide, but for the thoroughly competent surgeon skilled in the care and treatment of such cases."

As Finney points out, every practitioner, whether general or special, must have been struck with the great frequency with which stomach symptoms usher in almost any affection; and that among the extraabdominal condition with which the stomach may show functional derangement are pneumonia, tuberculosis, brain tumor, the acute exanthemata, angina pectoris, arteriosclerosis, various disturbances of kidney functions, eyestrain, etc., while the same disturbances of normal function may be found with many intraabdominal conditions, as in the vomiting of pregnancy, appendicitis, intestinal obstruction of one sort or another, mesenteric thrombosis, acidosis, uremia, etc. These disturbances may occur in the absence of any organic trouble whatever with the stomach itself, while, in addition, the disturbances due to the many morbid conditions affecting the stomach, alone or coincident with disease elsewhere, come up for consideration. With disturbances of gastric function occurring under such manifold conditions, Finney calls attention to the fact that "in arriving at a definite diagnosis in any case of so-called stomach trouble the physician will not infrequently be called upon to go over in a general way the whole ground indicated above, and much more, before being able to discriminate between a case of real stomach disease and one in which the stomach symptoms, while prominent, constitute only a minor consideration, because secondary to some other pathological condition elsewhere in the body; and that a stomach case may, after careful consideration, prove to be an inflamed appendix, cancer of the rectum, brain tumor, gastric crisis of tabes, cholecystitis, cholelithiasis, or what not." It should also be remembered, however, that although the surgeon is admittedly dependent upon the internist for the interpretation of certain features of the individual case, the internist should not delay too long before seeking the advice of the surgeon in all cases where there is a possibility that operation may be necessary. This fact was very strongly emphasized years ago by Rodman, when he bitterly arraigned the physician who sometimes waited so long to make a positive diagnosis that the case had become inoperable.

The diagnosis of any given case of stomach trouble is not only not always easy, but sometimes extremely difficult, and at times actually impossible without exploratory incision; and perhaps even then the ultimate decision must rest with the pathologist. This, Finney thinks, is a rather humiliating confession to be obliged to make in these days, when our diagnostic ability, aided by the various laboratory tests, has reached such a high stage of development; and we would join in the plea for cooperation between the surgeon, internist, radiographer, and laboratory staffs, in order that the percentage of cases in which a definite, correct, preoperative diagnosis is made may be increased.

The great need for such cooperation has been well shown in certain series of studies, notably those of Cabot and Abrahams, that have been made with the idea of determining the percentage of diagnostic errors. One series, based on autopsy records, must have been particularly disconcerting to the internists and surgeons, whose conclusions, in many instances, were shown to have been far from correct. In considering the reasons for diagnostic errors, Abrahams' classification, quoted by Finney, affords much food for thought. He divides these into two groups: "(1) Social, due largely to the personal equation of the physician himself; and (2) clinical errors, due to (1) ignorance, (2) faulty judgment, (3) obsession, (4) failure to think automatically, (5) failure to think at all, (6) reluctance to accept responsibility, (7) inherent difficulties of the case, (8) incomplete examination." Concerning this, Finney says: "It is evident at once that if his analysis is correct some of these mistakes may be condoned and others not. Unquestionably, the first and last, ignorance and incomplete examination, are responsible for the majority of our mistakes, and these may be corrected. Indeed, all of them, except possibly those due to inherent difficulties in the case, may be overcome, and all the time, with our improved methods, this group is getting less and less." This latter statement is probably true for the larger medical centers and in those cases where the services of the expert internist and surgeon are enlisted, but we confess to a more pessimistic view when the diagnosis and surgical treatment of the case rest with the average general practitioner and the less experienced surgeon. Many an "exploratory" operation is done by embryo surgeons when the more experienced operator would require more definite indications for operative attack, or would hesitate to operate at all because of unfavorable concomitant conditions; for, as Finney says, "with added years and accumulated experience comes increased caution."

In view of the inherent dangers and difficulties

of stomach surgery, we would therefore strongly urge two things: First, that before a patient presenting stomach symptoms is advised to undergo the perils of operation the case shall be thoroughly studied by a competent authority, if available in the community in which he lives, and that when sufficiently skilled local practitioners are lacking he shall be referred, when possible, to the nearest medical center where such competence can be found. Second, that whenever possible, operation, if indicated, shall be performed by a surgeon who has had long experience in abdominal surgery and who is thoroughly competent to deal with the various complications that may be encountered, many of which perhaps cannot be diagnosticated before opening the abdomen. It is only by careful study at the hands of those trained in the diagnosis and treatment of stomach conditions that the percentage of error can be reduced to the minimum.

THE PHYSIOLOGY OF FOOD AND ECONOMY OF DIET.

THE question of food has been for some time one of great importance to the European nations at war, and it is now becoming an absolutely vital one. At the present time this country is not only concerned with supplying her own population with an adequate supply of food material, but England, France, and Italy, to a lesser extent, rely upon America to make up deficiencies in their home supply. Consequently, the food question, although not so acute as in Europe, is yet sufficiently serious.

Recently, a little book* has been published by Dr. W. M. Bayliss, Professor of General Physiology in University College, London, the object of which is to give scientific information on all questions related to food. Among the points dealt with is the quality of food required for mental workers. Bayliss draws attention to the fact that the energy value of the diet for a man engaged in mental work is sometimes given as the same as that of a man doing very light mechanical work. Now this is possibly correct, since, so far as we know, the actual consumption of energy in mental processes is not great. But the author goes on to say that there is another consideration which, in his opinion, should be taken into account. The oxygen consumed by an organ is an index of the exchange of energy therein, or an index of the food required by the organ. So far as experimental results go, it does appear to be the fact that the actual consumption of oxygen in the nerve centers is not great, but, on the other hand, it has to be supplied at a high pressure. This is shown by the fact that even momentary stoppage of the blood supply causes immediate unconsciousness, although the oxygen of the blood still remaining in the brain cannot have been exhausted. It is somewhat as if we had an electromagnet which does not need much current to actuate it, but, owing to the wire with which it is wound is of high resistance, and consequently a high voltage is necessary to drive even a small current through. Should the brain be an analogous case, it seems possible that although the actual consumption of food is not great, yet this food may require to be presented at a high pressure, and that to attain the high pressure it may be necessary to take a diet of an energy equivalent to that of moderate muscular work.

With respect to alcohol, Bayliss affirms that there is no benefit, from the food standpoint, to be derived from the use of alcohol, and this being the case, if there is likely to be any shortage of food, the first prohibition to be made ought surely to be of the use of food materials in distilleries and, to a lesser extent, in breweries. For the manufacture of alcohol as a solvent for explosives, materials unfit for use as food, such as bad potatoes, could be used. Moreover, Bayliss points out that nothing can alter the fact that there is a loss of energy in the change from carbohydrate to alcohol. If the barley thus used were consumed directly by man and cattle, the energy value obtained would be greater than if all the products resulting from its use in making beer were consumed. It is doubtless true that very little sugar is added, as such in the manufacture of beer, but the starch of the barley is converted into sugar in the process and part of its energy value lost by fermentation.

In connection with vegetarianism, Bayliss states that there is no special virtue in butcher's meat, and that vegetable foods, if properly chosen, can supply all that is necessary for a complete diet. The protein is not quite so easily digested, but in compensation more of the food can be taken. The conclusion to which the author comes is that a diet of purely vegetable origin cannot be safely made up until more is known concerning the properties of each food stuff.

One feature of the food situation in Great Britain referred to by Bayliss might be applied with equal force to the situation in this country. He lays stress on the fact that one of the most pressing needs at the present time is a control of the prices of food and a means of insuring equality of distribution. Many dealers in foodstuffs appear to think themselves justified in exacting as high a price as they can get their customers to pay. When the price of food is higher in Great Britain than in Belgium, and higher in this country than in Great Britain there is evidently something wrong.

*The Physiology of Food and Economy in Diet. London and New York, Longmans, Green & Co., 1917.

A PERSONAL CASE OF HOSPITAL GANGRENE.

THE statement that hospital gangrene no longer exists must not be accepted too literally. It does not exist as a contagious plague, nor does it occur in a severe form (the two doubtless go hand in hand), but not infrequently the French military surgeons mention a complication of wounds which agrees in essentials with the once dreaded scourge. Verdelet, in the *Gazette hebdomadaire des sciences médicales*

de Bordeaux for May 27, reports that on June 12, 1915, when he was dressing a boil on the neck some pus ran down on the back of his hand. Two days later a folliculitis appeared over the extensor tendon of the thumb at the metacarpophalangeal joint. This disappeared in three or four days. On June 19 he amputated in the thigh for purulent arthritis of the knee, and again pus came in contact with his hand. Next day there appeared at the site of the folliculitis a livid spot, and by night pain was marked, with constitutional symptoms, the sheath of the tendon having been infected. Lymphangitis was soon in evidence. The infection gradually spread to all the extensor tendons of the fingers. The systemic reaction was mild until June 27, when evidences of septicemia suddenly appeared. After free incisions in the dorsum of the hand these symptoms abated. By July 7 the condition was quiescent, the hand still showing infiltration; but at once a new focus appeared over the third metacarpal. A fresh incision gave relief until July 15, when another recrudescence appeared. The hand began to swell and its skin to redden, an incision scar reopened and the wound exhibited a false membrane characteristic of hospital gangrene. Hemorrhagic blebs appeared on all the fingers. A severe general reaction set in with chills, vomiting, and icterus. The gangrenous wound was at once cauterized with the paquelin, followed by spraying with Labarraque's solution and permanganate. But little change was noted for several days, when a favorable crisis set in—diaphoresis and diuresis, with fall of temperature and subjective improvement. The false membrane began to slough, revealing healthy granulations. The chief local treatment was the hot air douche. The wound cauterized and gradually infiltration disappeared from the hand, which, however, was left in a dystrophic condition. Its color was livid, the nails were deformed, the joints and tendons were stiff, and the muscles atrophic, those of the forearm and arm having shrunk in size. The period of disability lasted nearly a year.

A Wholly Unnecessary Law.

The physicians of this city were more or less disagreeably surprised and puzzled to receive on Saturday of last week a letter from the State Commissioner of Health inclosing sundry blank forms and ordering them to file on the preceding Tuesday an inventory of all the preparations or derivatives of opium at that time in their possession. Under separate cover was sent a copy of the law prescribing this inventory. The law is clumsily worded, but so far as one could make out from a careful perusal of it every physician in the State, having failed to file the inventory several days before he had heard of the necessity of so doing, has been guilty of a misdemeanor. The Commissioner calls the law one "governing the sale of habit-forming drugs," but the law itself specifies only "opium or any of the salts, alkaloids, or derivatives, or any compound or preparation of them." So it is a law governing the sale of only one group of the habit-forming drugs, and is in so far inadequate to prevent drug addiction; moreover, all its provisions and much more are fully covered by the Harrison law, and it is therefore useless. It merely adds to the annoyances of the physician, and cannot possibly affect a single addict who is not already under the restraint of the Harrison law. In addition to filing an inventory of all opium preparations in his possession, the physician must register with the State Commissioner of Health, pay a dollar, swear (legally) twice at 25c. per swear, and ever thereafter make out numerous order blanks, keep records of prescriptions, et cetera, repeating the registration and the swearing annually.

News of the Week.

No Infantile Paralysis.—The Board of Health has issued a statement to the effect that this city is apparently free from poliomyelitis this season. Last year at this time there had been 1900 cases of infantile paralysis reported since the beginning of the year, while so far this year only 77 cases have been reported.

Death Rate of New York City.—The death rate of this city last week was the lowest ever recorded in the history of the Health Department, being 10.36 for each 1,000 population. The death rate among babies under one year of age was 85 deaths for each 1,000 births for the period since January 1. During the corresponding time last year the rate was 93. Only ten years ago the death rate among babies was twice as great.

Dr. Leverett D. Bristol of Boston has been appointed first health commissioner of the State of Maine by Gov. Milliken.

Dr. William J. Mayo of Rochester, Minn., has been summoned to Washington to confer with the Government officials relative to the formation of a central medical staff in Washington, the purpose of which will be to obtain the best medical service for American soldiers while in the field.

"Drug King" Sent to Prison.—Convicted of operating a bogus sanatorium for drug users and of secretly importing heroin and other narcotics from Havana for distribution throughout the entire East, a man claiming to be a physician was recently sentenced here to two years and nine months in Atlanta Federal Prison and to pay a fine of $2,000.

Report on Transmittance of Poliomyelitis.—Dr. Hideyo Noguchi and Dr. Rokusaburo Kudo of the Rockefeller Institute for Medical Research, have undertaken to determine whether poliomyelitis is carried by flies and mosquitos. They report their results in *The Journal of Experimental Medicine* as follows: Of several hypotheses concerning the mode of conveyance of poliomyelitis that of direct contact appears to be the only one which stands on a substantial basis. Specimens of *culex pipiens* raised from the larval stage in water experimentally contaminated with an abundance of poliomyelitic virus were found to be incapable of causing the infection when allowed in large numbers to bite normal Macacus monkeys. Experiments with flies also show that it is improbable that the virus of poliomyelitis is taken up by fly larvæ and multiplied therein. Not only does the virus fail to multiply, but probably it is rapidly destroyed within the body of the insects. The notion that these non-biting flies may act as intermediary hosts or a

virus reservoir is not justified by evidence brought out in this present study.

Increased Street Perils.—During the last six months according to the report of the Police Commissioner, 12,284 persons have been victims of street accidents in this city, compared to 10,593 for the same period last year. In June there were 565 more accidents than during the same time last year.

Patent Medicine Men Victorious.—New York City patent medicine manufacturers have won an important decision over the Department of Health before the Appellate Division of the Supreme Court, which declared invalid the ordinance requiring the manufacturers of all proprietary remedies to register all the active ingredients of such remedies with the Department of Health. Such registration was confidential. Since the ordinance had not been ratified by the State Legislature it was open to attack on the ground of unreasonableness, according to the Court.

Aid for the Tuberculous in France.—The International Health Board of the Rockefeller Foundation Commission for the Prevention of Tuberculosis in France is about to put its plans into execution. The commission will be under the care of Dr. Farrand and Dr. James Alexander Miller will take charge of the phases of the work relating to medical relief.

Dr. H. S. Baketel of this city, a lieutenant in the Medical Reserve Corps, U. S. A., has been promoted to the rank of major.

The War Babies' Cradle.—Mrs. F. A. Clark, president of the American Committee of the War Babies' Cradle, has issued an appeal for funds to provide care for poor Frenchwomen in childbirth. They are mostly soldiers' wives and many of them are in the region of northern France desolated by the Germans. Contributions may be sent to Mrs. Jules Bache, 350 Madison Avenue, New York City.

Obituary Notes.—Dr. JAMES A. JONES, assistant city physician of Lynn, Mass., died at his home on July 3, of heart disease, aged 53 years. He was graduated from the University of Vermont College of Medicine, Burlington, in 1906, and was a member of his County and State Medical Society.

Dr. JAMES M. TUBB, a graduate of the Memphis Hospital Medical College, Memphis, Tenn., in 1893, died at his home at Bessemer, Ala., after a long illness on June 21, aged 66 years.

Dr. ROBERT C. BLACK, a graduate of Rush Medical College, Chicago, Ill., in 1858, died at his home in Gainesville, Tex., on June 22, very suddenly of heart disease, aged 85 years.

Dr. WALTER L. PURSSELLEY, a graduate of the Missouri Medical College, St. Louis, in 1897, died at his home in Springfield, Mo., on June 21 of apoplexy, aged 51 years.

Dr. WILLIAM B. EZELL, a graduate of the Atlanta Medical College, Ga., in 1861, died at his home in Brunswick County, Va., at 80 years of age. He served both as a private and lieutenant in the Confederate army during the Civil War, participated in several battles and was confined in the prison at Richmond for a term of weeks.

Dr. ALEXANDER C. DICK died at his home in Sumter, Va., on June 27, after a long illness, at 56 years of age. He began his medical education at the University of Virginia, but later received his diploma from the Medical College of the State of South Carolina, Charleston, in 1889.

Dr. FRANCIS M. RIDLEY, a graduate of Tulane University of Louisiana School of Medicine, New Orleans, in 1880, died at his home in LaGrange, Ga., on July 7, aged 63 years, after an illness of several weeks. He was president of the State Board of Medical Examiners, chief surgeon for the Atlanta and West Point railroad, and a member of both County and State Medical Society.

Dr. FRANK B. REAGOR, county health officer, died suddenly at the home of his brother, Dr. L. T. Reagor, at Shelbyville, Tenn., on June 29, aged 57 years. He was graduated from the University of Tennessee, Medical Department, Memphis, in 1891, and was a member of both County and State Medical Society, and a fellow of the American Medical Association.

Dr. GEORGE T. MCWHORTER died at his home in Riverton, Ala., after an illness of over two years, on June 29, aged 67 years. He took an active interest in the politics of his county and while in the State Legislature he endeavored, though unsuccessfully, to establish a colony for epileptics.

Dr. GEORGE E. WALTON of Daytona, Fla., died at the home of his son at Terre Haute, Ind., during the third week in June after an illness of several years, aged 77 years. He was graduated from the Bellevue Hospital Medical College, New York, in 1864, and served as a surgeon in the Union army during the Civil War, and when President Lincoln was assassinated, he was one of the first physicians to reach his side.

Dr. ALBERT V. VEAZIE, of New York City, a graduate of the Tulane University of Louisiana School of Medicine, New Orleans, in 1908, died at the home of his father, Dr. Henry A. Veazie, in New Orleans, on June 30, from Bright's disease, aged 37 years. He studied for the stage, later entering medicine and for several years before practising in New York, followed the sea as a ship's surgeon.

Dr. NICHOLAS C. SCHILTZ, for the past 19 years an instructor in the Drake University Medical School, Des Moines, died at his home in the city from cancer on July 1, aged 51 years. He was graduated from the Rush Medical College, Chicago, in 1892, and was a member of his County and State Medical Society, and a fellow of the American Medical Association.

Dr. JOSEPH L. ABT died at his home in Chicago, Ill., on June 30, after a prolonged illness, aged 52 years. He was graduated from the University of Michigan, Department of Medicine and Surgery, Ann Arbor, in 1892 and from the University of Illinois, College of Medicine, in 1893, and was a fellow of the American Medical Association.

Dr. JAMES F. SPELMAN died at his home in Anaconda, Mont., from Bright's disease, on July 1, aged 49 years. He was graduated from the University of Pennsylvania in 1890 and received an appointment as house surgeon at the hospital in Harrisburg, Pa. He then began to practise in Anaconda and in 1899 took a special course in surgery at St. Bartholomew's Hospital, London. He was a fellow of the American College of Surgeons and also a fellow of the American Medical Association, and one time president of the Montana State Medical Association.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

HALF A MILLION DOLLARS FOR THE RED CROSS FROM AUSTRALIA—THE FRANCHISE FOR SOLDIERS AND SAILORS—FUNERAL OF VICTIMS OF THE BABY-KILLERS—MEDICAL OFFICERS OF HEALTH—ACRIFLAVINE—HOSPITAL SUNDAY.

LONDON, June 23, 1917.

THE joint war committee of the Red Cross Society and the Order of St. John has just received through the Australian branch of the Red Cross the sum of £100,000 contributed by the people of Victoria for the Red Cross funds. This is the magnificent first result of an appeal organized throughout the State of Victoria by Lady Stanley, wife of Sir Arthur Stanley, governor and president of the Victorian division of the Australian Red Cross. The appeal was launched early in May, and the response to it was immediate and enthusiastic. The earliest donations included 18 of £100,000 each; the list on the opening day reached £34,370 and within a fortnight Sir Arthur and Lady Stanley were in the happy position of being able to announce that they had received the sum of £70,000, which grew rapidly to the figure of £100,000 now remitted as a preliminary contribution to the Red Cross headquarters.

The Senate of the London University has elected Sir Cooper Perry as vice-chancellor, to succeed Sir Alfred Pearce Gould.

The Earl of St. Germans, who holds a captain's commission in the Dragoons, has been wounded. Born in June, 1890, educated at Eton and Sandhurst, he has been mentioned in dispatches and awarded the Military Cross during the war.

The Home Secretary has brought before the House of Commons a remodeled clause giving votes to soldiers and sailors. Every man in active service and on full pay is to have his right to vote for the place of his home or for the place where he has obtained his six months' residential qualification. It will be the duty of the registration officer to inquire as to the persons entitled to be registered, and the soldier or sailor will not have to claim the vote.

At the funeral service for the 15 child victims of the air raid on the 13th a message from the King was read, showing how he and the Queen were thinking of the mourners and praying that they might be blessed with God's help and comfort in their sorrow.

The Royal Medical Benevolent Fund is now called upon as a result of the war to deal with the cases of many widows and children who in happier times would have needed no assistance. At the last committee meeting no less than 20 cases were under consideration and £163 was granted to 16 of the applicants. The guild is glad to receive second-hand household linen and clothing. The clothes most needed are those suitable for boys and girls working in offices, or for women or old men.

At a meeting of the N. W. branch of the Society of Medical Officers of Health a letter was read from Prof. Sheridan Delépine, director of the Public Health Laboratories of Manchester University, who had been invited to speak but was unable to be present. Though not personally concerned with the administrative duties of such offices, he had during the last 25 years, owing to his official position, had many opportunities of observing the loss of time, money, and power for good, resulting from the present uncoordinated and sometimes antagonistic state of the various departments interested directly or indirectly in public health.

The medical research committee have written to the lay press to correct statements based on misapprehension of the situation in regard to the properties and the supply of acriflavine. The unique properties of this substance were known several months ago, although only moderate quantities were obtainable for a considerable time. The medical research committee seem to have assumed responsibility for the supply of the drug, but they have offered no explanation of the delay in its production which has been complained of, and on account of which it has been urged by some that the Government should undertake the supply.

Hospital Sunday is the day after to-morrow. So it may not be amiss to report that the claims of those institutions are as urgent as ever; for some three years they have borne the burden of the loss of doctors, nurses, and staff, as well as the increase of cost all round, maintaining their great work for the sick poor, besides caring for some 150,000 of our wounded. The in-patients are now about 12,000 occupying beds. The out-patients number about 17,000. Our hospitals have always been a cause of reasonable pride, which will be accentuated when the history of the war records, as it must do, that they sustained a principal part in the system whereby the enemy was met and defeated.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 5, 1917.

1. A Report of a Service with the First Harvard Surgical Unit at a British Base Hospital, with the End Results of the Cases One Year Later. Channing C. Simmons.
2. Ascending Lymphogenous Renal Infection. Daniel N. Eisendrath and Oscar T. Schultz.

2. Ascending Lymphogenous Renal Infection.—Daniel N. Eisendrath and Oscar T. Schultz state that they have made an attempt to study the route of infection of the kidney which takes place in an ascending direction along the interstitial lymphatics of the ureter. They have felt for some time that the older view of infections ascending from the bladder to the kidneys along the lumen of the ureter must be abandoned, except in cases of complete obstruction of the ureters. In two series of experiments carried out a total of thirty-seven female animals were used, eleven rabbits and twenty-six dogs. The organisms employed were *Bacillus coli, Staphylococcus aureus* and *Bacillus proteus*. Attempts were made to imitate conditions clinically in cases of ascending renal infection in the human being, by making an emulsion of sterile salt solution and scrapings of four agar slant cultures, which was injected into the bladders of the female dogs and rabbits through a sterile silver cannula of very narrow caliber. Caution was taken as to presence of any previous infection and the animals were anesthetized with ether; every precaution was also taken to avoid any injury to mucosa of bladder and urethra. The animals were killed at varying times with strychnine. Of the eleven rabbits, six showed involvement of the ureter, five of the pelvis, and six of the kidney. The pathogenic organism injected was recovered from the bladder five times; from the kidney twice. Of the twenty-six dogs used, twenty-one showed ureteral involvement, sixteen pelvic involvement, and thirteen

lesions of the kidney. The organism injected was recovered from the bladder twelve times and from the kidney five times. Seven dogs were examined by the same method as controls. One of these showed the same type of lesion in the ureter and pelvis. Microscopical investigation of the tissues was also carried out. Eisendrath and Schultz further state that (1) anatomical studies have demonstrated the presence of an anastomosing network of lymphatics in the wall of the bladder and of the ureter, communicating above with a similar lymphatic network in the renal pelvis and parenchyma. At its lower end this system communicates also with the lymphatics of the pelvic structures, in both the male and female. (2) Infections of the bladder or lower ureter may reach the renal pelvis or the kidney, either by way of the lumen of the urinary tract or by way of the mural lymphatics. (3) Experimental and clinical evidence indicates that almost complete obstruction to the free passage of urine is necessary for ascent of infection by way of the lumen of the urinary tract. (4) Experimentally they have shown that infection, set up by the simple introduction of bacteria into the bladder without injury or without obstruction, may pass upward by means of the interstitial lymphatics of the ureter. (5) The degree of involvement following the introduction of bacteria into the bladder depends upon the virulence of the organism and upon the susceptibility of the animal. The subsequent tissue reaction may remain limited to the bladder and ureter, it may pass upward to the tissues of the renal pelvis, or even the parenchyma of the kidney itself may become involved. (6) When the kidney tissue is involved in ascending infection brought about experimentally, as described, the path of travel is from the subepithelial tissues of the pelvis to the kidney by way of the inter-tubular and perivascular lymphatics. (7) From the kidney the perirenal tissues may become involved through the capsular lymphatics, which anastomose with those of the cortex. (8) The experimental evidence indicates that, in cases of pyelitis and pyelonephritis in the human, secondary to infection of the bladder, the lymphatics constitute the most important course of upward travel of the infection, especially in those cases where there is no hindrance to the urinary outflow. (9) Pyelitis and pyelonephritis, not secondary to cystitis, may also be the result of lymphatic transport of infection from the pelvic organs in the male and female, and from the lower intestinal tract.

New York Medical Journal.

July 7, 1917.

1. The Army Medical Service. T. H. Goodwin.
2. The Function of the Military Orthopedic Hospital. Fred H. Albee.
3. A Summary of Medicomilitary Facts Developed by Experiences on European Battle Fronts. Henry K. Loew.
4. Distal Osteoporosis of the Upper Extremity. Dudley J. Morton.
5. Larva Migrans on the Mexican Border. Charles Perley Gray.
6. The War and the Nervous System. Smith Ely Jelliffe.

5. Larva Migrans on the Mexican Border.—Charles Perley Gray gives the results of his experiences in the treatment of cases of larva migrans from the bot fly in men in the Federal service on the Mexican Border during the summer of 1916. The histories were practically the same. Following a test march, called the ten day hike—100 miles—in August, a large number of men complained of an intense itching of various parts of the body. The temperature at the time was high, ranging from 100° to 120° F., registering one day as high as 141, and on general examination the condition was considered to be prickly heat, since in many cases the eruption appeared on the back underneath the pack which each man carried. The condition did not yield to the ordinary treatments and the men suffered from lowered vitality due to loss of sleep as a result of their condition. A few days later, close examination revealed small vesicles, from which serum exuded when they were pricked, profuse in number, but segregated in small groups with patches of clear skin between them. On watching the skin closely, however, it was noticed that within twenty-four hours after these vesicles were rubbed by scratching, small serpentine furrows would develop, at the end of which another vesicle would appear, and from the tract itself sometimes serum appeared. These vesicles would at times, following various treatments, lie dormant for four or five days without itching or symptoms of discomfort; then suddenly they would begin to itch, scratching would occur and another serpiginous tract would appear. The top vesicle would be broken by the scratching, the serum exude and spread over the skin, a tiny furrow would slowly spread in a given direction, and in twenty-four or thirty-six hours another vesicle would appear at about an inch distant, followed in another twenty-four hours by a repetition of the process further on, until the condition spread all over the body, sometimes on the arms and legs as well. Macroscopically the lesions showed no parasite; under the microscope but once could there be detected anything resembling a living parasite. It had a threadlike appearance with a slight joint, like a lobster's claw, on the end. This was invisible under the magnifying glass, and the pathologist was not sure that it was not extraneous matter. The only treatment that proved effective was to paint the vesicle and burrow with a fine brush with strong carbolic acid, ninety-five per cent., until the tissue turned white, and then to paint the surface over with ten or twenty per cent. tincture of iodine. Only the vesicle and burrow were touched. This was followed up the second day, protected by a dry, sterile dressing, the patient allowed to rest, and carefully watched for recurrence. Sometimes one treatment would suffice, but where the lesions were extensive several sittings were necessary. Gray's theory is that the condition was caused by some form of animal or vegetable parasite. It was traced back to a ranch where all the men later affected camped in an old corral infested with flies and horse manure. Gray treated over one hundred cases in two regiments during a period of over three months, though many forms of treatment were tried before the most efficacious one was worked out. The majority of the cases at first stopped immediately, lay dormant for a week or two, only to break out anew at the end of that time.

Journal of the American Medical Association.

July 7, 1917.

1. The Eye and the Endocrine Organs. William Zentmayer.
2. Treatment of Intestinal Amebiasis with Special Reference to Ipecac and Its Derivatives. B. C. Crowell.
3. The Rôle of Alcohol in the Welfare of the Human Race from the Standpoint of Pharmacology and Therapeutics. Bernard Fantus.
4. Crystalline Deposits in the Eye. F. Park Lewis.
5. Observations on Treatment of Foot Conditions. C. L. Lowman.
6. The Endonasal Operation on the Lacrimal Sac. William B. Chamberlain.
7. The Reaction After Intravenous Injections of Foreign Proteid. Francis J. Scully.
8. Treatment of Paresis by Injections of Salvarsan in the Lateral Ventricle: Second Report. Graeme M. Hammond and Norman Sharpe, with Laboratory Data by J. Wheeler Smith, Jr.
9. A Report of the Use of Dichloramin-T (Toluene-Parasulphone-Dichloramin) in the Treatment of Wounds. H. D. Dakin and Walter Estell Lee, Joshua E. Sweet, Byron M. Hendrix and Robert G. Le Conte.
10. Sodium Succinate and Leucocytosis: Effect of the Subcutaneous Administration of the Drug on the Leucocyte Content of Human Blood. Frederick S. Hammett and Ernest E. Kessler with the Assistance of C. C. Browning.
11. The Incidence of Phosphatic Urinary Calculi in Rats Fed on Experimental Rations. Thomas B. Osborne and Lafayette B. Mendel with the Cooperation of Edna L. Ferry.
12. A Study of Exophthalmic Goiter from the Point of View of the Basal Metabolism, with Remarks Concerning the Effect of Various Forms of Treatment. J. H. Means and J. C. Aub.

9. A Report of the Use of Dichloramin-T (Toluene-Parasulphone-Dichloramin) in the Treatment of Infected Wounds.—H. D. Dakin, Walter Estell Lee, Joshua E. Sweet, Byron M. Hendrix, and Robert G. Le Conte report on their search for the perfect germicide. To be such, two simple requirements must be met. It must kill all parasitic life, while causing no harm to any cell of the living body. The problem has been partially solved for certain groups of infective agents belonging to the lower forms of animal life. The bacteria have shown a greater resistance to lethal agents than is possessed by the cells of the animal body, and therefore the great problem of surgery, the prevention and control of bacterial infection, remains but partially solved.

The demands made on surgery by the extensive suppurating wounds of modern warfare have reopened the question of treatment and made necessary a further search for an agent which would meet the requirements of a perfect germicide. In military surgery the problem has distinctly been one of treatment of infection, antisepsis. Skin irritation entered into the use of many of the solutions used in cleaning up wound infections, especially the chlorine preparations. This group of experimenters have produced the following and state that in comparing the practical surgical value of dichloramin-T with aqueous hypochlorite solutions in the treatment of infected wounds, which in spite of many serious objections has given such promising results, they believe that their laboratory and clinical findings thus far warrant the following statements: (1) Dichloramin-T is a nonirritating synthetic germicide, and corresponds to the antiseptic chloramine substances found in minute quantities when nascent chlorine of the aqueous hypochlorite solutions is brought into contact with the exudate of suppurating wounds. (2) Dichloramin-T can be used in strengths of from twenty to forty times greater than is possible with the hypochlorites and in an oily solution which makes possible the slow elaboration of the germicide over a period of from eighteen to twenty-four hours instead of a rapid disappearance in from thirty minutes to one hour as with the hypochlorites. (3) Its use is as simple as the application of the tincture of iodin, and they can see no reason why it cannot be used to replace iodine as a primary dressing. In their experience it is just as effective as a germicide, and is without the destructive effect on the tissue cells. They have had the opportunity of using it in this way at the primary operation in seven wounds involving soft tissues, tendons, joints and bones and have not failed to have primary union. One case, a compound fracture of a metacarpal with severed extension tendons, did not receive treatment until three hours after the injury. (4) The chlorine in dichloramin-T, as in the hypochlorites, has the power of dissolving dead tissues. Hemorrhage, therefore, must be stopped by ligation, else the clot will dissolve and secondary hemorrhage may follow. (5) One should not depend on a chemical agent to perform, in the treatment of suppurating wounds, for that which can and should be done quickly and thoroughly by mechanical means. Neither chemistry nor bacteriology can or should be expected to replace the mechanics of surgery. At the best these chemical germicides can react only on the bacteria with which they actually come in contact which means a very superficial process. Therefore, at the primary operation all infected tissue, foci and devitalized tissues must be removed when possible by surgical procedures. Finally, adequate drainage, dependent if indicated, must be provided. They have seen two cases of skin irritation after several weeks of continuous use. It is similar to the eruption of ivy poison, and may be due to the eucalyptol.

The Lancet.

June 16, 1917.

1. Goulstonian Lectures on Paratyphoid Infections. Charles H. Miller.
2. Amputations Considered from the Artificial Limb Point of View. Thomas Openshaw.
3. Neurasthenia in Soldiers of the Home Forces. F. W. Burton-Fanning.
4. Note on the Treatment of Neuritis with Special Reference to Sciatica. Harrington Sainsbury.
5. Freud's Psychology of the Unconscious. W. H. R. Rivers.
6. Salvarsan and Intramine with Reflections Upon Chemotherapy. J. E. R. McDonagh.

5. Freud's Psychology of the Unconscious.—W. H. R. Rivers considers it possible, even probable, that the practical application of Freud's theory of the unconscious in the domain of medicine may come to be held as one of its least important aspects, that it is perhaps in other branches of human activity that its importance will in future be greatest. Rivers' own belief in the value of Freud's theory of the unconscious as a guide to the better understanding of human conduct is not so much based on clinical experience as on general observation of human behavior, on evidence provided by the experience of friends as well as observations of his own mental activity, waking and sleeping. The feature which makes Freud's theory noteworthy is his scheme of the nature of the opponents in the conflict, and of the mechanism by which the conflict is conducted. Another concept characteristic of Freud's psychology is that of dissociation, but the idea is older than Freud and forms part of systems of psychology very different from his. The special merit of this theory in this respect is that it provides a psychological theory of dissociation, of the factors upon which it depends, and of the processes by which its effects can be overcome. According to Freud forgetting is an active process, not negative as heretofore taught. In considering the Freudian theory of the unconscious with reference to the neuroses of the war, Rivers states that fate seems to have presented an unexampled opportunity at the present time for the testing out of these theories. His opinion is that so far as the theory and clinical methods founded upon it are concerned, both are largely doomed to disappointment, since they seem to be inadequate as a means of explaining and treating those disorders for which the theory was originally designed. Certain features of the situation must be taken into account before any conclusion can be accepted. First, it must be noted, that while the proportion of the population from which cases of warstrain are now being drawn is very large, it is not wholly representative, but has been selected, perhaps in a rough way, by the medical examination preliminary to enlistment. Another and more important reservation depends on the fact that warfare tends to produce states of anxiety and apprehension so deep-seated and far-reaching that they obscure causes of a different kind. Cases arising out of the war do not for this reason furnish satisfactory material whereby to test the truth of the Freudian position. Persons who break down under the strains of ordinary life in whom other states are not hidden by the overpowering emotional conditions arising out of modern warfare provide material which shows far more readily the influence of unconscious factors of the kind which are held to be so important by the Freudian school. Even when the reservations are taken into account, there remains singularly little to support the Freudian position in the form in which it is usually presented to us by its advocates. Rivers' experience shows this to be particularly true in regard to the part played by sexual experience in the production of the functional disorders arising out of the war. Those forms of paralysis and contracture, phobia and obsession, regarded by the Freudians as the result of repressed sexual tendencies occur freely in persons whose sexual life seems to be wholly normal and commonplace, singularly free from those sexual repressions which are so frequent in modern civilization. Certainly, if results are any guide, the morbid states disappear without any such complexes having been brought to the surface, while in other cases the morbid states persist in spite of the discovery of definite complexes, sexual or otherwise, going back to times long before the war. Denial, however, of the validity of Freud's theory of the unconscious in the form currently held by its adherents as the means of explaining nervous and mental disorders is something very different from the denial of the validity of this theory altogether. While the Freudian types of mental and nervous cases are few among the cases arising out of the war, there is hardly a case which this theory does not help us the better to understand—not a day of clinical experience in which this theory may not be of direct practical use in diagnosis and treatment. While the results of warfare provide little evidence in favor of the production of functional nervous disorders by the activity of repressed sexual complexes, Rivers believes that they will be found to provide abundant evidence in favor of the validity of Freud's theory of forgetting, the most striking and characteristic feature of his psychology. Rivers' shows that with reference to line of treatment used in the neuroses of war, the Freudian plan of freely discussing the painful experience and an attempt of readjustment by the individual, who has so suffered, carries out the practical side for good results, in many cases, rather than the generally accepted plan of attempted dissociation, of repression of the painful experience. Rivers concludes by stating that Freud's theory of the unconscious should appeal to the physician in that it provides him with a definite working scheme of influences, which he has long known to be active in

the causation of mental disorders and of bodily disorders traceable to mental factors. The great merit of Freud is that he has provided us with a theory of the mechanism by which this experience, not readily and directly accessible to consciousness, produces its effects, while he and his followers have devised clinical methods by which these hidden feactors in the causation of disease may be brought to light. Freud's psychology of the unconscious provides a consistent working hypothesis to aid in attempts to discover the rôle of unconscious experience in the production of disease. As it now stands the scheme is but a partial truth and will suffer many modifications with further research, but Rivers believes that it aims in the direction of the truth.

British Medical Journal.

June 16, 1917.

1. The Development of British Surgery in the Hospitals on the Lines of Communication in France. George H. Makins.
2. On Some Anaerobes Found in Wounds and Their Mode of Action in the Tissues. Herbert Henry.

2. On Some Anaerobes Found in Wounds and their Mode of Action in the Tissues.—Herbert Henry states that the literature on the anaerobes is beset with so many contradictory statements that it is impossible to construct from it an accurate account of the reactions of even the better known organisms. Experience has shown that this confusion is due almost entirely to the investigation of impure cultures, for, with the establishment of a more exact and rigorous technique, the features of individual species are found to become more clearly defined, and previously existing discrepancies tend to disappear altogether. All the anaerobes isolated from wounds are probably fecal in origin. They give vigorous fermentation reactions in the presence of organic material, and according to their biochemical activities they may be divided into two main groups—the saccharolytic group and the proteolytic group. The members of this first group vigorously decompose a variety of carbohydrates with the production of acid gas, but they are only feebly proteolytic. The group comprises: (1) *B. welchii.* (Synonyms: *B. aërogenes capsulatus* of Welch and Nuttall; *B. perfringens* of Veillon and Zuber; *B. phlegmonis emphysematosae* of Fraenkel. (2) *B. tertias.* (Synonyms: *Bacillus Y* of Fleming; *B. von Hibler IX* or *B. rodella III* of Robertson. (3) *B. fallax* of Weinberg. (4) *B. aërofetidus* of Weinberg. (5) *B. oedematicus* of Weinberg. Pasteur's *Vibrion septique* would seem to belong to this group, but it is omitted because there has been as yet no opportunity of establishing its characteristics. The proteolytic group comprises (1) *B. sporogenes* of Metchnikoff. (2) *B. histolyticus* of Weinberg. (3) *B. putrificus coli* of Bienstock. (4) *B. cadaveris sporogenes* of Klein. (5) *B. tetani* of Nikolaier. The individual members of this group digest protein very vigorously, but have a restricted range in the matter of carbohydrate fermentation. The production of a gaseous cellulitis in the tissues surrounding a wound is practically certain evidence of anaerobic infection, although it must be noted that the infiltration of gas may often out-distance the microbic invasion in the tissues. It is not uncommon to find no microscopical or cultural evidence of organisms in the edema fluid taken from crepitant subcutaneous tissues at some distance from the wound. Another feature of anaerobic growth is the necrosis it produces in the invaded part. Quite apart from wounds which show these clinical manifestations, the majority of open wounds treated at a base hospital in France give cultural evidence of the presence of anaerobes. Out of 100 open septic wounds of all grades of severity examined at intervals of from two to twenty-two days after the receipt of the injury two-thirds showed the presence of *B. welchii*, and almost one-half showed the presence of *B. sporogenes*. It is unusual to find only one anaerobe in a wound. In the vast majority of cases the anaerobe infection is a mixed one, the most frequent combination being *B. welchii* with *B. sporogenes*. In contradistinction to these open wounds, Henry found that out of 500 specimens of hemothorax fluid examined from thoracic injuries, which were considered as closed wounds, 195 proved to be septic and 44.6 per cent. of these were infected with anaerobes. Here again, *B. welchii* is the most common infecting anaerobe, and the combination of this organism with *B. sporogenes* is frequent. The anaerobes tend to remain localized to the tissues during life, and it is only seldom that they can be found in the circulating blood. On the other hand, cases have been recorded of socalled metastatic gas gangrene in which anaerobes have developed in some position at a distance from the infected tissue. Henry states that the pathological processes in an anaerobe infected wound as being characterized by two main features—the production of gas and the death of tissue. Each of the two main groups of anaerobes above defined has its share in these processes, and the successive stages by which an anaerobe infection develops may be thus summarized: (1) The initial trauma in determining the death of tissue establishes a focus for growth. This is characterized by the latent period, which precedes any obvious clinical signs of anaerobic infection. (2) The first active phase of anaerobic infection consists in the development of the rapidly growing saccharolytic organisms, of which *B. welchii* is the chief. It is because of the richness of muscle in fermentable carbohydrate that this tissue provides such favorable conditions for the growth of organisms of the saccharolytic type. Their development results in the production of acid and gas. The gas accumulates first in the muscle and reaches the subcutaneous tissues by escape from the muscle. The pressure produced by gas and also by inflammatory edema fluid leads to an anemic condition in the tissues surrounding a wound, and this change initiates the second active period of anaerobic invasion. The muscle in the saccharolytic period is of a brick-red color. The second phase of anaerobic infection in a wound consists in active proteolytic digestion. This is characterized by death and digestion of the tissues. The process is accompanied by the formation of sulphuretted hydrogen and of volatile substances, which give the penetrating putrefactive odor so typical of the later stages of infection. The previously red muscle becomes soft and diffluent. It may be stained black by a sulphide of iron formed by the interaction of sulphuretted hydrogen with the iron released from broken-down hemoglobin. The toxaemia which develops at this period results from the absorption of toxic substances produced in the breaking down of the protein molecule, and cannot be attributed to the acid which is formed in the breaking down of the carbohydrate molecule. The final phase is that of successful bacterial invasion of the blood stream. It occurs in most cases just at, or immediately preceding, the death of the individual.

La Presse Médicale.

June 4, 1917.

The Severe Form of Trench Foot.—Chauvin refers to the three conventional types of this lesion based on degree of severity. The third degree is characterized by sloughing, and it is much less known in literature than the milder forms. It is sometimes termed pseudocongelation. But since the winter of 1917 we know of a fourth degree—a veritable gangrene in bulk, which often involves the entire foot. An inflammatory element is present and swelling may be in evidence as high as the knee. A general reaction coexists, the sepsis which attends congelations. Such forms may have no premonitory symptoms; only a trench foot of the mildest degree may at first be present. In fact, there may only be the usual subjective symptoms. This insidious onset, however, is the exception. As a rule edema marks the début of this severest type and the whole leg may swell. Pain may be associated. Any one of the three classic stages of severity may have first developed in the integument. The massive gangrene develops from the second to the fourth day. The distinction between the true and pseudocongelation is not clear for the author admits that the term "gelure" is the only one to use for gangrenous trench foot despite the points of difference between the two. If this form of trench foot is the same as a freeze of the third degree, an elaborate special description would not be required. In one type of gangrene the indications are local only. Should the entire foot be sacrificed by a

tibio-astragalus separation or will a Chopart or Lisfranc suffice? Should be amputate early or be governed by lines of demarcation? Temporizing is dangerous, for if patient is infected amputation will not save him; moreover, it is useless because of the probability that a higher amputation will be required. In his most recent cases based on early experience, the author may see fit to do a precocious high amputation to prevent death from threatened sepsis.

Duodenal Tubage.—Romme speaks approvingly of analysis of the duodenal secretions as obtained by tubage, as having displaced the older crude tests of Sahli and Schmidt and the oil breakfast. The use of the duodenal sound for this purpose was introduced by Einhorn and Gross in 1909-1910. In 1911 Hess, an American, reported its successful application in children with a soft rubber catheter. For adults the author prefers the heavy tube of Gross in as far as it is the most readily introduced. Fluoroscopic control is of great aid. The technique of White of Boston is described in full; any orderly can readily master its application. This physician did not see a single untoward result in 90 tubages. His results of analyses do not tally with those of Einhorn because different reagents are used, those of White all being extremely sensitive, tending to show that the three classes of enzymes in the duodenal secretion are in a constant state of fluctuation. Classifications based on amounts of enzyme present do not, therefore, appeal to White. Duodenal alimentation as introduced by Einhorn and developed by the latter and Morgan has also given brilliant results at White's hands and is destined to supplant rectal feeding for certain conditions. As White began tubage as a sceptic his warm approbation of its diagnostic and therapeutic efficacy is the more sincere.

Correspondenz-Blatt für Schweizer Aerzte.

April 7, 1917.

One-Minute Heart Death from Adrenalin Insufficiency.—Steiger's remarkable paper was briefly noted in the editorial columns of the MEDICAL RECORD some weeks ago. The article appears in full in the above number, and one of the author's four cases may be reproduced in detail. Patient, a man of 42, was admitted to the medical clinic of the Zürich University for supposed cardiac insufficiency. There was a history of lues, for which he had been treated 3 years before. Eight years ago he had suffered from a contusion of the spine with resulting curvature. On examination a kyphosis was found at the junction of the cervical and dorsal vertebræ. The skin of the face and neck was deeply pigmented, with a sharp line of demarcation at the collar of the undershirt. The same distinction was seen on the forearms. The skin of the penis and scrotum exhibited dark pigmentation. Aside from these anomalies the patient's condition was fairly good, as shown by numerous tests. The tuberculin reaction was negative. Low blood pressure alone—95 diastolic—was an unfavorable sign. Two days after admission, Professor Eichhorst made a diagnosis of Addison's disease. Next day the patient, who rose at 10 A. M., got into an excited argument with some relatives. He walked up and down and gesticulated. At 11 he returned to bed for a blood test. Suddenly he called out that he could not see and collapsed, falling as if struck by lightning, pulseless. As he was still breathing artificial respiration was instituted, but breathing ceased in 70 or 80 seconds. Autopsy showed that the coronary arteries were sound. Both adrenals were the seat of extensive tuberculosis. A study of the heart, in addition to the state of the coronaries, showed fully competent aortic valves. The diaphragm was high. There was slight hemorrhagic pericardial effusion. The auriculoventricular valves and their cords of both sides were thin and delicate. The myocardium, brownish red, was not notably softened.

Eclampsia without Convulsions or Loss of Consciousness.—Chatillon states that in 1913 but thirty-one cases of eclampsia without convulsions were on record. He has been able to increase this total to forty-two, including a personal observation with autopsy. The symptomatology of these cases shows much variation. In certain of them consciousness was retained. While the number of cases is not mentioned, the diagnosis is not always made before autopsy. Among wrong diagnoses have been acute and chronic nephritis with uremia, internal hemorrhage, gas embolism, and some form of poisoning. It is indeed almost impossible to make a final diagnosis. However, today such cases should be promptly recognized as examples of toxemia of pregnancy and doubtless the number of socalled cases of eclampsia without convulsions could be notably increased from this material. The author's patient was a primipara. Gestation had gone on to term without trouble. When first seen labor was in the expulsive period. After an injection of pituitrin the child and placenta were expelled. The infant was seen to be pulseless. Artificial respiration was without response. The mother five minutes after delivery was seen to turn pale with rapid, feeble pulse. There was no evidence of internal hemorrhage. She lived an hour and a half, during which she made no real response to treatment. The liver was the seat of extensive hemorrhages and to the microscope it was a typical eclampsia liver.

Hospitalstidende.

April 11, 1917.

Raynaud's Disease.—Schou describes a personal case of this affection of which over 300 examples have now been reported. Long known to be in part a disease of syphilitic origin, the recent advances in syphilography make it urgent to study every new case from this viewpoint even if Wassermann and treatment test prove negative. The author's patient, a man of 37, denied syphilis throughout, while his mother appears to have suffered from dead fingers and cold extremities. The Wassermann, however, was positive. Owing to the severity of the case, which was at first purely a surgical one, requiring intercarpal amputation of the left hand and several finger amputations on the right hand, the question of etiology was not at first of paramount importance. The patient was later placed on iodide of potassium without apparent benefit. He was then given an inunction cure and neosalvarsan by intravenous and intramuscular routes. The Wassermann remained unaffected. There was no hemoglobinuria at any time, but hematuria was present. Despite the suspicion of syphilis in Raynaud's disease, not much over 10 per cent. of this coincidence has been recorded. Of thirty-eight probable cases nearly all were seen before the introduction of the Wassermann test. The author makes three categories. Certain Raynaud's disease in syphilitics, 14 cases; doubtful (ditto), 8 cases; Raynaud's disease due to syphilitic arteritis, 16 cases (total, 38). The author's bibliography shows that he has consulted only six books or journal articles since the Wassermann has come into general use and only one since 1912.

Addison's Disease in a Child.—Rutelli saw a case in a girl aged ten years. The course was atypical and the diagnosis was made solely by exclusion.—*Pediatria.*

Objective Manifestations of Indigestion.—Pron enumerates relaxation of the abdominal wall which indicates a similar relaxation of the stomach; induced splashing after eating (splashing in an empty stomach means dyspepsia of long duration), and the sign of Leyden (dilatation of the pupil on pressure over the epigastrium).—*La Presse Médicale.*

Protein Nourishment and Reproductive Power.—Grumme asserts that defective production of milk and eggs during the present war is due directly to fodder poor in albumin. If geese are fed on potatoes 90 per cent. of eggs remain sterile, *i. e.* cannot be fertilized. But if cereal grains or bran be added to the potato diet this deficiency is at once remedied.—*Muenchener medizinische Wochenschrift.*

Elderly Primiparæ.—L. Meyer denies that in women in their thirties the birth tract is rigid, or at least he claims that there is no proof of such an assertion. Not every elderly primipara has a long labor. A distinction must be made between women who have been sterile in early married life and those who have married late in life. It is in the latter class only that we expect dystocia.—*Zentralblatt für Gynäkologie.*

Book Reviews.

CLINICAL BACTERIOLOGY AND HEMATOLOGY for Practitioners. By W. D'ESTE EMERY, M.D., B.Sc., Lond., Director of the Laboratories and Lecturer on Pathology and Bacteriology, King's College Hospital, London. Fifth Edition. Price, $2.75 net. Philadelphia: P. Blakiston's Son & Co., 1917.

EMERY'S work was prepared chiefly for the practitioner who had had little or no training in bacteriology and hematology and takes up the subjects of chief importance in a somewhat elementary fashion according to that idea. The present new edition shows but few changes from the fourth edition. The method of McIntosh and Fildes for the Wassermann reaction is included on account of popular demand. The work has been but slightly enlarged by the addition of new material. It is well suited to its purpose, but the demand for it should grow increasingly less as the profession comes gradually to be made up of men who have had the mentioned special training. For men who have had such training the work will necessarily seem rather inadequate in many ways, but for the beginner it will probably have a good deal of value.

LOCALISATION ET EXTRACTION DES PROJECTILES. Par L. OMBRÉDANNE ET R. LEDOUX-LEBARD. Prix, 4 francs. Collection Horizon. Paris: Masson et Cie., 1917.

THIS valuable work is somewhat larger than the average of the Collection Horizon, comprising about 350 pages, much of which is in fine print. There are 225 figures in the text in addition to eight plates. The labors of two and a half years in the radiography of projectiles in the body are digested. The old type of tubes seems to have been used throughout, gasless apparatus being alluded to but once as a subject for the future of radiography. The absence of a complete synopsis or analytical index is a drawback to the student. The volume comprises three sections, devoted respectively to the physics of *x*-rays, location of projectiles and extraction of the same. Among the brief conclusions of the authors we note that projectiles are often located by chance, that indications for extracting slumbering projectiles are still in doubt, that radiography in association with operation renders much service, that the "simplest" technique may involve operating blindly, and also dangerous exposure of the hands and that intermittent control is preferable.

CASE HISTORIES IN OBSTETRICS. By ROBERT L. DE NORMANDIE, A.B., M.D., F.A.C.S., Assistant in Obstetrics, Harvard Medical School. Price, $4.00. Boston: W. M. Leonard, 1917.

THIS, the second edition of Case Histories in Obstetrics by Dr. De Normandie, contains within its 497 pages a wealth of very valuable information arranged in a very convenient and accessible form. The general field is well covered, as are particular problems. Its information is in a form which makes it particularly well adapted to the needs of the advanced student and especially the practitioner who is practicing obstetrics without the advantages of an active hospital experience in this branch.

For the man conversant with the bedside practice either in hospitals or in one of our large outdoor obstetrical departments the case records are full of meaning, but it would seem that the selection of the very limited number of very typical cases, however enlightening and instructive, leaves much to be filled in from the experience of the reader. It is in this respect that the volume may fall short of its full opportunity in the case of the student and of the occasional practitioner. Particularly is this to be regretted in the discussion of accidental hemorrhage, a field in which almost without exception the textbooks and reference books are deficient. The suggestive cases in mastitis fall under the same criticism. They are too few in number and the emphasis is not so laid as to impress the reader with the author's very wise conservatism in the treatment of the lactating breast.

The work is to be commended for the quality of its teaching, which is of a very high standard and represents a very advanced position in rational obstetric practice.

A COMPEND OF HUMAN PHYSIOLOGY. Especially adapted for the use of medical students. By ALBERT P. BRUBAKER, A.M., M.D., author of "a Textbook of Physiology"; Professor of Physiology and Medical Jurisprudence in the Jefferson Medical College; formerly Professor of Physiology in the Pennsylvania College of Dental Surgery; formerly Lecturer on Anatomy and Physiology in the Drexel Institute of Art, Science and Industry; Fellow of the College of Physicians of Philadelphia. Fourteenth edition. Price, cloth, $1.25 net. Philadelphia: P. Blakiston's Son & Company, 1917.

WHEN a compend of physiology reaches its fourteenth edition the dignity attained through long years of service attests to the value of the work. Has there ever existed a medical student who has not used this little book of Dr. Brubaker's as a short cut through the intricacies of the details of the recommended physiologies of the curriculum? The text has followed closely on the heels of each advancement or change in medical outlook and conclusions affecting human physiology—a task of no mean proportions on the part of the author. Much former material not essentially necessary to the value of the text has been replaced by new facts in proper relation to the whole revised edition. Thus the internal secretions cover nine pages, which, in a compend of about 250 pages, and small pages too, shows the increasing importance of the newer physiology. Dr. Brubaker is to be both congratulated on the continued success of his work and thanked for the labor of many hours of detailed work, necessitated by this special type of book.

POVERTY AND ITS VICIOUS CIRCLES. By JAMIESON B. HURRY, M.A., M.D., Author of "Vicious Circles in Disease." Price, $2.00 net. London: J. & A. Churchill, 1917.

AN interesting viewpoint of this subject is offered in that poverty is made the basis of the circle and contributory conditions complete the ring. These circles are many, but the contributing causes or the resultant effects are not new, nor are they dealt with from a new angle. The author offers three channels for ultimate relief and improvement of poverty and elevation of the poor, namely, legislation, voluntary organization, and individual effort. As a reference book for social workers, church guilds, philanthropic organizations and various other charitable societies it has a decided field of usefulness.

LABORATORY TECHNIQUE. The Methods Employed at St. Luke's Hospital, New York. By Drs. F. C. WOOD, KARL M. VOGEL and L. W. FAMULENER. Price, 75 cents. New York: James T. Dougherty, 1917.

SOME of the most valuable manuals for laboratory work are those which are originally prepared as typewritten instruction for those working in the laboratory. Such is the book which has come from St. Luke's Hospital. It will probably find large use in the smaller hospitals and with private practitioners. The methods are simply and clearly given, with sufficient detail, and many points as to nicety of work are given. In his foreword Dr. Wood notes the importance of standard methods in the hospital, in order that the hospital records may be of value to the attending physicians. An even greater importance lies in the value of the records for comparative study. The book will be widely welcomed.

HANDBOOK OF SUGGESTIVE THERAPEUTICS, APPLIED HYPNOTISM, PSYCHIC SCIENCE. A Manual of Practical Psychotherapy, Designed Especially for the Practitioner of Medicine, Surgery, and Dentistry. By HENRY S. MUNRO, M.D., Omaha, Neb. Fourth Edition, Revised and Enlarged. Price, $5.00. St. Louis: C. V. Mosby Company, 1917.

THE aim of this work is to present the practical as well as the scientific side of psychotherapy, and appears from the fact that it has gone through three editions in a comparatively short space of time to have succeeded very well in the accomplishment of the intention. Two new chapters have been added, one on Suggestion in Dentistry and the other chapter dealing with the human libido has been named "The Tie That Binds and the Urge That Drives." The work is both useful and interesting.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

Stated Meeting, Held May 2, 1917.

The Challenge Which the Chronic Patient Represents to Our Profession.—Dr. JOEL E. GOLDTHWAITE of the Harvard Medical School delivered this address, in which he said that it seemed to him that chronic disease was today the greatest reproach of our profession. Furthermore, it seemed to him that chronic disease was quite as controllable as acute disease, if we only used the same methods of study that we did in acute cases. We had fallen into the habit of calling things diseases that were only groups of symptoms. If we only recognized this and tried to find the causes back of the symptoms it was amazing how some of our problems were simplified. For example, when rheumatism was treated merely by measures directed to the symptoms, such as baths, rubbing, heat, etc., we never obtained any very lasting results, but when we came to look upon the joint manifestation as simple as the smoke from the fire, and directed our treatment to the cause, we found that the joint condition cleared up in a remarkable manner. It was surprising how persons could be relieved and restored if the same principle of study was carried out in other chronic conditions. In trying to find out what was wrong with a great many of these patients they had found it necessary to study along definite lines because they saw a number of patients with somewhat similar symptoms and yet a different structure, and this had led them to go back to the anatomical field. We had been taught that we studied anatomy because it was necessary to know the structure of the human creature if we were to interpret the physiology and symptoms of disease. If we studied anatomically that type of patient called chronic we found that he had little resemblance to normal anatomy. These humans were made on absolutely different anatomical lines. There were distinct orders in humans as in the lower orders. Taking the horse we had the race horse, the carriage horse, and the Percheron; these were all built on anatomically different lines and adapted to different needs. The race horse was built on slender lines, had slim, light bones, fine, small muscles, and quick action. In the human family we found exactly the same type. They were the type of people that had been pioneers. Their skeletons weighed ten or fifteen pounds lighter than normal. Their bones were different in shape, especially the vertebrae, the lateral diameter of the vertebrae being equal to the anteroposterior, and there were sometimes six lumbar vertebrae. This made for extreme flexibility. To this type belonged the contortionists, the acrobats, the fancy dancers; their flexibility was due to anatomical structure and not to muscle training. One could never make of these the Sandow type of individual. The slender type did not appear strong, but it was frequently found that the winner in athletics was of this type. Like the race horse, he had fine, slender muscles, and power and energy. This slender type of individual not only had characteristic bones and muscles, but he had the tubular-shaped stomach, the type of stomach that when stretched became "J-shaped." That type of individual never had twenty feet of intestines, but only ten feet, and that was the reason we had difficulty in fattening him, because he had only one-half the length of intestines from which to absorb food. His colon had a free mesentery on both ascending and descending parts, the type of colon that made a sharp kink at the splenic flexure. The liver was also smaller, and there was a limited amount of retroperitoneal fat which favored mobility of the kidney, so that in this type of individuals the kidneys were easily displaced. Because of this lack of fat the adrenals lay exposed, and it was not to be wondered at that individuals of this type had sudden rise of blood pressure when one realized how easily the adrenals were irritated when certain postures were taken, nor was it surprising that there should be vasomotor disturbances from pressure on nerve ganglia. Dr. Goldthwaite stated that the normal anatomical type was much less common than it used to be; it was rarely seen in the chronic cases. He rarely saw the Percheron type in his practice. On the other hand, we had the stocky or heavy type, in which the torso was shorter, the vertebrae thicker and shorter, with a wider lateral diameter, and sometimes only four lumbar vertebrae. The skeleton was different and weighed ten or fifteen pounds more than normal. The vertebrae had broad transverse processes, and were not only heavy, but formed an articulation with the sacrum. All these peculiarities would be found in the lower animals, as in the horse and hippopotamus, animals built to carry heavy weight. Training would never convert the stocky type into the flexible type. The stocky type had coarser muscles—the kind that made the big-bellied muscles of the Sandow—though they might not have the quickness of setting of the slender type. The stocky individual had a heavier heart, which, studied with the fluoroscope, was entirely different in appearance from that of the slender type. The stocky type had also a heavier liver, and a pear-shaped stomach, attached high up. The intestines in this type were from twenty-five to thirty-nine feet in length, and that was the reason every bit of food was absorbed in its passage. The problem here was to use food that would be hurried along; for the slender type one should use bulky food. The colon in the heavy type was longer, and there was also additional length in the transverse colon; all showed the hammock-shaped colon. It was quite obvious that with such a difference in structure there would be a difference in physiology and in disease. Certain diseases were peculiar to certain types. The slender type had commonly an excess of hydrochloric acid in the stomach, and was likely to have the hyper-conditions, hyperthyroidism, etc. The stocky type had the hypo-conditions. In the heavy type the blood pressure averaged twenty points above normal; in the slender type twenty points below normal. If we got a person of the slender type with a blood pressure of 180 something was going to happen; if the stocky person had a blood pressure down to 120 it was time to look after him. Allowing for fluctuations, there were certain general averages that held good for special types. It was the slender type that had the autointoxications and infections, generally speaking, though one, of course, found some in the other type. Dr. Goldthwaite said he was not quite sure, but thought that the stocky type was more likely to have gland and bone tuberculosis, and possibly bovine; the slender type was more likely to have tuberculosis of the inherited type, and was more commonly tuberculous than the stocky type. The slender type was the most sensitively organized nervously, and perhaps the one the neurologist saw oftener than those of the stocky type, though one sometimes saw these nervous conditions in the latter type. The slender type was the one that also contributed largely to the population of the hospitals for the insane. The stocky type showed chiefly the joint diseases, osteitis, arthritis deformans, gouty conditions, etc., the conditions that had their origin in chemical disturbances. They oftener had gallstones, whereas the slender type would have cholecystitis, the result of thickened bile. In studying the patients in a hospital one would find that they classified themselves almost at once into these two classes. If we were to expect anything like a normal physiology we must see that these types used themselves correctly. The slender among the young, unless guided in childhood, formed bad postural habits and incorrect habits of breathing. If the individual stood relaxed, the ribs were lower down, and the diaphragm was lower down, and it could not contract; instead of being dome-shaped, it might even be concave downward, and as a result one had only thoracic breathing. If there was not the constant rise and fall of the diaphragm the return circulation was interfered with. Individuals with these faulty habits of posture and viscera so displaced that food could not pass through the alimentary tract normally might have indigestion from the simplest kinds of food. The problem here was a mechanical one. With the diaphragm forming a concavity downward all the viscera were displaced and the esophageal opening into the stomach narrowed. As all organs were more mobile in the slender type they more easily drooped and fell out of place. The speaker

described the manner in which the diaphragm was suspended either side of the cervical spine, and emphasized the importance of studying the way in which the diaphragm worked, as in that way much could be learned as to the position of the abdominal organs. The stocky individual was the one that commonly had difficulty on the chemical side; he had the greatest difficulty in handling large amounts of protein, and he was the one who usually ate large amounts of food, and particularly protein foods. He really required less food, as the fat did not have to be replaced. In feeding these stocky individuals one should study the chemical output and modify the food combinations until one obtained the correct chemical output. The slender individual commonly had hyperacidity, and his chief difficulty was not in the food, but in the way he handled it. It had been shown that certain individuals showed albumin or sugar in the urine as the result of mechanical interference due to sitting or standing in certain positions. Dr. Goldthwaite cited an instance of a patient showing considerable amount of albumin, there being much more albumin in the day specimen of urine than in the night specimen. Treatment directed toward the correction of the faulty posture and restoration of the viscera to their normal position had caused practically a disappearance of the albumin from the urine. The stocky adults were the ones who oftener had sugar in their urine and the slender children were the ones who oftener had sugar. There were a great many other chronic conditions due to perfectly tangible elements of strain. Many people were cripples by paralysis of progressive muscular atrophy which used to be considered a perfectly hopeless condition. Work on these patients showed an almost complete absence of blood sugar, and by doing what could be done to improve the abdominal condition remarkable results had been obtained. In many of these cases if one got rid of impressions gained from textbooks and simply stripped the patient and studied him the cause of the trouble might be ascertained. When a patient came complaining of pain, to simply say "neuritis" and write a prescription, that was not worthy of us. We should strip the patient, examine him, and go to work to fix him up. It should be remembered that in many of these conditions there was more than one factor at work. There was, for example, something more to do than to merely remove gallstones; the operation must be followed by exercises that would put the liver in a healthy condition so that it could do its work. In people in whom the diaphragm drooped the organs would all be constricted, and this type of symptoms might be explained if they were thought out in chemical terms. He had seen an instance of cardiospasm with severe vomiting which had persisted for a long time in a neurasthenic individual relieved by postural treatment, and by lying on the abdomen and supporting herself on her elbows while eating. In the postural treatment it was important that the patient lie flat on his back without pillows, in order to pull the diaphragm up into its normal position. Lying with the face downward, and the thorax supported on the elbows expanded the ribs forward and the diaphragm rose. One might support the hips on the bed and the chest and head on a stool, though it was not usually necessary to go to that extreme. Dr. Goldthwaite also spoke of the possibility of arresting a lateral scoliosis by hyperextension of the trunk and legs, thus flattening the lumbar and cervical spines, and of the postural treatment of autointoxication, and particularly emphasized the point that one should always think of the patient with hope, no matter how bad he might appear to be. Dr. Goldthwaite then exhibited charts illustrating the two types of chest deformities, (1) the flat chest, in which the lateral diameter was normal, and the anteroposterior much restricted, and (2) that type in which the ribs dropped at the side and the lateral diameter was narrowed and the anteroposterior diameter increased. The flat-chested individual was the one most likely to have tuberculosis. The stocky individual supported his weight at the dorsolumbar joint; in the slender one who was given to "droopy" postures, the strain came at the sacroiliac joint; this would explain why the latter type suffered pain at menstrual periods. At present 60 per cent. of the people were of the slender type, while fifty years ago only 20 per cent. were of that type. This type was rapidly increasing. This showed the importance of physical education in our schools. New York State was fortunate in having a compulsory physical education law. A large percentage of the students of Harvard and Smith colleges were of the slender type; this was not the fault of the colleges, but of the preparatory schools. Many of the young women were of academic mind, but of kindergarten age in body. Smith College had now taken the stand that no girl should be graduated until she knew how to use her body correctly. We should see that every child was given the chance to learn this. We should see that the people and the legislators supported the laws that we had in effect. When a patient consulted us we should think of that individual not as having something wrong with one organ, but as having many parts, and should find out which of those parts was causing the trouble at that time.

Dr. I. A. Lehman asked Dr. Goldthwaite what he considered the ideal medical school inspection system. The important thing seemed to be to find out to which type the child belonged. To get tracings such as Dr. Goldthwaite had shown it might be better to have the family physician make them, as it would not be practical in the public schools at present.

Dr. Goldthwaite said the people would have to be educated and shown that the best way to give these children the proper physical training was to get a picture. These pictures were the best records to show parents. It would be a good plan to get teachers interested.

SECTION ON MEDICINE.

Stated Meeting, Held January 16, 1917.

Dr. Harlow Brooks in the Chair.

Present Status of Fractional Estimations of Stomach Contents.—Drs. Burrill B. Crohn and Joseph Reiss made this presentation, the studies having been carried out under the George Blumenthal, Jr., Fellowship in Pathology of Mount Sinai Hospital. Dr. Burrill reviewed historically the advances in our knowledge and the present status of our knowledge of the chemism of the stomach in health and disease. He stated that in their studies they had attempted to apply the method of fractional estimation of gastric contents to persons suffering with abdominal symptoms and to ascertain to what extent and in what degree pathological processes and abnormal stimuli altered the cycle of digestion, the emptying time of the stomach, the factor of duodenal regurgitation, etc. The studies were based on over 200 curves taken from patients in the wards and dispensary of Mount Sinai Hospital, and represented all phases and varieties of abdominal disease. In a large percentage of the cases, the clinical diagnosis was confirmed by operation. Throughout the attempt had been made conscientiously to consider only such cases in which the symptoms had been clear cut and definitely indicative of pathological conditions. The technique employed had been to make the patient swallow the Rehfuss tube at 8 A. M., all food or drink having been proscribed since the evening meal of the previous day. When the question of pyloric obstruction arose, the patient ate on the previous night at 10 o'clock thirty raisins with the skins and seeds. The swallowing of the tube was an easy matter. Retching was avoided to the greatest possible degree. The stomach was aspirated in several positions until no further material was obtainable. The fasting contents were usually clear, watery, or slightly turbid in appearance. In about one-quarter of the cases bile was present in amounts varying from a tinge to a heavy golden yellow. Except in cases in which gastroenterostomy had been performed (in these bile was present constantly and in large amounts) there appeared to be no definite clinical significance to the appearance of bile in the fasting contents. When it was present it denoted a patent pylorus. The amount withdrawn from the fasting stomach varied from nothing to 140 c.c., though it rarely happened that nothing was withdrawn. In this series the amounts recovered were as follows: In gas-

tric neuroses, 2 to 60 c.c., averaging 31 c.c.; gastric or duodenal ulcer, 20 to 140 c.c., averaging 54 c.c.; chronic appendicitis, average 31 c.c.; acidity or achilia cases were either empty or showed at a maximum 10 to 25 c.c.; in functional hypersecretion, 50 to 70 c.c. The writers were unable at any time to duplicate the large amount found by Rehfuss and his coworkers in normal males, or of Fowler and Zentmire in normal or approximately normal females. The acidity of the fasting residue varied considerably, but followed in general the acid titration of the digesting meal. The acid titer was never above that of the test breakfast; usually it was lower than its maximum; in cases of hyperacidity materially lower. In those cases which approximated the normal curve the content was usually near the same figure as at the end of the test meal. This should be designated as the minimal acidity of the stomach. In cases with normal or slightly acid curve the fasting titration showed free acid of 32 to 52 per cent; total acid of 44 to 68 per cent. In subacidity cases, free acid was absent and total acidity diminished to 20 per cent. Mucus in small amounts was present in all cases, and was usually markedly increased in cases of chronic gastritis, marked subacidity, and carcinoma. Food particles, recovered by this method, had the same significance as when found by any other method, namely, were highly suggestive of pyloric obstruction. When food residue occurred a higher acidity titration was the rule. Blood had been noted only in cases of carcinoma. A heavy oatmeal gruel was utilized as the test meal. The gruel was made by adding two tablespoonfuls of oatmeal to a quart of water and boiling it down until it was reduced to a pint in volume. It was then filtered and a pinch of salt added. Lavage was practiced before giving the test meal. Every ten or fifteen minutes after the administration of the test meal, ten to fifteen c.c. of the stomach contents were aspirated for examination. In a group of cases numbering over 50, in which were included all cases free from organic disease, many illustrations of normal curves were noted. The pure gastric neuroses and the so-called normal cases fell into this group. Free acid appeared soon after the beginning of the test; maximum total acidity, 60 to 70 per cent., was reached at about one hour; thereafter there was a slow decline, approaching the base line though never reaching it. The stomach emptied itself usually in from two to two and one-half hours. The course varied but slightly in the hypersecretory cases, the total acidity reaching slightly high levels, 80 per cent. and over. These latter cases emptied themselves in the same time, though the fall in acidity was slower and did not approach the base line until later, if at all. The hyposecretory type was essentially the same as the isosecretory. In cases of anacidity there was a lack of free hydrochloric acid throughout, though the total acid might have risen to 20 or 30 per cent. at some time of the digestion. Ferment strengths were maintained, fasting contents were usually absent or of minimal quantity, and the stomach emptied itself within two hours. In the achylia cases, free acid was consistently absent throughout; total acid fluctuated between the extremely narrow limits of 8 to 10 or at most 14 per cent. The emptying time was shortened to one and one-half to one and three-quarters hours; ferments were absent. A distinct classification of psychical and chemical achylias they had been thus far unable to confirm. Since achylia gastrica should be regarded merely as an advanced stage of anacidity, those cases with the late rise of acidity belonged properly to the class of anacidity; rather this was better than to create a new classification of "spurious achylia" (Rehfuss). Some of the most advanced examples of achylia occurred in cases of pernicious anemia. Ferments as well as mineral acids were lacking in these instances. While it could not be said that there was a curve absolutely characteristic for ulcer yet it might be conservatively stated that ulcer cases were associated with a curve of acidity that rose rapidly and was sustained throughout the cycle of digestion, at least to within a short time of its end. It was the steady, rapid, prolonged rise, and sustained plateau of acidity that was seen in the ulcer cases. The fall, if it occurred at all, took place just before the final emptying of the stomach. A delayed motility was frequently a factor, and indicated pyloric involvement, either functional or organic. The regurgitation of bile was most commonly absent or took place only at the very last phase of the digestion. The presence of mucus was not associated with ulcer, though occasionally it was seen in large amounts in the fasting contents at the termination of the period of observation. In spite of what might have been expected blood was absent throughout. In all of these cases the highest acidity took place not one hour after eating, but 1¾ to 2½ or 3 hours after giving the test breakfast. No case of subacidity had been noted in this series of ulcer curves. A mild hypersecretion was occasionally noted. Chemical analysis of the postdigestive in these ulcer cases showed it to correspond closely to the analysis of pure gastric juice as found in the standard text books. Cases of pyloric stenosis showed moderate acidity at the outset. Up to the present time the authors had found no possible means to differentiate the acidity curves in cholelithiasis and chronic appendicitis from those of ulcer. The postgastroenterostomy cases showed normal or subnormal acidity curves characterized by a drop in acidity at the end of the first hour. The curves in cases of carcinoma ventriculi were those of marked subacidity, occasionally those of anacidity. The almost flat curve of achylia was rarely seen in these cases. The gastric ferments were retained in all the cases and blood which was practically never seen in other conditions was very common. Chronic parenchymatous nephritis, the convalescent stage of acute intercurrent infections, and syphilis of the stomach gave a curve of subacidity without novel characteristics. One who expected to find in the curves of the fractional digestion a new and infallible diagnostic criteria would be disappointed. For the demonstration of digestive hypersecretion the method was unequalled. Its great value lay in the fact that it offered knowledge regarding the physiology of the entire cycle of digestion. Through it one could gain information on the following points: (1) Fasting contents—amount, presence of food residue, regurgitated bile, mucus and blood. (2) Type of secretory activity. (3) Duration of secretory activity, whether ceasing with the exit of food or maintained as a hypersecretion thereafter. (4) Time of emptying the stomach, that was, its motility. The field of usefulness of this method for the study of defects of medication, dietary, therapy, psychical influences, operative procedures, etc., was unlimited.

Roentgen Diagnosis of Early Gastric Cancer. — Dr. WILLIAM H. STEWART made this contribution. He stated that it was not his desire to excite any rivalry to the different methods of the early diagnosis of gastric cancer. Realizing the difficulties that must be overcome in order to accomplish this ideal, he earnestly advocated combining all "methods" before arriving at a conclusion. The fact was that it was not always possible to make an early diagnosis of carcinoma of the stomach as many cases did not present themselves until the process was well advanced. Those who sought advice early presented fairly typical *x*-ray findings. It was recognized that gastric cancer appeared in three forms, a true tumor growth of the stomach wall, a scirrhous or infiltrative type, and an ulcerative form. The difficulty of diagnosing the first was not difficult. The *x*-ray findings were characterized by a circular or irregular defect in the stomach outline. If located at the pylorus, the defect had a "punched out" appearance, while if located on the anterior or posterior wall, it showed itself as a central defect in the shadow of the stomach. In the scirrhous form there was a stiffening and thickening of the stomach wall with contraction and diminution in size and there was a partial or complete absence of the peristaltic waves through the involved area. Under the fluoroscope, the contraction passing toward the pylorus from the fundus coming upon this thickened segment became greatly diminished or disappeared entirely to again appear beyond this area, if there was normal stomach wall between the diseased portion and the pylorus. It was in the third or ulcerative form that the greatest difficulties presented themselves. Since it must be conceded that the presence of carcinomatous tissue in an early ulcer could only be ascertained by the microscope, they had a large number of cases between a typical carcinoma and an unquestionable benign ulcer in which

the diagnosis of malignancy was doubtful. Before obstruction or palpable tumor appeared, many of these cases, showed roentgenographically as small annular growths at the pylorus or as ulceration on the lesser curvature of unusual size and were undoubtedly malignant; still it would be manifestly unjust for the roentgenologist to say that carcinoma was present when the problem could not be solved until the pathologist had made a microscopical examination of a section taken from the proper portion of the ulcer. What the roentgenologist could do was to report that the case was probably malignant and must be considered so until proved otherwise. If this rule were followed, the case would soon reach the surgeon's hands where it belonged. A recent canvas on the importance of the *x*-ray examination in early cancer of the stomach showed that a number of observers who had a wide experience in making roentgenological examinations in cases of suspected gastric cancer assigned to this method of examination a great value, some even regarding the negative diagnosis as of decided value, these findings being based on lack of defects in the stomach wall, absence of interference with peristalsis, and no tendency to obstruction. The greatest difficulty experienced in the *x*-ray diagnosis of early gastric cancer was the elimination of the spastic element. Some small ulcers at or near the pylorus would give a typical appearance of an annular growth. Persistency of such a defect, both fluoroscopically and roentgenographically, with a confirmatory examination after the administration of an antispasmodic for a few days, would usually clear up the case. The roentgenologist should be allowed to hold his patient under observation for a sufficient period of time to thoroughly confirm his diagnosis. That syphilis of the stomach could readily be mistaken for an early malignancy there could be no question. It was, therefore, advisable to have a Wassermann test made on all suspected cases before surgery was resorted to.

Dr. L. T. Le Wald amplified and emphasized the points that Dr. Stewart had brought out. He showed slides of syphilitic stomachs that had come under his observation. One of these was a small rapidly emptying stomach. The diagnosis in this instance was made on the youth of the patient and the four plus Wassermann. She was put on active antisyphilitic treatment and the pyloric condition came under control. Another plate showed a very similar condition but the stomach wall was more involved and there was a dilatation of the esophagus. This patient was operated on because there was such a degree of stenosis. A gastroenterostomy was performed and this, together with antisyphilitic treatment, effected a cure. A third case was that of a boy, 14 years of age, who complained of indigestion. It was thought that he might possibly have a complicating appendicitis. As he showed a four plus Wassermann he was put on the iodides and now, four years later, he was quite well and still had his appendix in him. The slides showed the condition of other cases, before treatment and two years after; the stomach had regained some of its contour. Another plate showed a persistent deformity of the greater curvature near the pylorus and in this instance there was also a four plus Wassermann. This patient had 24-hour gastric retention and gastroenterostomy was performed. Dr. Le Wald also exhibited slides showing the typical picture of annular carcinoma. He stated that he had had five such cases in which the *x*-ray examination had furnished confirmatory evidence of the condition; resection was accomplished in these cases. All five patients were alive three to five years after operation.

Dr. John Douglas said he wished to confirm the contention of Dr. Stewart as to the value of the *x*-ray examination both in the diagnosis and operability of carcinoma of the stomach. In this connection there were two points worthy of discussion. The first was that these patients did not always present themselves for early diagnosis to the surgeon, the physician, or the roentgenologist. This statement might be confirmed by any number of cases, particularly by one on which he had recently done a resection for a large carcinoma in the lesser curvature, which became adherent to the liver and had even involved the liver without producing any definite symptoms indicative of carcinoma. This man had absolutely no stomach symptoms up to three months before he came under observation. He gave no history of pain in the stomach or abdomen at any time; his only symptoms were occasional discomfort and occasional vomiting and loss of flesh and strength. As Mayo has said, carcinoma of the stomach *per se* caused no symptoms. Secondary symptoms resulted from pyloric stenosis ulceration, etc., caused the symptoms, hence we must often rely upon other means than clinical symptoms in making an early diagnosis of carcinoma of the stomach. Such extreme statements as those of Friedenwald that after operation for carcinoma of the stomach patients alive for any considerable length of time should not be allowed to gain credence for if both physician and patient felt that operation offered no hope there would be no use in making an early diagnosis. Dr. Douglas said his experience included 10 cases of carcinoma of the stomach on which he had performed resections. Of these 10 cases 3 were still alive at the end of four years or more and one six months after operation. Of the six deaths that had occurred, three were not directly due to the carcinoma, one being due to postoperative embolic gangrene of the leg, one to heat stroke following the operation, and one to the operation. Three had lived for a period of 6 to 18 months after operation. Four were alive and well, and such a result was certainly more encouraging than the attitude of pessimism that was current. One patient had come under his observation who had had a palpable tumor of which she was aware for over a year and whose condition might have been considered inoperable according to the dictum that when a tumor became palpable operation offered no hope of a cure, yet that patient had been operated upon and was alive at the end of almost five years.

Dr. Julius W. Weinstein said he would like to present the *x*-ray plates taken from a case which was rather interesting, because it showed that the examination of the stomach contents was no mean factor in making a diagnosis of carcinoma of the stomach. The patient was the father of a physician who had suffered from stomach trouble for many years. During the past five years, however, he had been in perfect health. He came under the speaker's observation November 2, 1916, with a history of five weeks' duration. He suffered with discomfort after eating, lost his appetite, and was very weak. His bowels became constipated. He vomited his food. There were no other symptoms. On physical examination all the organs were negative. There was some rigidity in the region of the stomach. An *x*-ray examination of the stomach, both fluoroscopic and roentgenographic, was negative. The motility of the stomach was good. The small intestines and colon were normal under the *x*-ray. A test meal examination showed, however, that the stomach contents were poorly digested. Microscopical examination showed some epithelial cells, some Boas-Oppler bacilli, and a few other microorganisms. There was no free hydrochloric acid. The total acidity was 14; combined acidity 0. Lactic acid was presented. In view of the negative *x*-ray examination the speaker thought the case might have been one of an exacerbation of achylia gastrica, since the patient had a long past history of stomach trouble. A strong suspicion of carcinoma, however, was expressed. Seeing that the patient's condition was not improving, about ten days later another test meal was extracted which showed that the contents emitted a fecal odor. Microscopically the stomach contents were full of Boas-Oppler bacilli. A positive diagnosis of infiltrating type of carcinoma of the stomach was made. The patient's son wanted to consult other men in view of the hopeless prognosis and he put the patient under the care of Dr. Basch. The latter made radiographs of the patient about one week later and by this time the radiographs showed a destructive process of the stomach due to the invasion of the carcinoma. The patient died January 7, 1917, as a result of hemorrhage of the stomach. This case was one of a fulminating type of cancer of the stomach. Dr. Weinstein said that while he knew and appreciated the brilliant services of the *x*-ray in the diagnosis of cancer of the stomach this case proved that it was not infallible and that other aids to diagnosis must not be neglected.

Dr. Seymour Basch said that the plates which Dr. Weinstein showed spoke for themselves. One would be quite unable from these plates to say that carcinoma was present. The patient had an area of tenderness at the xyphoid-costal angle and clinically presented the typical appearance of carcinoma, the cachexia, etc. There was stagnation of the stomach contents as much as 60 c.c. having been withdrawn at one time. There was one point which Dr. Stewart failed to bring out and that was the possibility of mistaking a syphilitic condition for one of early malignancy. In these cases the Wassermann test was not enough to clinch the diagnosis; a positive reaction might indeed be misleading as it would tend to verify the syphilitic condition and lead one to throw out a carcinoma. Here only the ultimate therapeutic test or laboratory study of the excised tissue could often decide the diagnosis of early carcinoma. One point not brought out should be mentioned and that was the finding of a thinning of the center of the opaque stomach shadow in carcinoma of the body of the stomach.

Dr. William H. Stewart said he had tried to be perfectly fair in his statement that the roentgenological examination must be combined with other methods in reaching an early diagnosis of gastric cancer. Medical men assumed rather a peculiar attitude toward the *x*-ray. Most of them acknowledged the value of the roentgenological examination yet whenever the opportunity presented itself they were sure to make unfavorable criticism and to question its value. Dr. Weinstein cited a case which gave a history of cancer and made the statement that the *x*-ray examination showed no indications of the presence of a defect, but he did not say who made the examination. The speaker's paper had emphasized the fact that the roentgenological examination of a case of suspected malignancy should be entrusted to one well trained in roentgenology; this case should not have been presented as antagonistic to the value of the *x*-ray examination. It was gratifying to hear Dr. Douglas speak as he did of the operability of gastric carcinoma; the impression had gained too much credence that all operations for advanced gastric carcinoma were hopeless. Dr. Erdmann and Dr. Bainbridge had each recently reported a number of cases in which late operations which might have been considered as offering little prospect of success had resulted in apparent cures. Dr. Stewart said he wished once more to emphasize the importance of excluding syphilis where one found a persistent defect before having recourse to surgery.

The Diagnosis of Duodenal Ulcer. — Dr. Anthony Bassler spoke on this phase of the subject presenting the clinical side without going into the other methods of diagnosis or dwelling on the points that were well known. He said that all present knew the classical syndrome of Moynihan of pain coming on between two and four hours after a meal, relieved by the administration of alkalies, but not belladonna or atropin, or by the taking of foods which closed the pyloris for the time being. These patients had a history of remission of symptoms, were generally somewhat emaciated, and were usually men. He agreed perfectly with what Moynihan had stated in this connection, although he did not agree with the close of his description—namely, that the presence of these symptoms justified an operation, because there were instances of duodenal ulcer cases that got well on medical treatment. Although the discrimination necessary to pick out those cases that would respond to medical treatment was a very fine one, it still was practical to a considerable extent. The type of cases with the clinical syndrome was so characteristic that his own secretary in taking the history had on three or four occasions made the diagnosis, and she always was right. The type of more interest, however, was the one without the characteristic symptoms. If one went carefully into the history, while the element of pain was absent, or so slight that it could not be designated as "pain" there were certain points that were suggestive in a mild way. Such cases sometimes presented on fractional extraction, or extraction of the Ewald test meal one and one-half or two hours after ingestion, the presence of blood. Ofttimes this was difficult to observe by the microscope in the mess of carbohydrate substance, but could be found present on chemical test. In these cases the *x*-ray as a means of diagnosis was very valuable. Such cases commonly presented the colloquial symptoms of indigestion—namely, post-meal distress, gas, pressure, eructations, etc. There were probably more instances of duodenal ulcer unrecognized during life and healed of themselves than were present in medical ways. Careful studies of the duodenum at post mortem show that healed lesions of the duodenum were common. What was interesting in this connection was that when a duodenal lesion healed it healed well, and the evidences of their having been a lesion at some time often could not be observed excepting by careful microscopic study of the sections. It was probable that a proportion of these cases presented at some time during life the colloquial symptoms of "indigestion" and with the healing of the lesion a cessation of these. The natural inference here would be that there had been no lesion of the duodenum but years afterward it would show on careful examination of the tissue. He felt further that the theatrical aspect of the perforation cases justified no extension of remarks on his part, because his experience has been that practically all of them were being suspected or diagnosed when seen. In this connection he doubted that it was important to differentiate as to whether the rent was in the duodenum, gall bladder, or stomach. The indications for treatment were the same in all—namely, surgery, and all these tissues were in such close proximity that they could be examined in a few seconds. Occasionally, however, these patients gave a previous chronic gall bladder history, a history of duodenal ulcer, or that of gastric ulcer, and in such cases it is sometimes possible to state with reasonable accuracy which tissue had perforated. In his experience the perforations had been mostly in the florid types of ulcers where there was no organization of tissue suggesting a chronic lesion, usually a soft irregular ulcer formation of the mucous membrane and then more or less of an irregular tear through the peritoneum. They apparently are more of a necrosis ulcer type and had been most often seen in alcoholics. Dr. Bassler's experience in the differential diagnosis of duodenal ulcer comprised mostly four conditions which it could simulate. The first was hypersecretion. In these conditions, and he did not take the time to classify them, one had relief from the symptoms by the taking of alkalies, but here belladonna was useful. Ofttimes there was relief from the symptoms by the taking of foods. Of course, the element of pain was absent, although there might be suggestions of a remissive type in the running course of a case. What were valuable here were the observations and examination of test meals, the absence of blood, and a negative *x*-ray. Also the benefits from logical treatments were definite, and not observed in the average duodenal ulcer case. The next were atonies. He used to think that atony of the stomach was a common condition, but he has come to change his mind. One could not depend upon a marked splash as being significant. Many stomachs (gastroptosis) were so low in the abdomen that they did not get the protection of the costal arch, and in agitating abdomens of such cases a splash was common. His studies of atonies suggested that it was a rather uncommon condition so far as demonstration by test meal and *x*-ray examinations had proved. However, such cases did exist, in which there was no obstruction of the pyloris, and it was sometimes observed that such an one would give symptoms moderately suggesting a duodenal ulcer. Here the test meal extracted denoted a moderate degree of delay and the *x*-ray a negative cap. Here, like in hypersecretion, the results of treatment were good. The next was appendicitis, leaving out of consideration acute appendicitis with its characteristic symptoms of pain and spasm, fever, increased pulse rate and leucocytosis, there were cases of chronic appendicitis running frequent attacks of low forms of subacute inflammation which might simulate duodenal ulcers. Naturally the physical examination would suggest the mischief being in the lower right side of the abdomen, and here he suggested that not enough detailed attention was being paid to the diagnosis of chronic appendicular conditions. Operations were engaged in, appendices were removed, and people were not relieved of their digestive trouble. If men would take the trouble to percuss the cecum, make their point pressures at

the base of the appendix, carefully examine appendices by the *x*-ray, marking pressures along their course when possible of visualization, they would not go so far wrong in diagnosis. In his experience there were appendices that should have come out wherein surgeons advised against it, but more often there were appendices which should not come out so far as relief of symptoms was concerned, which they insisted upon removing. There were reflexes from the region of the appendix and other things to make it possible to differentiate the condition from duodenal ulcer. Still, there was occasionally a case of this sort which presented considerable difficulty. The last conditions to differentiate from ulcer were the gall bladder pathologies, and here the greatest difficulty was met with. One sometimes meets with small quantities of blood in the test meals and stools, and it is not unusual to have adhesions springing from the gall bladder and involving the duodenum giving irregular shadows suggestive of ulcers. One point he drew attention to was that these irregularities were usually on the inferior surface of the cap whereas duodenal ulcer lesions were on the superior. What was confusing in these cases was that not uncommonly the patient gave a history of distress coming on about two or more hours after meals. He thought this was due to the gall bladder functioning actively, and, being in a diseased condition, the distress was a cry from that viscus. We knew that the gall bladder was a reservoir intended for the purpose of having a considerable amount of bile ready for active digestion, and it was being poured into the duodenum about two hours after the meal. *X*-rays might show a visible gall bladder—which was always pathological—or stones. What was still more confusing was the occasional case in which both a gall bladder pathology and duodenal ulcer existed at the same time. But these cases were usually actually ill, the symptoms of disturbance being marked, and that was helpful in differentiating. What was also of help in differentiating gall bladder pathology cases from duodenal ulcer was that there might be no relief by taking alkalies and foods—the condition being extragastric. Of course, in these cases there was a tenderness in the median fissure of the liver, this not being present below in the abdomen. In closing Dr. Bassler said that altogether he thought that the diagnosis of duodenal ulcer was relatively easy. The history was of the most value, the *x*-ray second, the laboratory third, and the physical examination not worth much.

The Treatment of Duodenal Ulcer from the Medical Standpoint.—Dr. W. A. BASTEDO presented this phase of the subject. He stated that the treatment of duodenal ulcer differed markedly according to whether or not the ulcer was in the phase of severe hemorrhage, and, if not, whether or not one had a surgical condition. At the time of severe hemorrhage, the immediate treatment was: (1) To secure physical and mental quiet, by having the patient lie flat without a pillow, and with an ice bag over the epigastrium, and by the administration of morphine, which allayed restlessness, diminished the chances of vomiting, took the tone from the general stomach muscles, induced closure of the pylorus, and thus assisted in keeping the duodenal ulcer region free for the time being from gastric contents. (2) To give nothing by mouth, not even a teaspoonful of water or cracked ice. (3) To allay thirst by the rectal administration of a pint or two of warm saline solution. If the patient was exsanguinated, 1000 or 1500 c.c. of normal saline by hypodermoclysis or venous infusion might be administered, or best of all, if it was feasible, a transfusion might be done. If the hemorrhage appeared to be continuous one might inject subcutaneously, every six hours for three doses, 20 to 30 c.c. of human or rabbit serum, or intravenously 20 c.c. of a freshly prepared 10 per cent. solution of normal saline coagulen or coagulose. It took the serum six to twelve hours to affect hemorrhage. One might employ subcutaneously or intramuscularly, but not intravenously, a like amount of a 10 per cent. saline solution of thromboplastin. The calcium salts were probably of little if any value. As a rule surgery was not indicated at the time of a hemorrhage from a duodenal ulcer, because mostly the hemorrhage ceased spontaneously or as a result of the measures taken. The subsequent treatment was to continue the quiet of the patient by keeping him in bed; allowing nothing by mouth for three days, and allaying thirst by rectal salines, one-half to one pint every four to eight hours, or by the Murphy drip; giving 2½ to 7½ ounces per hour; cleanse the bowel by daily soapsuds enema; giving a nutrient enema two or three times in twenty-four hours; keeping the mouth clean as with peroxide of hydrogen or simple mouth washes, and after the end of three days treating the same as for ulcer when there was no hemorrhage. As to the treatment of ulcer at the time when there was no severe hemorrhage, if the case was definitely surgical there was no use wasting time on the medical treatment. Dr. Bastedo stated that he considered the treatment surgical if there was acute perforation; if there was chronic perforation, as demonstrated by the Roentgen rays; if there were adhesions as demonstrated by the Roentgen rays; if there was pyloric obstruction; if there was suspicion of carcinomatous change; if, in spite of proper medical treatment, the ulcer was the site of repeated copious hemorrhages, or persistent hemorrhage in small amount, and if there was constant pain or nausea or interference with nutrition. If the ulcer was not surgical, the relief of symptoms by medical treatment was, as a rule, quite prompt. The failure of relief of symptoms by medical treatment suggested that the condition was surgical. As an aid in determining whether a pyloric stenosis was inflammatory or cicatricial and not edematous or spasmodic the patient might be put to bed on the ordinary ulcer diet and medication and in addition a daily lavage, best late in the afternoon might be given. In some of the retention cases, the milk diet resulted in such marked milk sourness as to render the use of milk impossible. In this event the diet might consist of strained cereal with butter, potato, macaroni, wetted bread or toast, soft egg, and perhaps shredded chicken or scraped cooked beef. If these measures did not overcome the retention, the treatment was surgical. The treatment of an ulcer that was nonobstructive and nonsurgical should be purely medical and should consist in rest in bed for three or four weeks, and then allowing the patient to sit up a little each day, gradually to sit up longer and to walk an increasing distance each day, always short of fatigue, until at the end of six weeks he might be up the greater part of the day but he should lie down after each feeding. The length of time before the patient could attend to his usual affairs was at least two months. During the entire time a reasonable amount of mental calm favored the cure. Dr. Bastedo said the names and diets of Lenhartz and von Leube, etc., should be forgotten. Meals should be small and frequent, every hour during the waking hours, so that they might satisfy the need and prevent the accumulation of acids. The food should be bland, nonirritant, and arranged to combat hyperacidity and hypersensitiveness of the stomach. No coarse, gritty fibrous particles should be allowed, and no spices, seasoning or saltiness; the food should not be ice cold (except Lenhartz). There was nothing better than milk, eggs and cream. If it was desirable to prevent the coagulation of milk by the rennet ferment, three grains of sodium citrate might be added to each glass. The medicinal treatment at the outset consisted of antacids, demulcents, and laxatives, that was, drugs to combat hyperacidity and hypersensitiveness with pylorospasm, and measures to avoid intestinal stasis. At the end of the second week castor oil for a thorough cleansing, or calomel, one grain, (¼ grain every one-quarter hour) followed the next morning by a saline cathartic and after that mineral oil, one-half to one ounce, two or three times a day. The mineral oil tended to decrease acidity and sensitiveness, to relax the pylorus, to soothe the ulcerated area, and to act as a laxative. It was not to be expected that a cure could be obtained unless the bowels were kept in good order. Chlorosis, but no other form of anemia, might be successfully treated by daily hypodermics of 0.5 to 1 c.c. of a 10 per cent. solution of iron and ammonium citrate. After outlining the measures to be employed in meeting special indications, such as pain, distention, vomiting, retention, and hyperacidity, he stated that in some cases in which a course of a week or two of ulcer diet was unsuccessful in abolishing the pain or other symptoms, or when the

ordinary ulcer treatment was followed soon by recurrence, a course with duodenal feeding might be successful. In duodenal ulcer without obstruction the intermittent character of the attacks made the patient seem to be cured when he was not. Freedom from pain and discomfort obtained by proper treatment did not of necessity mean a cure until time proved it to be permanent.

Dr. E. A. Aronson said that he took exception to the remark of Dr. Bassler's that it was easy to make a diagnosis of duodenal ulcer, and wished to ask the reader how many of his cases were confirmed by operation or otherwise. From a large experience in the gastroenterological service of Mt. Sinai Hospital in making a diagnosis most reliance was placed on a proper consideration of the history, physical examination, laboratory findings, and *x*-ray. The physical examination showed that it would be extremely unwise in making a conclusive diagnosis without a distinct point of tenderness; the chemical examination sometimes gave assistance and sometimes it did not. As far as the *x*-ray examination was concerned, most frequently it corroborated the presence of an ulcer. It had been their experience that even with a significant history, positive physical, chemical, and positive *x*-ray the surgeon on operation found no ulcer to be present and conversely found an ulcer where none had even been suspected. Until an absolute diagnostic sign of ulcer was discovered, just so long would patients be submitted to the surgeon whose operation always began as an exploration.

Dr. E. Libman said he agered with Dr. Aronson that the diagnosis of duodenal ulcer was often very difficult, and he was surprised to hear that anybody considered that it was always a very easy diagnosis. If the case had repeated hemorrhages, or had an *x*-ray diagnosis which pointed to complete or incomplete perforation, the diagnosis was, of course, definite. In many cases, however, the *x*-ray examination gave findings which could be found in other forms of disease in the abdominal cavity, particularly in disease of the gall bladder and appendix. Dr. Libman said that in some cases he could only make a diagnosis after he had with difficulty excluded the presence of tuberculosis of the lungs, gallstones, prostatic disease, chronic obliterating appendicitis, renal calculus, diseases of the uterus and adnexa in women (in some cases fibroids gave symptoms that were suggestive of atypical clinical pictures of gallstones or ulcer), and a peculiar form of gastric disturbance which occurred at or following the menopause or after hysterectomy, and neuorses. It was his custom, however, he said, to have *x*-ray examinations made in all the cases because even if typical findings were not present, one obtained evidence that there was organic disease in the abdomen.

Dr. Lewis Gregory Cole stated that the diagnosis, by means of serial radiography, was possible in practically every case of duodenal ulcer. Postpyloric ulcers showing an obliterated cap and pyloric or postpyloric stenosis, with either broken or failing gastric compensation, demanded surgical intervention. Postpyloric ulcers showing a deformed or obliterated cap without stenosis, but with a deep crater, and thick, turgid edges, required surgical intervention. Postpyloric ulcers showing an obliterated or deformed cap and secondary gastric involvement required surgical intervention for a removal of the induration. Postpyloric ulcers showing an obliterated or deformed cap and with compensating peristalsis were a border line group, and as large a percentage did as well on medical treatment as do those treated surgically. Postpyloric ulcers showing a simple cap deformity with or without slight stenosis and with a normal or compensating peristalsis, and without deep crater or secondary gastric involvement were more completely relieved of their symptoms by medical treatment than by surgical intervention. This last group with indication for medical treatment comprised 63 per cent. of his cases; the preceding groups with indication for surgical intervention comprised 37 per cent. A few of the cases in the medical group would exhibit symptoms so severe that surgical procedure would be necessary, but even after interference they did not show the satisfactory results that were shown in the groups where there was definite indication for surgical procedure.

Dr. Gedide A. Friedman said he would like to emphasize that the diagnosis of duodenal ulcer was occasionally difficult. He cited the case of a patient who had all the so-called classical symptoms and signs of duodenal ulcer, late pain, hunger pain, night pain, and positive tests for occult blood in the stools. The radiographic examination also favored the diagnosis of duodenal ulcer. Dr. Brill, under whose service the patient had previously been, diagnosed the case as duodenal ulcer. Dr. Friedman referred the patient to Dr. Gerster, who at operation stated that he palpated a callous ulcer in the first portion of the duodenum. Shortly after the operation, the patient died from intestinal hemorrhage. An autopsy was performed, but no duodenal ulcer was found. There was, however, an accessory pancreas from which the bleeding probably originated. This was only one illustration of many that might have the typical history of duodenal ulcer and confirmatory *x*-ray findings, and yet at operation no ulcer would be found. Great progress certainly had been made in the diagnosis of duodenal ulcer, for only as far back as fifteen years ago the diagnosis of this condition was a mere accident. Although he admitted that *x*-ray examination was a great help in the diagnosis of duodenal ulcer, yet he disputed the statement of Dr. Cole that the diagnosis could be made certain in every case of duodenal ulcer from radiographic findings.

Dr. Alexis V. Moschcowitz said that for allaying thirst, water was better than the saline that Dr. Bastedo had mentioned in his paper; the saline had a tendency to increase thirst. He was rather radical in the belief that where there was bleeding in duodenal ulcer there was a distinct indication for operation.

Dr. W. H. Stewart said there seemed to be a great discrepancy of opinion as to the ease with which the diagnosis of duodenal ulcer could be made. He had recently heard Dr. Deaver of Philadelphia read a paper in which he reported a series of 200 cases of typical duodenal ulcer, and only eight atypical cases, in all of which the diagnosis was made largely on the history. In reality the diagnosis was not easy; it required a great deal of skill. Dr. Stewart said he would like to ask Dr. Bastedo how much food he gave these cases in the beginning. He had said a small amount. How much was that? He would also like to hear him say whether he placed any dependence on hyperperistalsis as an indication of the progress that was being made in the treatment. His own experience had been that during a period of quiescence the hyperperistalsis continued. Dr. Stewart also brought out the point that duodenal ulcer might be dependent upon mechanical interference in the bowels, and if this factor was involved, one must direct attention to the entire alimentary tract before operating for duodenal ulcer.

Dr. J. W. Weinstein said there was considerable divergence of opinion as to whether the diagnosis of duodenal ulcer was easy or difficult. He considered it easy. The syndrome Dr. Bassler had mentioned made it easy. The *x*-ray gave some assistance, and it could also be diagnosed clinically. The trouble was they had been devoting all their attention to the physical examination; more care should be given to the taking of the history. There were takers and takers of history. It would be interesting to know in how many cases diagnosed as duodenal ulcer the diagnosis was sustained at operation. All surgeons agreed that in making a diagnosis the first reliance was to be placed on the history.

Dr. Patterson called attention to the alkaline treatment advocated by Sippy, who gave alkali every hour and removed the stomach contents at bedtime by means of the stomach or duodenal tube. Sippy's claims that he had never seen a case that could not be cured by his method were rather extravagant, but the treatment might be worthy of mention in connection with Dr. Bastedo's paper.

Dr. Bassler, in closing, said that the effects of alkalies in relieving distress in ulcer cases was not so much due to their neutralizing action on the gastric juice, but to their sedative action on motility. He was reminded that in 1910 when the first edition of his text book came out he took the stand that a proportion of duodenal ulcer cases were possible of cure by medical means, this being at the time when the

subject was considered definitely surgical, and he was glad to see that his experiences were being substantiated, but he did not agree with Dr. Cole that two-thirds of duodenal ulcer cases were medical. He felt that not more than one-third were, considering the condition of patients two years after treatment. Regarding the number of duodenal ulcers which he had diagnosed and treated medically, he, of course, could not be sure of a lesion. He had no records to substantiate him, but the number that had been operated upon were not a few—probably somewhere between fifty and one hundred, and up to the present time he had not missed in one. In every instance a lesion in the duodenum was present which was believed to be an ulcer, and it was on the basis of this that he claimed that the diagnosis was easy. He stated that all these cases had been examined by *x*-ray, and that this, with the history, was the reason of his success. He did not think that the importance that Dr. Aronson placed upon tenderness on pressure in duodenal ulcer cases was worthy of much significance. It was the last thing that he expected to find in any definite way and most of his operated-upon cases had no tenderness.

Dr. BASTEDO, in closing the discussion, said he had been asked about the amount of food he gave at the beginning. He started with three or four ounces, or sometimes only two ounces, of peptonized milk, being guided by the tolerance of the patient's stomach. In regard to the question as to whether he judged that a patient was cured by the stopping of the hyperperistalsis, he had not followed the patients sufficiently by the *x*-ray to say, but he thought there might be a justification for following up this line of observation. The persistence of hyperperistalis, especially if there were in addition alternating phases of open pylorus with rapid emptying and pylorospasm with temporary retention, would suggest the continued presence of the ulcer. Sippy had treated a large number of cases of ulcer, possibly more than any one else in the United States. It did not seem possible that he could have been successful with his method of treatment in a large number of cases of pyloric obstruction, though he stated that he did so believing that a large number of cases gave a condition of obstruction due to edema or inflammation or reflex spasm, which for a time resembled cicatricial pyloric obstruction. In obstruction cases he would be prone to set up a serious milk sourness with the milk and cream treatment.

THE NEW YORK PSYCHIATRICAL SOCIETY.

Stated Meeting Held January 3, 1917.

DR. L. PIERCE CLARK, PRESIDENT, IN THE CHAIR.

On the Place of the Psychiatric Clinic in Prisons.—Dr. BERNARD GLUECK, Psychiatrist to Sing Sing Prison, read this paper. The clinic was established August, 1916, and was supported by the Rockefeller Foundation. A broad program of activity had been laid out. The functions of the clinic were to be both scientific and applied, and to this end a reception service had been organized. The normal individual should be segregated from the abnormal, and the abnormal should be studied; the origin of antisocial behavior should be investigated. For reconstruction purposes a study of the aptitudes for vocational training and social adaptation was being undertaken with a view to increase individual efficiency and to develop a motive and capacity for work, instead of a continuance of antisocial tendencies after being discharged. Promising results were being obtained. Follow-up work had been instituted, and therapeutic interviews with convicts were arranged for through a daily clinic. The clinic had further facilitated the work in several of the penal administrative departments, notably by furnishing more exact data to the parole board, by assisting in the revision of the local and State plans for prison development, and by suggesting modifications in prison legislation. The speaker referred to an affiliation with a university which promised reciprocal values to both institutions. The great ameliorating effect of the Mutual Welfare League upon prison conditions and prisoners was dwelt upon and its extended value beyond the prison days was remarked. Considerable case material and graphic charts were submitted.

Dr. THOMAS SALMON spoke of the great theoretical and practical value of this work, and the growing interest near and remote municipalities and States were taking in the Sing Sing object lesson. In New York City eleven psychiatrists were now employed to study and advise in matters pertaining to criminality and the broader disorders of conduct and delinquency. The growing importance of defective delinquency, appreciation of its earlier and adult manifestations, and proper provision for this class, as well as for the feeble-minded, was one of the most urgent demands upon the State at the present time.

Dr. WILLIAM A. WHITE spoke of traditions being broken down, of the practical results increased insight into abnormal behavior had brought about, and the importance of developing and restoring the working capacity of a delinquent individual; a new era in the understanding of human conduct was opening, and the problem of insanity and criminology was much the same.

Dr. JOHN T. MACCURDY inquired relative to the co-operation of prisoners.

Dr. GLUECK replied that there was an almost unbelievable willingness on their part to cooperate.

Dr. ADOLF MEYER spoke of the value of humanized psychiatry, of a proper atmosphere, and the leading influence of the personality of the worker. He was sure a wider presentation of such concrete material would eventually influence judges to distrust present methods alone and make them recognize the value of more unbiased and significant facts as obtained by this broader and impartial approach.

Dr. CHARLES L. DANA spoke of the value a psychiatric clinic might have if attached to the schools and enlisting the interest of teachers in applied psychology.

Dr. L. PIERCE CLARK spoke of the clinics in connection with the ungraded class system of the public schools and the possibility of correction of relatively benign disorders of conduct at their inception as a prophylactic measure in handling many of the antisocial tendencies that might ultimately lead to criminal careers if not corrected.

Dr. GLUECK concluded by telling of a recent dinner attended by forty graduates from the recent Sing Sing régime, their appreciation of what had been done for them, and their approved attitude toward life.

Stated Meeting Held February 7, 1917.

DR. L. PIERCE CLARK, PRESIDENT, IN THE CHAIR.

Nervous States and Nervous Attacks in Children.—Dr. C. MACFIE CAMPBELL, Associate Professor of Psychiatry, Johns Hopkins Hospital, read this paper. By means of a large, well summarized case material, the speaker illustrated special types of neurotic reactions prevalent in childhood and the probable physiological levels from which they had their origin. These reactions were faulty adaptations to a complex environment, which were inferior and unhygienic, analyzable, and to great extent open to reeducational modification. Of the various reactions specified there were pallors, fainting attacks, narcoleptic states, spasmophilic reactions, and convulsive phenomena. Apt cases were cited, showing sometimes the apparent comparative simplicity, more often the complexity of the biological forces at work provoking these reactions. The utilization of these nervous states and attacks to meet conflicts and unpleasant situations and to obtain desired results was striking. Further study on these disorders might enable us to formulate the constitutional inferiority of the individual in definite biochemical and physiological terms. The importance of taking a wider psychobiological attitude for the understanding of neurotic symptoms was urged.

Dr. WILLIAM A. WHITE spoke of the enlightening value work of this character should have on the adult situation and the importance of carrying the analysis further. He would like to see the material worked with special reference to libido trends and earlier fixations. The conscious levels could be worked out readily, but the archaic were difficult to investigate. The problem was a teleological one.

Dr. E. E. Southard wondered if the mental causes were really very complex after all, and not more genetic than etiological. What was somatic and what was functional was a question of preponderance.

Dr. Campbell replied that adaptation to life was a matter of considerable complexity and a faulty reaction might thus occur, but agreed that there were many levels to be worked at in the fuller understanding of these reactions.

Dr. Stewart Paton spoke of certain biochemical experiments on embryos showing the effect of absence of calcium salts in determining excitability. The speaker, in this connection, alluded to the early developmental appearance of the thyroid and adrenal glands, and their connection with the autonomic and sympathetic nervous systems and appearance of related crises; for example, gastric and perhaps epileptic phenomena might be related to a disturbed balance herein, the conscious and unconscious phenomena being quite secondary.

Dr. L. Pierce Clark spoke of the neurotic syndromes in childhood as being more elementary and elusive for clinical grasp than the same syndromes in the adult, hence the difficulty in handling and formulating the significance of the former for diagnostic and therapeutic purposes. They probably furnish a more favorable opportunity for correction and riddance before they become definite and fixed disorganizations of habits. The suggestions of the paper ought to be of greatest value to parents, who often do not recognize these minor and elusive psychopathic traits as being worthy of attention. The same consideration ought to be given these traits by both physicians and social workers who, being unbiased, can be of greatest assistance to help the child to make an adaptation in its developmental life which oftentimes the parents are unable or unwilling to do.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Medical Council of Canada

Montreal, October 10, 11 *and* 12, 1916.

ANATOMY

1. Describe the urinary bladder, including its attachments, its blood and nerve supply.
2. Describe the nasal fossæ and adjoining air sinuses.
3. Give fully the location and relations of the spleen.
4. Describe accurately the origin, course, relations, and terminations of a typical intercostal artery.
5. Describe the radiocarpal joint, including bones, ligaments, synovial membrane, movements, and relations.
6. Give fully the relations of the trachea.

PHYSIOLOGY.

1. Describe the mechanism which brings about the reflex secretion of submaxillary saliva. What are the histological differences between an active and a resting salivary gland?
2. Describe the effect of fatigue upon the contraction of skeletal muscle, drawing muscle curves to elucidate your answer. Discuss the cause of muscular fatigue.
3. How is blood pressure measured in the human being? Explain by what means general blood pressure may be raised and lowered, and also how local blood pressure may be altered.
4. Describe the structure of the skin. Explain how the different sensory areas of the skin have been mapped out. Trace the pathway of the different nerve impulses from the skin areas to the cerebral and cerebellar cortex.
5. Distinguish the different kinds of white blood cells and specify their function.
6. What changes does the uterus undergo during menstruation?

PATHOLOGY AND BACTERIOLOGY.

1. What is meant by agglutinins, precipitins, opsonins, and anaphylaxis?
2. What do you understand by edema, anasarca, ascites? What are the causes of these conditions?
3. Describe fully the morbid changes in the lungs in (*a*) acute lobar pneumonia, and in (*b*) acute lobular pneumonia.
4. Give the pathological-anatomical forms of acute endocarditis, their situation, and their pathogenesis.
5. Write what you know of the *Bacillus diphtheriæ*.
6. What are "carriers"? Mention the diseases that are admittedly due to the influence of the "carrier"?

ANSWERS.

ANATOMY.

1. The *urinary bladder* is a hollow musculo-membranous viscus, situated chiefly in the pelvic cavity, but when fully distended it extends into the abdominal cavity. It lies behind the pubes and the rectum in the male, and between the pubes and cervix uteri and upper part of the vagina in the female. On the inside, three openings are observed, the two ureteral openings behind and that of the urethra in front; the space between these openings is called the trigone. The peritoneum covers the superior surface of the bladder and extends for a variable distance over the anterior surface; that part of the anterior surface which is not covered by peritoneum is called the prevesical space of Retzius. Most of the posterior surface is covered by peritoneum. The *attachments* are a number of ligaments, five true and five false ones; the true ones are two anterior or puboprostatic, from the back of the os pubis to the front of the neck of the bladder; two lateral, which are expansions of the pelvic fascia; and the urachus, extending between the summit of the bladder and the umbilicus. The false ligaments are peritoneal folds; two posterior, from the back of the bladder to the rectum in the male and the uterus in the female; two lateral, from the iliac fossæ to the sides of the bladder; and one superior, from the summit of the bladder to the umbilicus. In addition, the bladder is attached to the ureters, urethra, and rectum; also to the prostate in the male, and to uterus and vagina in the female. The *arteries* are the superior, middle, and inferior vesical, and branches from the obturator and sciatic, all from the internal iliac; in the female, there are additional branches from the uterine and vaginal arteries. The *veins* form plexuses around the neck, base, and sides of the bladder, and end in the internal iliac vein. The nerves are derived from the hypogastric plexus of the sympathetic, and from the third and fourth sacral nerves.

2. The *nasal fossæ* are two irregular cavities situated in the middle of the face. They open in front by the anterior nares, and behind into the nasopharynx by the posterior nares. They are separated by the septum, which is generally deviated to one side. The mucous membrane lining the nasal fossæ is called the Schneiderian membrane. Each fossa has a roof, a floor, an inner and an outer wall. From the outer wall there project into each fossa the superior and middle turbinated processes of the ethmoid bone, and the inferior turbinated bone; these bony processes divide each fossa into a superior, middle, and inferior meatus. The nasal fossæ communicate with the sphenoidal sinus, the anterior and posterior ethmoidal cells, the frontal sinus, and the antrum of Highmore.

The *roof* is formed by the ethmoid, nasal, frontal, sphenoid, vomer, and palate bones; the *floor* is formed by the maxillary and palate bones; the *outer wall*, by the nasal, maxillary, lacrymal, ethmoid, inferior turbinated, palate, and sphenoid bones; the *inner wall*, or *septum*, by the ethmoid, vomer, frontal, nasal, sphenoid, maxillary and palate bones, and septal cartilage.

The *antrum of Highmore* is situated in the body of the superior maxillary bone, is pyramidal in shape, its apex being at the malar process and its base forming the external wall of the nasal cavity. Above it is covered by the orbital surface of the maxilla, and below by the alveolar border. Its walls are lined with mucoperiosteum which is continuous with the mucous membrane of the middle meatus of the nose.

The *frontal sinus* is found between the two layers of bone in the vertical part of the frontal bone. The two sinuses are separated by a thin septum. The cavity is lined with mucoperiosteum which is continuous with the middle meatus of the nose.

The *ethmoidal cells* are situated in the lateral mass

of the ethmoid bone; the anterior cells open into the middle meatus of the nose, and the posterior cells into the superior meatus.

The *sphenoidal sinuses* are situated in the body of the sphenoid bone immediately below the fossa which lodges the pituitary body; they are separated by a septum, and open into the superior meatus of the nose.

3. The *spleen* is situated in the upper and left side of the abdominal cavity; it lies far back in the left hypochondriac region, behind the stomach. It lies above the left kidney and the splenic flexure of the colon. It is surrounded by peritoneum except at the hilum. Above and externally are the peritoneum, diaphragm, left ninth, tenth and eleventh ribs, left lung and pleura, and posterior thoracic muscles. Below, the splenic flexure of the colon, costo-colic ligament, and (sometimes) the tail of the pancreas. Internally, the stomach (posterior surface of the fundus), left kidney and suprarenal capsule, and tail of the pancreas.

4. Intercostal arteries. "(*a*) The *vertebral portions* of the intercostal arteries, arising in pairs from the posterior part of the thoracic aorta, pass around the vertebræ—the right being covered by thoracic duct, vena azygos major, pleura, lung, esophagus—the left, by vena azygos minor, left superior intercostal vein, third vena azygos, pleura, lung. The arteries here divide into posterior or dorsal, and anterior or intercostal branches. (*b*) The *intercostal portions* run forward and obliquely upward in the intercostal space to the lower border of the superior rib, and divide near the angle of the rib into the upper (larger) and lower (smaller) branches—the former, to run in the groove along the lower border of the upper rib and anastomose with the superior intercostal branch of the internal mammary in the upper spaces, and of the musculophrenic in the lower—the latter, to run along the upper border of the lower rib and anastomose with the inferior branch of the internal mammary in the upper spaces, and of the musculophrenic in the lower. At first these arteries lie between pleuræ, lungs, endothoracic fascia, and infracostals internally—and external intercostal muscles externally—then (from the angles of the ribs) between the external and internal intercostal muscles. The sympathetic nerve crosses them opposite the head of the ribs. The intercostal vein lies above and the intercostal nerve below the intercostal arteries—except in the upper spaces."—(Bickham's *Operative Surgery.*)

5. The *radiocarpal joint* is formed by the under surface of the radius and a triangular plate of fibrocartilage, which together form a shallow socket for the scaphoid, semilunar, and cuneiform bones. The ulna does not take part in this articulation. The ligaments are the anterior, posterior, internal and external. The *anterior ligament* extends from the lower border of the inferior extremity of the radius, and is inserted below into the scaphoid, semilunar, and cuneiform bones. The *posterior ligament* arises from the posterior aspect of the lower end of the radius and is inserted into the scaphoid, semilunar, and cuneiform bones. The *external lateral ligament* extends from the tip of the styloid process of the radius to the scaphoid bone. The *internal lateral ligament* extends from the styloid process of the ulna to the cuneiform and pisiform bones. These ligaments are continuous with each other, and so form a capsule around the joint. The synovial membrane lines the deep surfaces of the ligaments, it is loose and lax and presents numerous folds. The *movements* are those of flexion, extension, abduction, adduction, and circumduction. *Anterior* to the joint are the flexor carpi radialis, palmaris longus, flexor carpi ulnaris, flexor sublimis digitorum, flexor profundus digitorum, and flexor longus pollicis. *Posteriorly*, extensor carpi radialis (longior and brevior), extensor communis digitorum, extensor indicis, extensor minimi digiti, extensor carpi ulnaris. *On the radial side*, the supinator longus, extensor ossis metacarpi pollicis, extensor brevis pollicis, extensor longus pollicis.

6. Relations of the trachea. *In the neck. Anteriorly*, the skin, superficial fascia, anterior jugular veins, inferior thyroid veins, thyroidea ima artery, sternohyoid and sternothyroid muscles, isthmus of thyroid gland, thymus or its remains. *Posteriorly*, the esophagus. *Laterally*, the lateral lobes of the thyroid gland, inferior thyroid arteries, recurrent laryngeal nerves, and the sheath containing the common carotid artery, internal jugular vein and pneumogastric nerve. *In the thorax. Anteriorly*, upper part of sternum, sternohyoid and sternothyroid muscles, thymus or its remains, left innomimate vein, transverse part of the arch of the aorta, innominate artery, left common carotid artery, deep cardiac plexus, and left recurrent laryngeal nerve. *Posteriorly*, the esophagus. *Laterally*, the pleuræ, pneumogastric nerves.

PHYSIOLOGY.

1. The salivary glands have a double nerve supply, from the sympathetic and from the cranial nerves. The submaxillary gland receives its sympathetic fibers from branches of the cervical sympathetic which ramify on the facial artery, and its cranial fibers from the chorda tympani nerve. These fibers run for a short time with the lingual nerve, and then leave it as a slender nerve which, reaching Wharton's duct, runs along this to the gland. The fibers are connected in the hilus of the gland with nerve cells. A small collection of nerve-cells—the submaxillary ganglion—is found in the triangle between the chorda tympani nerve, lingual nerve, and duct. Different effects are obtained according as the chorda tympani or the sympathetic fibers are stimulated. Stimulation of the chorda tympani in the dog gives rise to an active dilatation of the vessels of the gland, and a copious watery secretion containing only a small amount of mucin and formed elements. Stimulation of the sympathetic causes constriction of the vessels and a scanty flow of very thick viscid saliva, rich in mucin and formed elements. The changes that occur in the cells are much more marked under sympathetic than under chorda stimulation. In consequence of the differences in the action of these two sets of nerve fibers, they have been supposed to have two distinct functions. The chorda fibers are vasodilator and secretomotor of water; the sympathetic fibers are vasoconstrictor and secretomotor of organic matter. According to Langley the action of the gland fibers of the sympathetic and the chorda tympani nerve are probably identical, the differences in the saliva obtained by the stimulation of the two sets of nerves being conditioned by the concomitant vascular changes. Against this view may be urged the fact that while atropine paralyzes the secretory fibers of the chorda tympani, it has practically no effect on those derived from the sympathetic. The center for the secretion of saliva is located in the medulla. In the resting condition of the gland, the acini are seen to be distended with large cells having clear hyaline contents, so close together that no lumen can be seen. The nuclei situated at the outer border of the cells, near the basement membrane, appear shriveled, with irregular margins. In a gland that has been actively secreting for some time, the acini and the cells are smaller, the lumen quite distinct, and the nuclei round and swollen. The section appears darker from the fact that the cells have taken up the staining fluid more readily.—(From Starling's *Elements of Human Physiology.*)

2. *Effect of fatigue upon the contraction of skeletal muscle*: "At first the contractions improve, each being a little higher than the preceding; this is known as the beneficial effect of contraction, and the graphic record is called a staircase. Then the contractions get less and less. But what is most noticeable is that the curves are much more prolonged; the latent period gets longer; and the period of relaxation gets very much longer; this condition is known as contracture, so that the original base line is not reached by the time the next stimulus arrives. In the last stages of fatigue, contracture passes off. Contracture is often absent in fatigue of mammalian muscle. *Cause of muscular fatigue:* This is due to the consumption of the substances available for the supply of energy in the muscle, but more particularly to the accumulation of waste products of contraction; of these sarcolactic acid is an important one. Fatigue may be artificially induced in a muscle by feeding it with a weak solution of lactic acid, and then removed by washing out the muscle with salt solution containing a minute trace of an alkali. If the muscle is left to itself in the body, the blood stream washes away the accumulation of acid products, and fatigue passes off."—(Halliburton's *Physiology.*)

3. Blood pressure is estimated by means of a sphygmomanometer.

"The individual whose blood pressure is about to be recorded should be placed in such a position that his heart, the artery the blood pressure of which is to be determined, and the manometer are at the same level. It is usual to record the pressure in the brachial artery. The india-rubber bag of the instrument should be wrapped around the bared arm, the metal covering of the bag should then be adjusted, and firmly strapped in position. The india-rubber tube leading from the bag is then adjusted to the proximal limb of the U-shaped manometer which contains mercury. The experimenter places the index finger of his left hand over the radial pulse of the subject, and with his right hand he compresses the syringe and so drives air into the india-rubber tube and the india-rubber bag around the individual's arm. The pressure of the air in the bag around the arm is recorded by movement of the mercury from the proximal to the distal limb of the manometer. The operator keeps on pressing the syringe until oscillatory movements are seen at the surface of the mercury in the distal limb of the manometer; the mean point of maximum oscillations registers the diastolic pressure. If the pressure in the bag is still further increased, the oscillations diminish in amplitude and finally disappear, and at this point the pulse can no longer be felt at the wrist. The height of the mercury supported then registers the amount of systolic pressure. It will then be noted that the mercury has descended in the proximal limb of the manometer, and has ascended in the distal limb of the manometer; the difference between the two mercurial levels will be the blood pressure of the brachial artery. The normal systolic pressure in man is about 120 mm. Hg, and the diastolic pressure about 100 mm. Hg. In women the pressures are about 10 per cent. less. In children the systolic pressure may be as low as 90 mm. Hg, with a diastolic pressure of about 80 mm. Hg."—(R. Hutchison.)

General blood pressure may be *raised* by increase in the rate and power of the heart beat, increase in the contraction of the arterioles, or increase in the volume of the blood. It may be *lowered* by the opposite conditions.

Local blood pressure may be altered by the increase or decrease in the size of the arterioles in areas other than the one under investigation.

4. "The skin is composed of a deep portion, the corium, derma, or true skin; and of a superficial portion, the epidermis or cuticle.

The *corium* makes up by far the greater part of the skin, and within it are the perspiratory glands, the sebaceous glands, the hairs, together with both blood and lymphatic vessels. The upper surface, where it joins the epidermis, is irregular, being composed of elevations—papillæ—and intervening depressions. In some of these papillæ are the tactile corpuscles, in which nerve-fibers end.

The *epidermis* is made up of a deep and a superficial layer. The deep layer (rete mucosum or rete Malpighii) covers the papillæ of the corium and fills the depressions between them. It is composed of cells, round or of different shapes due to pressure of contiguous cells, the material of which they are composed yielding readily. It is in this layer that the pigment is deposited which characterizes the dark races. The superficial layer of the epidermis is composed of cells which are flat and dry or horny."—(Raymond's *Physiology.*)

"The surface of the skin appears to be divided into innumerable small sensory areas, separated by intervals which are not responsive to those stimuli which are only just above liminal intensity. Each of these small areas responds to a specific adequate stimulus, such as pressure, heat, cold, pain. No doubt each area contains a special sensory end organ. The pressure spots, heat spots, cold spots, and pain spots are intermingled, but in some regions one variety predominates, in other regions another variety predominates. The distribution of these spots is by no means uniform. . . . The responsiveness of the skin to external stimuli is investigated by esthesiometers. Pressure sense is estimated by little weights placed upon the skin. Heat and cold sense is investigated by the use of hollow pencil-shaped rods containing hot and cold water respectively, or by using minute drops of water at different temperatures as stimuli. Pain sense is investigated by the use of fine needles. . . . The finer uncrossed tactile sensations pass into the cord at the posterior root zone, and travel up in the column of Burdach and column of Goll. For the most part the impulses from the leg pass up the column of Goll, and those from the arm up the column of Burdach. . . . The coarser tactile sensations, along with the sensations of heat, cold, and pain, travel into the posterior gray cornua, thence into the central gray matter, crossing the cord at the anterior gray commissure. The fibers which convey these impulses appear to make cell stations at the base of the opposite posterior cornua, and from some of these posterior cornual cells new fibers arise which conduct these impulses up the spinal cord through the spinothalamic tract. These impulses eventually arrive at the optic thalamus, and by the thalamo-cortical fibers gain the gray matter of the cerebral cortex. The nerve fibers from the spinal cord, which convey the impulses which eventually give rise to sensations of heat, cold, and pain, travel up through the medulla, external to the olivary body, and in this region they mix with the fibers coming up from the tract of Gowers. Both these sets of fibers eventually reach the optic thalamus."—(From Lyle's *Manual of Physiology.*)

5. *Varieties of white blood cells:* (1) *Small mononuclear leucocytes* or *lymphocytes*, which are a little larger than red blood cells and consist of a narrow zone of protoplasm around a relatively large and circular nucleus; both nucleus and protoplasm are basophilic; this variety is about 25 per cent. of the total colorless corpuscles. (2) *Large mononuclear leucocytes*, which consist of a relatively small oval nucleus in the center of basophilic protoplasm; the diameter is about 12 to 20 microns, and they constitute about 1 per cent. of total white corpuscles. (3) *Transitional leucocytes*, which consist of a smaller cell body than the last, the protoplasm is basophilic and granular, and the nucleus is oval or lobed; they make up about 2 to 4 per cent. of the white cells. (4) *Polynuclear leucocytes*, which make up the chief mass of white cells, being about 70 per cent. of the whole; they are about 9 to 12 microns in diameter, and have several nuclei, of different shapes, which are basophilic and granular; the protoplasm is finely granular, and stains with neutral stains and also faintly with acid (eosin) stains. (5) *Eosinophile leucocytes*, which are usually about 12 to 15 microns in diameter and contain two or three nuclei or one nucleus of irregular shape; the protoplasm is granular, and readily stains with eosin or other acid stains; they are about 2 per cent. of the white corpuscles.

Their *functions* are (1) to serve as a protection to the body from the incursions of pathogenic microorganisms; (2) they take some part in the process of the coagulation of the blood; (3) they aid in the absorption of fats and peptones from the intestine, and (4) they help to maintain the proper proteid content of the blood plasma.

6. *Changes in the uterus during menstruation.* "The endometrium, in the four or five days preceding the flow, becomes rapidly thicker and its superficial layers are congested with blood and, in places, small collections of blood may be noticed. Opinions differ very much as to the change undergone by this thickened membrane during the flow. According to some authors, most of the membrane is thrown off and the blood escapes from the denuded surface mixed with pieces of the membrane. According to others, no material destruction of the membrane occurs, the blood that escapes being due to small capillary extravasations or perhaps mainly to a process of diapedesis. It would seem that the amount of destruction of the endometrium must be subject to individual variations. After the cessation of the flow the mucous membrane is rapidly repaired by regenerative changes in the tissues; the surface epithelium, if denuded, is replaced by proliferation of the cells lining the uterine glands and the thickened, edematous condition of the membrane rapidly subsides during a period of six or seven days. The mucous membrane of the uterus may be said to exhibit a constantly recurring menstrual cycle which falls into

four periods: (1) Period of growth in the few (five) days preceding menstruation, characterized by a rapid increase in the stroma, blood vessels, epithelium, etc., of the membrane. (2) The menstruation or period of degeneration (four days) during which the capillary hemorrhage takes place and the epithelium suffers degenerative changes and is cast off more or less. (3) The period of regeneration (seven days) during which the mucous membrane returns to normal size. (4) The period of rest (twelve days) during which the endometrium remains in a quiescent condition."—(Howell's *Text-book of Physiology.*)

PATHOLOGY AND BACTERIOLOGY.

1. *Agglutinins* are antibodies which cause certain bacteria, when suspended in a fluid, to form clumps.

Precipitins are specific antibodies which develop in the serum of animals inoculated with bacteria and which produce a precipitate in a clear solution of the particular culture filtrate against which the animal has been immunized.

Opsonins are substances in normal and immune sera which act upon bacteria and render them more readily available for being ingested by phagocytes.

Anaphylaxis is a condition of hypersusceptibility induced by the injection of a serum. It is (to some extent) the opposite of prophylaxis, and in place of rendering the person injected immune the serum renders him particularly susceptible.

2. *Edema* is an excess of transuded fluid in the interstices of the tissues. When such fluid infiltrates the subcutaneous tissues the condition is called *anasarca.* A collection of such fluid within the abdominal cavity is called *ascites.*

Six factors enter into the production of edema, usually more than one acting at a time, viz., positive pressure in the vessels (in proportion as it rises), permeability of the vessel wall, osmosis from excess of salts outside the vessel as seen in the action of a saline laxative, selective action of the endothelium, variations in the blood plasma, and obstructed onflow in the lymph channels.

3. ACUTE LOBAR PNEUMONIA. "It is convenient to describe four stages, those, namely, of (1) hyperemia or engorgement, (2) red hepatization, (3) gray hepatization, and (4) resolution. *First stage or splenization.*—The lung is injected, dark red, and heavy, and pits under the finger; on pressure, there exudes a frothy serum tinged with blood and slightly aërated. The lung still floats in water. *Second stage or red hepatization.*—The part involved is solid and friable, presents a granular or red granite appearance, and sinks in water. The alveoli are filled with a coagulated exudation, which shows under the microscope fibrin, leucocytes, red corpuscles, proliferated alveolar epithelium, and pneumococci. *Third stage or gray hepatization.*—The lobe has now the appearance of gray granite, the lung substance is softer and more friable; on pressure, a dirty purulent fluid exudes. The gray appearance is due to four factors: (1) Decolorization of the red blood corpuscles; (2) obliteration of the alveolar blood vessels from pressure; (3) fatty degeneration of the coagulated material; (4) great infiltration of leucocytes. A more advanced stage, in which the lung tissue is bathed in purulent fluid, is known as purulent infiltration. It is probably inconsistent with life. *Fourth stage or resolution.*—Resolution of the inflammatory exudation is brought about principally by absorption (autolysis), but partly by liquefaction and expectoration. Pneumonia may affect a lobe, or the whole of a lung, or it may attack both lungs. Double pneumonia occurs in about 10 per cent. of cases. Different parts of the same lung may at the same time show different stages. There is always some degree of pleural inflammation over the affected area. Modern enlargement of the spleen is very common."—(Wheeler and Jack's *Practice of Medicine.*)

ACUTE LOBULAR PNEUMONIA. "The disease affects both lungs, and begins in the terminal bronchioles, spreading thence to the infundibula and alveoli. The consolidated patches have therefore a lobular arrangement, but if many adjacent lobules are affected the consolidation may be almost lobar. The bronchioles are inflamed and frequently plugged with mucus, and their walls and the surrounding interstitial tissue are infiltrated with small cells. The walls of the air vesicles in the consolidated area are congested, their epithelium is swollen, and their lumen is filled with proliferated epithelial cells, leucocytes, and a mucous or mucopurulent (not fibrinous) exudate. Many lobules are collapsed, but not inflamed, from plugging of the bronchioles. When cut into, the small consolidated areas are seen to be conical in shape, with their bases towards the pleura, reddish in color, with indefinite margins, and separated from each other by crepitant lung tissue. Adjacent lobules may be emphysematous (compensatory emphysema). The bluish-gray collapsed areas are most numerous in the lower lobes."—(Wheeler and Jack's *Handbook of Medicine.*)

4. ENDOCARDITIS.

Types: I. Acute { Simple / Malignant or Ulcerative { Septic / Typhoid / Cardiac }

II. Chronic.

The difference between simple and malignant endocarditis is probably one of degree rather than of kind.

Etiology: Simple endocarditis is associated with rheumatism or scarlet fever. Malignant endocarditis is also associated with rheumatism, scarlet fever, and also with pneumonia or septic processes. Micrococci are often found. Chronic endocarditis may follow an acute endocarditis, or may be the result of syphilis, old age, high arterial tension, gout.

Morbid anatomy: In the simple form there will be found a cloudiness, followed by edematous thickening of the valvular endocardium; superficial erosions, and the formation of small granulations; deposits of layers of fibrin and corpuscles from the blood, the whole process resulting in the formation of small warty vegetations. These vegetations are most marked at a slight distance from the free borders of the valves—*i.e.* those parts which come into opposition during closure. In course of time they are transformed into fibrous tissue. According to Poynton and Paine the infective organisms are conveyed to the base of the valves by the capillaries, and thence pass to the subendothelial tissues by the minute nutrient channels in the valvular substance; others hold that the organisms are derived from the blood circulating over the surface of the valves. In the malignant form the initial changes are similar, but there are some important differences, inasmuch as ulcerations may completely replace the vegetations. The differences are: (1) The vegetations when present are larger and fungating. (2) The underlying tissues are necrotic and show loss of substance and round-celled infiltration. (3) They contain masses of micrococci, while in simple endocarditis the organisms are scanty. The two forms cannot be distinguished by the organisms producing them; either simple or malignant endocarditis may arise from a pyogenic infection. (4) When the vegetations become detached they form *septic* emboli, giving rise to metastatic abscesses. (5) The ulcerative process causes great destruction of the valves, and may even lead to perforation of the curtains. (6) The subsequent or permanent changes in the valves, if the patient survive, are much more marked. (7) If the vegetation touches the mural endocardium as it flaps to and fro, the part touched becomes affected by contact.

As regards the side of the heart most affected—*Congenital* endocarditis attacks the right side of the heart (but note that many congenital cardiac lesions are due not to endocarditis, but to developmental faults); simple endocarditis attacks the left only; the *malignant* attacks *both sides*, though the *left* is much more implicated than the right side.

The vegetations are upon that side of the valve opposed to the blood-stream—viz., at the aortic valve the vegetations project into the ventricle, at the mitral valve into the auricle.

As in pericarditis, the myocardium almost always shares in the inflammatory affection.—(Wheeler and Jack's *Practice of Medicine.*)

5. The *characteristics of the bacillus of diphtheria:* The bacilli are from 2 to 6 microns in length and from 0.2 to 1.0 micron in breadth, are slightly curved, and often have clubbed and rounded ends; occur either singly or in pairs, or in irregular groups, but do not form chains; they have no flagella, are non-motile, and aerobic; they are noted for their pleomorphism; they

do not stain uniformly, but stain well by Gram's method and very beautifully with Loeffler's alkaline-methylene blue; they grow well on blood serum, slowly on gelatin, and with difficulty on potato.

6. *Carriers* are persons who, though apparently well, harbor within their bodies and distribute to their environment pathogenic bacteria. Diseases thus "carried" are: Typhoid, diphtheria, meningitis, tetanus, malignant edema, Asiatic cholera, dysentery, and perhaps poliomyelitis and other diseases.

(*To be continued*)

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading, but it must be with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

CASE HISTORIES IN OBSTETRICS. Groups of cases illustrating the fundamental problems which arise in obstetrics. By ROBERT L. DENORMANDIE, A.B., M.D., F.A.C.S. Second Edition. Published by W. M. Leonard, Boston, Mass. 1917. 516 pages.

DISEASES OF THE STOMACH, INTESTINES AND PANCREAS. New (third) Edition Revised. By ROBERT COLEMAN KEMP, M.D. Octavo of 1096 pages, with 438 illustrations. Published by W. B. Saunders Co., Philadelphia and London. 1917. Cloth, $7.00 net; half morocco, $8.50 net.

DISEASES OF THE GENITOURINARY ORGANS AND THE KIDNEYS. Fourth Revised Edition. By ROBERT H. GREENE, M.D. Octavo of 666 pages, 301 illustrations. Published by W. B. Saunders Co., Philadelphia and London. 1917. Cloth, $5.50 net; half morocco, $7.00 net.

PRINCIPLES OF PHARMACY. Second Edition Revised. By HENRY V. ARNY, Ph.G., Ph.D. Octavo of 1056 pages, with 267 illustrations. 1917. Cloth, $5.50 net. Published by W. B. Saunders Co., Philadelphia and London.

LIFE OF DR. LYMAN SPALDING. By his grandson, Dr. JAMES ALFRED SPALDING. 379 pages. 1916. Price, $3.50. Published by W. M. Leonard, 101 Tremont Street, Boston, Mass.

THE METHOD OF ENZYME ACTION. By JAMES BEATTY, M.A., M.D., D.P.H., with introduction by Prof. E. H. STARLING, M.D., Sc.D., F.R.S. 143 pages. Price, $1.75 net. Published by P. Blakiston's Son & Co., Philadelphia, Pa. 1917.

EYE, EAR, NOSE AND THROAT. A Manual for Students and Practitioners. By HOWARD CHARLES BALLINGER, M.D., and A. G. WIPPERN, M.D. New second edition, thoroughly revised. Illustrated with 180 engravings and 8 colored plates. 503 pages. Price, $3.50. Published by Lea & Febiger, 706 Sansom Street, Philadelphia, Pa. 1917.

TWELFTH ANNUAL REPORT OF THE BOARD OF MANAGERS OF THE MANHATTAN STATE HOSPITAL TO THE STATE HOSPITAL COMMISSION. For the nine months ending June 30, 1916. 88 pages. Published by J. B. Lyon Co., Albany, N. Y. 1917.

THE SURGICAL CLINICS OF CHICAGO. April, 1917. Vol. 1, No. 2, with 99 illustrations. 448 pages. $10.00 per year. Published bi-monthly by W. B. Saunders Co., Philadelphia and London.

FIRST ANNUAL REPORT OF THE STATE DEPARTMENT OF HEALTH OF MASSACHUSETTS. 826 pages. Published by Wright & Potter Printing Co., State Printers, Boston, Mass. 1916.

FOOD POISONING. By EDWIN OAKES JORDAN. 115 pages. Illustrated. Price, $1.00 net postage. Published by The University of Chicago Press, Chicago, Ill.

THE TREATMENT OF TABETIC ATAXIA. By means of systematic exercise. By Dr. H. S. FRENKEL. Second revised and enlarged English edition by L. FREYBERGER, J.P., M.D. (Vienna). With 130 illustrations. 209 pages. Price, $3.00 net. Published by P. Blakiston's Son & Co., Philadelphia, Pa.

SPINAL INVESTIGATION OF POLIOMYELITIS. Report of committee appointed by the Mayor to cooperate with the Department of Health. ALVAH H. DOTY, M.D., Medical Director. New York, 1917.

Therapeutic Hints.

Treatment for Erysipelas.—Critzman has used the following with good results: Picric acid solution 1 to 1,000 with 12 grams of alcohol added to the liter is painted over the diseased area and a dry cotton dressing applied. This should be repeated every twelve hours. The eruption is usually checked in three days with a reduction in temperature and improvement in general conditions.

Fever.—Fischer advises the use of the following in cases where the fever is very high and a diagnosis has not been made:

℞ Sweet spirit of niter.....1½ fluidrachms
Citrate of potassium.....30 grains
Syrup of lemon.....4 fluidrachms
Water to make.....2 fluidrachms

A teaspoonful every three hours, for child of one year of age. —*Diseases of Infancy and Childhood.*

Pruritus.—Whitla has found that the accompanying formula will give relief when the itching is caused by a neurosis:

℞ Ext. cannabis ind.....gr. vi
Acid. carbolici.....gr. xviii
Cocain. hydr.....gr. vi
Ext. gelsemii.....gr. vi

M. et fiant pil. xxiv. Sig.: One every night.—*Dictionary of Treatment.*

Asthma.—Potter offers the following prescription for relief in this condition:

℞ Ext. stramonii.....gr. ij	0.130	gm.
Potass. iodidi.....℥ jss	6.0	gm.
Ammonii carbonatis.....℥ j	4.0	gm.
Tr. lobeliæ.....℥ jss	6.0	gm.
Aquæ chloroformi q.s. ad. ℥ viij	480.0	gm.

M. S.—Tablespoonful every six hours.—*Hughes' Practice of Medecine.*

Treatment of Bronchopneumonia in Children.—Measham advocates the following method of procedure in this condition: The child's chest is wrapped in a light Gamgee jacket, and over this is worn a pair of woolen combinations. The room is to be kept warm, but the windows are always open; no draughts, however, are allowed to blow on the patient. The child is encouraged to take frequent sips of cold water. No medicines are given by mouth, but a subcutaneous injection of quinine hydrochloride is given morning and evening. A solution is prepared in which one grain of the quinine salt is dissolved in ten minims of water, and the dosage given as follows: For a child of six months, 5 minims; one year, 10 minims; two years, 15 minims; and over two years, 20 minims. A striking feature is the rapidity with which physical signs of the disease disappear, the patient often appearing in normal health ten days after the first injection.—*The Practitioner*, June, 1917.

Nervous Exhaustion.—Goodell found the following formula efficacious for the relief of this condition:

℞ Extracti sumbul.....gr. xx (1.3)
Ferri sulphatis.....gr. xx (1.3)
Asafetidæ .....gr. x (0.60)
Arseni trioxidi.....gr. ½ (0.03)

Fiant pilulæ No. xx.

S.—One three times a day after meals.—*Hare's Practical Therapeutics.*

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Original Articles.

POLIOMYELITIS.

BY ALVAH H. DOTY, M.D.,

NEW YORK.

THE special investigation of poliomyelitis conducted during the past year by a committee appointed by the Mayor of the City of New York, and supported by the Rockefeller Foundation, has added much valuable data to the epidemiological history of this disease, and has gone far to sustain the opinions of previous investigators of this subject—notably Wickman, who presented to the public a most important and exhaustive report regarding an epidemiological study of the outbreak of poliomyelitis which occurred in Sweden during 1905. A careful analysis of the material collected in connection with these researches leaves no reasonable doubt that poliomyelitis is transmitted by personal contact through the medium of discharges containing the specific organism of this disease.

No epidemiological investigation ever undertaken has presented such impressive and extended evidence bearing upon the frequency with which infectious diseases are transmitted by mild, ambulant, or unrecognized cases as that furnished by the investigation of the Mayor's Committee. The importance of this cannot be overestimated, for it explains various disputed points in connection with outbreaks of poliomyelitis.

While many theories have been presented, no proof is forthcoming that poliomyelitis is transmitted by insects, general food supplies, aerial conveyance, clothing, or innumerable other articles. Erroneous theories are constantly being offered concerning media of infection, and are largely responsible for the extension of communicable diseases, for they not only seriously interfere with a proper concentration of effort in dealing with the true source of infection, but undue consideration of these theories on the part of health officials and others prevents efficient public co-operation, which is so urgently needed in dealing with outbreaks of infectious diseases.

The belief that infectious diseases are transmitted over long distances by the air, by clothing, money, and the like, is very popular and readily accepted, for it supplies a convenient and plausible explanation for the appearance of an infectious disease at any time or place when the real cause of the outbreak is unknown or has not been carefully sought for. Besides such theories are quite inviting, for they do not involve much personal responsibility. On the other hand, when a disease is known to be transmitted by personal contact, there must be a careful and painstaking investigation to detect the presence of mild as well as marked cases; to discover the true source of infection, and to maintain various necessary protective measures which call for special and individual attention.

The doubt which exists among those who are not yet convinced that poliomyelitis is transmitted by personal contact, is due largely to a statement which has been widely disseminated; that more than one case in a family seldom occurs during a given outbreak of the disease. This statement is misleading and is the result of a superficial investigation of this subject. The truth is that secondary cases of poliomyelitis do occur frequently in the same family and in a manner which presents clear and satisfactory evidence that the infection is transmitted from one person to another. Secondary cases not only occur often in the same family, but sometimes all the children succumb to the disease, and in some instances, the father or mother as well.

The proof which most effectively refutes the statement referred to lies in the fact that the investigation of the Mayor's Committee produced indisputable evidence that in many instances where but one case of poliomyelitis was officially reported in a family, other cases had occurred, although they were not identified until the investigation took place. Proof of this was everywhere present.

The value of this information lies chiefly in the fact that heretofore the medical profession has had but little definite knowledge of poliomyelitis and less of the mild and non-paralytic form and the frequency with which the latter type occurs. As an illustration, it may be stated that of the number of officially reported cases investigated by the Committee twenty per cent. were at first erroneously diagnosed by the attending physician, and in fifty per cent. of these the disease was mistaken for some form of gastrointestinal disturbance.

It is proper to assume that mild or unrecognized cases of poliomyelitis accompany the well marked cases of the disease whenever it appears. Therefore many children are rendered immune unknown to anyone.

Further doubt as to the transmission of poliomyelitis by personal contact is encouraged by reports presented in individual cases, that there was a complete isolation of the patient or the one affected was removed from any possible contact. The answer to this is as follows: (1) This statement is made in connection with all infectious diseases; (2) it emanates chiefly from the family and not as a result of a careful investigation; (3) in order to prove that a disease is transmitted by personal contact, it is not required that the source of infection in all discovered cases shall be established. It is only

needed that proof shall be presented in a reasonable number of cases. It may be said in passing that the communicability of measles by personal contact is not questioned; yet the identity of the organism of this disease, like that of poliomyelitis, is yet undetermined. In both diseases we have satisfactory evidence that the agent of infection is contained in the discharges from the mucous membrane of the nose and throat. In addition there is satisfactory evidence that in poliomyelitis the infectious organisms exist also in the intestinal tract. Unfortunately the latter has not yet received proper attention, at least so far as preventive measures are concerned.

No one who is practically familiar with infectious diseases doubts that there are some unusual means of transmission; and while these should be given proper consideration, it is the common sources of infection which must chiefly engross our attention if we expect to be successful in preventing outbreaks of poliomyelitis or any other infectious disease.

We may conclude that the transmission of poliomyelitis by personal infection is proven, and that the most dangerous medium of infection is the mild and unrecognized case, for, as a rule, such persons are under no control and may convey infection in any direction. Proof is wanting that poliomyelitis is *commonly* transmitted by well persons who act as "carriers," although the latter means of conveyance undoubtedly occurs in poliomyelitis as in the case of other infectious diseases. While it is true that specific organisms are transmitted to others in this way, it is also true that this theory of the transmission of diseases is too frequently accepted. This is due largely to the fact that it offers a plausible explanation for the appearance of an infectious disease, the origin of which cannot be clearly determined. The danger of this lies in the fact that it discourages a careful investigation to disclose the true source of infection, which is commonly a mild or unrecognized case.

The preventive measures in dealing with poliomyelitis are similar to those employed in connection with other communicable diseases; the detection of both well marked and mild or previously unrecognized cases; the observation of all cases of illness associated with these, the diagnosis of which is not clearly defined. It is exceedingly important to determine as far as possible the source of infection in each case. To this is to be added isolation of the patient and the most careful protection against contact with infectious discharges.

These methods of prevention are most successfully employed in the beginning of the outbreak.

The proper observance of the methods above described is quite sure to be successful in dealing with outbreaks of poliomyelitis as well as other infectious diseases, and leaves no excuse for the enforcement of unreasonable and hysterical regulations for the protection of the public during these emergencies.

It will not be out of place to speak at length of a most important factor in the prevention of all infectious diseases and one which unfortunately has received far too little consideration. I refer to the cooperation of the public. It is true that health departments throughout the United States issue bulletins relating to the preservation of health, but these do not reach the people among whom outbreaks of infectious diseases most commonly occur, nor do these bulletins contain information prepared in a simple and concise manner and in various languages in order that they may be understood by all; furthermore, many of the class of people referred to do not read. Welfare societies throughout the country render valuable aid in the dissemination of knowledge concerning the means by which health may be preserved. The press is also active in publishing information upon the subject of public health; but these agents do not convey information of a uniform character issuing always from authoritative sources and which reaches the people who are most urgently in need of this instruction.

The apathy of the public in the presence of an outbreak of infectious disease is not the result of unwillingness to aid in this emergency or of ignorance of the danger which is involved under these conditions, but is due rather to the fact that the public is not familiar with sources of infection and the manner in which it may aid in preventing the dissemination of these diseases.

An unusual opportunity to study this feature of public health protection was presented during the investigation of the Mayor's Committee. The homes of two thousand or more families were visited to obtain the views of these people regarding the means by which infectious diseases are transmitted, and to what extent they were willing to aid in preventing this danger. Those interviewed were principally mothers or other members of the family who remained at home and were responsible for the care and protection of the household. These are the people with whom we must deal in securing cooperation against the transmission of infectious diseases. Their opinions as to media of infection were fantastic and far from the truth. Only a few had received any authentic information upon the subject, although practically all stated that they were anxious to know how they might help in this direction in order to save the lives of their children.

There is abundant evidence that the present methods of educating the public regarding the means by which infectious diseases may be prevented are insufficient and unsatisfactory. Information to be of practical value must come through sources which appeal directly to the confidence of the masses. There is no more effective and valuable agent for this purpose than the trained nurse who visits the home and personally explains the subject. Pastors of churches also constitute a valuable means of conveying the needed information. There is not the slightest doubt that many clergymen would willingly devote a certain length of time to the instruction of those under their jurisdiction along the lines just referred to. Heads of the various associations and orders to which many of the poorer classes belong, particularly foreigners, would also be valuable teachers. Other practical methods may be devised by which information concerning the prevention of disease may be transmitted to those who are in greatest need of this instruction. Furthermore, *the information thus imparted should have the sanction and indorsement of expert practical sanitarians.* By these means the public may be taught to render most valuable assistance and cooperation in the preservation of health, particularly during outbreaks of infectious diseases.

205 West Fifty-seventh Street.

CIVILIZATION AND CHILDREN'S DISEASES.*

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THE influence of civilization on morbidity and mortality in infancy and childhood should furnish most amazing data could the actual morbidity and mortality of uncivilized races be obtained. Such races furnish some hygienic conditions not found among the civilized. They live more in the fresh air— that is, they have poorer facilities for excluding air from their habitations than have the civilized nations. Their occupations being manual they should afford more perfect bodily development for the propagation of their progeny, and the mothers should be better able to nurse their babies than the women living under civilized conditions. Such mothers are free from most of the confining duties of the modern mother, such as service on committees, attending close rooms for lectures and religious services, sewing circles, afternoon teas and balls.

On the other hand, adverse conditions exist that far outweigh these advantages. The absolute lack of medical care, the inability to provide proper artificial feeding in case of lack of breast milk, the unsanitary surroundings with the opportunity for sputum and fecal contamination, and the uncontrolled spread of disease, for in many epidemics children are more susceptible than adults. It will be recalled that in Koch's investigations in Africa he was able to obtain an index of the amount of malaria in any community by examining the blood of a certain number of children. In the days before vaccination smallpox attacked chiefly the young children. In addition to this we have the intentional neglect of some babies, particularly the female children, in certain countries.

In distinction from this condition of things we can say that the intelligent and efficient administration of any community now may well be judged from its infant mortality. It has recently been stated by a Roumanian physician that the infant mortality of that country is 50 per cent.—that is to say, one-half of all the children born in Roumania die before the end of the first year. It is within my recollection that more than one-fourth of the babies born in New York died within the first year, and it is only since the government of the city has been taken out of the hands of corrupt political bodies and administered by intelligent officers that this mortality has materially decreased.

In Russia before the war the infant mortality is stated to have been 26 per cent. The infant mortality before the war was higher in the Central Empires than among the Allied Powers of Italy, England and France, thus the infant mortality of Austria-Hungary was 22 per cent., of Germany 19 per cent., while in Italy it was 17 per cent., in England 12 per cent., and in France 10 per cent. In France infant life had been a source of particular care on account of the rapid diminution in the birth rate.

The infant mortality of this country has never been obtainable on account of the fact that in a considerable portion of the country the births are still not registered.

In New York City the infant mortality has been for three years less than 10 per cent., and this is better probably than that of any European country excepting Sweden, where the mortality is 7½ per cent. This low mortality in New York City has been attained through the efficiency of the Board of Health, the multiplication of milk depots and other agencies for the proper education of mothers in the tenements, to the gradual improvement of the milk supply, and of the hygiene and housing in the city.

Civilization, with its accompanying medical research and rapidly increasing knowledge, is producing results in the morbidity of children that could never have been expected. Thus infant mortality must have been materially diminished at the time vaccination was introduced and its accompanying elimination of smallpox from the material cause of death. In more recent years the knowledge of the causation of malaria by mosquitos has stimulated the drainage of stagnant water, which has eliminated from well administered communities, to a large extent, the deaths of infants from malaria.

Probably our most effective exhibit in the reduction of infant mortality is in the deaths from diphtheria. A death rate of 32 per 10,000 in 1894 in New York City was reduced to 3½ in 1909 and ⅛ of 1 per cent. in 1916. There is, therefore, now only one death where in 1894 there were 256.

The mortality from pneumonia is being diminished, but not by the use of specific sera, for, unfortunately, the Group 1 pneumonias which are amenable to such treatment are very rare in children. The reduction in mortality, therefore, from this disease is attributable to rational methods of treatment; the rapid emptying of the stomach and bowel contents, and the free access to fresh air. The ordinary mortality of pneumonia in children treated in hospitals is given in the textbooks as from 30 to 50 per cent. By the use of out-of-door treatment at The Roosevelt Hospital I have obtained in twenty-one successive uncomplicated hospital cases of lobar pneumonia a death rate of 4.7 per cent., and in thirty-one successive cases of uncomplicated bronchopneumonia a death rate of 3.3 per cent.

By the same method of treatment and the securing of sanitary quarters, as far as possible, the pulmonary tuberculosis death rate in New York has diminished in the past six years from 2.37 per cent. to 1.5 per cent.

The same sanitary methods have apparently influenced other diseases for which we have discovered no specific cures. Thus we find that the death rate from measles has decreased from 0.16 to 0.09 and that of scarlet fever from 0.20 to 0.02 per cent. These latter figures may be due to a milder character of the epidemics, but it seems to me probable that they are all due to better hygiene and care.

When crowding in public conveyances is forbidden by municipal ordinances; when our public schools are under more efficient medical supervision and children exposed are kept from school during the end of the period of incubation of the disease to which they have been exposed; when the benefits of fresh air are appreciated by the general public and the fact that the cold air of winter is much healthier than the warm air of summer; when peo-

*Read before the American Academy of Medicine at its 42d annual meeting in New York City, June 4, 1917.

ple stop overclothing their babies and children and stop overfeeding them with indigestible and irrational food; when the value of good health and the misery of sickness is better appreciated, our present mortality statistics in which we all now take pride will seem a disgraceful slaughter of infant and child life.

211 West Fifty-seventh Street.

CIVILIZATION AND THE DISEASES OF ADULT LIFE.*

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Probably no two persons would give the same definition of civilization. It is "at best," as some one has said, "one of those phantom generalizations which the mind is forced to employ." One person would define it ideally as an elevation of social and individual life, a state of refinement and enlightenment; another would base his definition upon the degree of civic organization, upon the liberty, law and order under which a people live; while a third would consider the material development of a country as indicative of its stage of civilization; and a fourth would stress intellectual attainment.

Again, civilization may be viewed from the standpoint of historic age periods, as the Egyptian, Roman, Jewish, or modern civilization, that with which we have to deal in our present discussion.

That either material or intellectual development really civilizes is negatived by what is now going on before our eyes. We see a people highly developed in these two directions exhibiting in their methods of warfare almost every form of extreme barbarism. Nay! barbarism enhanced by the very "culture" they boast of.

It looks as if our ideas of civilization must be materially reconstructed if we are to permanently exist upon the face of the earth. Our modern civilization, like all that have gone before it, has apparently been weighed and found wanting, and when not engaged in destructive wars, and industrial methods which more slowly, but just as surely, lead to untimely disease and death, it seems likely to verify Kay Robinson's prophecy as regards those who remain, that they will be "toothless, bald, toeless creatures with flaccid muscles and limbs almost incapable of locomotion." Compare such a sorry product of modern civilization with an uncivilized North American Indian!

"We find ourselves to-day," says Edward Carpenter, "in the midst of a somewhat peculiar state of society, which we call civilization, but which, even to the most optimistic among us, does not seem altogether desirable. Some of us, indeed, are inclined to think that it is a kind of disease which various races of men have to pass through, as children pass through measles or whooping cough."

My especial subject deals with the effect of this kind of civilization, so-called modern civilization, upon adult life, which may be considered to be the period from eighteen to thirty-five or forty years of age. What are the diseases peculiar to this age period more or less attributable to the influences of modern social and industrial conditions?

This is an age of intense living and endeavor; an age of daring venture, of unlimited ambition for accomplishment, physical or intellectual; an age of lavish expenditure of one's forces, both by the individual and the exploiter of labor; an age when one's passions are most insistent, when social demands are great. It is the age of childbearing, with all its risks. It is the age, in brief, which thinks little of conservation of health and the avoidance of disease; an age prodigal of its forces, which seem to it to be imperishable and perennially renewed. Of course, it is hardly necessary to say that this period of life is not immune from any of the diseases which may happen to man, though, as a rule, it is exempt from those we call the degenerative diseases, which generally occur later in life.

It is the diseases or damages most commonly met with in this age period which may be fairly attributable to the evils and untoward influence of modern civilization with which my especial subject deals.

First: There are the so-called occupational diseases produced by injurious influences or poisons occurring in one's occupation, such as lead poisoning and poisoning from various gases, diseases caused by dust of various kinds, as in grinding, stonecutting, cotton and shoe manufacture, etc.; occupational neuroses from overfatigue, whatever the kind of work. It is at this age period when one is careless of his health and at his maximum strength and efficiency that these occupational diseases are most frequent, and the loss to the individual, to his family, and to the community is very great in consequence.

In recent years this subject of occupational diseases has been exhaustively studied and much has been done to obviate the avoidable risks in many occupations, both through private effort and public legislation: for example, there has lately been established at the Massachusetts General Hospital an "Industrial Clinic" with a salaried physician and secretary, which deals solely with the diseases which may be considered to have been caused by the hazards of the patient's occupation. It is obvious, however, that so long as the public demands the innumerable and varied articles which it considers necessary accompaniments of present-day civilization (from the green flowers upon a woman's hat to a finely cut tombstone) many occupations which produce these articles must, from the nature of the occupation, be conducted under unwholesome conditions. It is the price we pay for this kind of civilization. We are sacrificing to an enormous extent men and women of adult life as the result of occupational diseases.

A second disease which is more prevalent at this age period than at any other is tuberculosis. You are all familiar with the world-wide efforts now being made to control it. The majority of cases, it is now believed, receive their infection in childhood, and later if active tuberculosis occurs it is so often due to untoward conditions of living and work which arouse into activity the old latent childhood infection. In other words, it is from condi-

*Read before the American Academy of Medicine, at its 42nd Annual Meeting in New York City, June 4, 1917.

tions caused by present-day civilization that a favorable soil is prepared for the tuberculous crop. Hence the manifold efforts to procure for the wage earner better and healthier conditions of working, better housing, a living wage, the avoidance of all debilitating conditions and excesses which lower the resistance, and earlier diagnosis and treatment. What has been already accomplished in these directions is familiar to all, and the gradual diminution of the disease may be ascribed quite as much to the general improvement of health conditions as to the attempts to control the infection itself, which seems almost a hopeless task. In spite of all that has been done tuberculosis still remains one of the most prevalent diseases of this age period.

Another disease condition pre-eminently one of this period is venereal in its two manifestations of gonorrhea and syphilis. Recent investigations and statistics have demonstrated the wide prevalence of these menacing diseases, inflicting upon both the sinner and the innocent victim so much misery. Commissions in this country and abroad are active in investigating the conditions which favor its spread and in plans for its control and proper treatment. Notification, as in the case of tuberculosis, has been proposed and indeed instituted, I believe, in some communities. More and better opportunities for treatment have been afforded. Prophylactic measures have been widely taught, all indicating the desire of modern civilization to mitigate the terrible evils of this disease, while at the same time it is continually affording conditions for its incidence and spread. It is like the saloon and the dipsomanic hospital. It is the Sisyphean tragedy over again.

The sexual instinct, one of the strongest in man, cannot with safety be repressed or in so many cases be controlled either by law or religion, and hence the hope of reasonably early marriage seems to me to be the fundamental and natural remedy for the venereal evil. In the early days of our country when life was simple and one's wants comparatively few, marriage was regarded as the natural and inevitable course for young adults; Colonial history tells us that but few passed the age of 25 or 26 without being married. The young couple carried on the struggle for existence together, each making his or her contribution to the common life. Many children were born and were not considered an additional burden but a valuable asset in increasing the family possibilities of making a living. Birth control was not preached or thought of.

Now all is changed. The young man with aspirations to get on, not born with a silver spoon in his mouth, thinks he must defer marriage until he becomes established in a remunerative position or acquires property, and the young woman too often looks for a partner who can support her, not for one with whom she can cooperate in gaining a living. Hence the number of unmarried men and women or late marriages.

Not all young men are St. Anthonys and some women are of easy virtue; hence with the prospect of marriage only in the dim future the temptation to sexual lapses at the period when the sexual instinct is most insistent and persistent is very great and with some irresistible. And one of the inevitable consequences of this condition of modern civilization is venereal disease.

Many and manifold are the efforts to control it: Sex education, sex lectures to college students, moral inculcations, religion, special dispensaries and hospitals, prophylactic methods, notification and salvarsan. It is to be hoped that much will be accomplished by these various methods in reducing the prevalence of venereal diseases, but I cannot help believing that early marriage is the fundamental remedy, and this the present-day civilization, at least with the better educated class, to a large degree denies. One is reminded of the fable of the road along the edge of a cliff, over which so many fell as they rode along, that a meeting of citizens was called to raise funds for the purchase of an ambulance in which to convey the victims to the hospital. While discussing the ways and means someone mildly suggested that they put up a fence along the dangerous road and then there would be no need of an ambulance.

Second: Another evil of this age which sooner or later leads to disease is the use and abuse of alcohol. With some disease from this cause comes early, while with others the reckoning is deferred until middle life or later. Besides various definite diseased conditions induced by the constant use of alcohol, we have mental and physical deterioration, a weakening of will power, and hence a ready yielding to other injurious influences, a lowering of one's normal resistance to infectious diseases, such as pneumonia and tuberculosis. As someone has said, "Alcohol makes the bed of the consumptive." There needs no argument to show that alcohol used as it is and will be used if attainable by great numbers of average people brings evil results and disease upon themselves and harm to the community. Recent investigations have shown, for example, that instead of being a mental stimulant it is a deterrent to clear thinking. The efforts of civilization to rid itself of the alcohol evil have greatly increased in late years all over the world, as we know, and it now seems highly probable that in no distant future we shall have a "bone-dry" country as now we have not a few "bone-dry" States. The demands of the present war for physical and mental efficiency have done much toward eliminating this one of the greatest menaces to this age period.

Again, this period of adult life, as I have said, is the childbearing period, a function which, with the normal woman, is a perfectly physiological one. The conditions of modern civilization, however, have made it with the so-called higher class of women, one of such stress and strain that it has become more pathological than physiological, and many chronic conditions and often prolonged invalidism result. Indeed, confinement itself has, with not a few, become such a dreaded ordeal that twilight sleep or even cesarean section has become popular in order to escape parturition pains, which ought and could be perfectly well borne by the normal woman. With some this dread is so great that means are sought to prevent conception or render it inoperative. The so-called social demands of city life are so strenuous in present-day civilization that the woman who marries after a wearying round of such life has little vigor left for the demands of childbearing or inclination to pursue it further than the first child or two. The result is inevitable—the steady and rapid destruction of that portion

of our race which calls itself the most highly civilized. The census of the older American families shows this only too plainly. Surely no birth-control propaganda is needed for this class of women. Professor Cattell in a recent number of the *Scientific Monthly*, in an article upon the "Families of American Men of Science," tells us that a scientific man has on the average about seven-tenths of an adult son, a Harvard graduate three-fourths of a son, and a Vassar graduate one-half a daughter. If this is the result of civilization and culture, is it worth the price? If we are to eliminate poverty and disease among the poor and have "happier homes, healthier children, better men and women, a stronger nation and a nobler race," as the birth controllists tell us will result from their remedy, I believe we should seek the true remedy not in birth control, but in a living wage, a juster distribution of wealth, education, frugal habits of living, less individualism and greater community responsibility.

This is an age of intensive living. The demands of its civilization are greater than poor human nature, even in all its vigor of adult life, can satisfy without present or future damage. Indoor life, in office or factory, fierce competition in professional or business life, social exactions in city life, insufficient rest and sleep, lack of time for physical exercise and mental diversion, monotonous work which makes of millions beasts of burden—these and many other abnormal influences make such strenuous demands upon one's vital energy that many fall by the way before middle life is reached or enter it permanently disabled. How many young old men we now see!

There is also the class of the idle rich and those who have no steady occupation or definite aim in life, who are an excrescence of modern civilization and who are ready victims of many evil conditions or disease engendered by their mode of life. This seems to be particularly true with women of this class at this age period, and hence the common disease or condition we call neurasthenia, a pathetic state, rendering its victims miserable in body and mind and making havoc with the equanimity of the family.

Finally: Although modern civilization, as we have seen, has much to answer for in the evils and diseases it inflicts upon adult life, it also has much to its credit. Not many years ago typhoid fever, for example, would have held a prominent place in the diseases of adult life. Now, however, it is almost negligible in comparison with its former prevalence, thanks to a more rigid milk inspection, a pure water supply, better sanitation and antityphoid vaccination. Diphtheria, again, has lost its terror through its antitoxin, and surgery is now preserving many adult lives from an untimely death from appendicitis, and so with many other formerly prevalent diseases.

Three years ago we were congratulating ourselves upon these and many other advances in the prevention of disease, and upon the general progress in social uplift. The average life limit was increasing. Our International Scientific Congresses seemed to strengthen the ties of universal brotherhood. We were all engaged in the peaceful and beneficent work of eliminating the evils of modern civilization and developing a vigorous adult life. We contemplated with satisfaction the high achievement of laborious centuries in the prevention of disease, and we thought we saw the distant gleam of that day which the great prophet predicted in his beautiful imagery when "the wolf also shall dwell with the lamb, and the leopard shall lie down with the kid and the calf and young lion and fatling together; and a little child shall lead them." Then suddenly the thin wall of civilization seemed to burst asunder and let loose the immeasurable fury of a brutality masqueraded in the garb of culture. And now it seems almost farcical to be discussing the diseases and danger of adult life when it is being wantonly destroyed faster and more cruelly than was human life by the Great Plague of the Middle Ages.

When one considers this vast cataclysmic collapse of our modern civilization with the loss of so much which had been achieved through long years of painful effort and the best of young manhood daily sacrificed in hecatombs, he is inclined to agreed with Edward Carpenter that "civilization is but a disease whose cure we still have to seek"; or with Dr. Eastman, of Indian birth, whose experience covers the whole range of civilization, that "behind the material and intellectual splendor of our civilization, primitive savagery and cruelty and lust hold sway undiminished."

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CIVILIZATION AND THE DISEASES OF MIDDLE LIFE.*

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It is a little difficult at this particular time to define just what one is to understand by the term Civilization and in a way many of us feel that the use of the word now obligates some sort of an apology. however taken in its relation to disease, this frank admission of shaken faith seems to obviate the customary explanation. Not in this relation alone, but in many others also, it seems as though the methods and life of those whom in the past we have chosen to call uncivilized have certain advantages. This is especially evident since the brutalities and bestialities of man of today exceed those of the so-called uncivilized man, or, as Mark Twain has so caustically pointed out in his posthumous work, excel even those of the beasts. There appears no longer necessity for the open question of whether in many ways we have not deteriorated rather than improved as we have gone on in our supposed evolution.

Hrdlicka has shown that at least among the Southwestern tribes of the Red Indians, longevity and health are much more commonplace than among ourselves, and La Fleische the Omaha has well remarked that in his recent struggle for health the white man has been forced to learn the customs and imitate the life of the red man, who in turn has been forced by legislation and by religion to abandon the very habits which gave him health, longevity,

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and morality and which some of us are now wisely learning to imitate.

Middle life may be looked upon as the proving period from a health standpoint of the soundness or otherwise of the methods of the earlier life. In youth and early adolescence, inherent, congenital health and stamina may carry through existence and tolerable activity; in old age deterioration and abatement of physical and mental force are as natural as are the habits of infancy. It is then in middle life, when the quality and quantity of productiveness should be at their maximum, that our truest test of life methods appears. There be indeed few who, as Stradivarius at 93, can still produce the acme of art and soul, and it is the middle period only which gives forth the matured and characteristic of most lives. It then is the time of life for which all anterior periods are preparatory and which should be succeeded by the time of reward and laurels—old age.

It behooves us then to consider particularly the effects of civilization on middle life, and especially in its relation to disease, since this is the period when a man should be of greatest economic and spiritual use to his country and to his kind. Conditions which, no matter how beneficial they may be to early adult life, hamper the middle period, are harmful in those most fruitful years when judgment and experience should be still combined with force and virility.

Civilization has in its development evolved specialization. A man is no longer his own farmer, musician, plumber, and preacher. Success in the material world has obligated a specialized life. The successful physician or scientist has no longer time to do the physical things of his life, to work in his own garden, make his own apparatus, to care for his horse, or even to change his own tires. Those in mental occupations have now become largely unable to attend to even their personal physical demands; the sedentary brain worker has become constipated and the physical worker in his middle age has become a deteriorating mass of bone and muscle, often activated by only selfish, jealous, and unpatriotic motives, dominated mentally perhaps by the demagogue or parlor anarchist.

Probably in no other field of medicine has the penalty of civilization exacted a longer or more severe penalty on middle age than in the realm of cardiovascular disease. Arteriosclerosis, other than the naturally senile type, even today, among those tribes of men living under relatively selected conditions, is rare. Study of the diseases of primitive man, at least in this country, has shown that cardiac or vascular death was infrequent and even the most intelligent tribes had but little knowledge of diseases of this character. Early mental deterioration and insanity were so unusual among the Indians that persons afflicted with these calamities were and are looked upon as special and unusual manifestations of the divine wrath. They are the commonplaces of our time and kind. Undoubtedly cardiovascular disease together with its closely associated renal disturbances has greatly increased as the customs of civilization have developed and these are the dominant disease conditions of present day middle life.

In so short a time as is allotted to the consideration of this subject today it is of course impossible to enter intimately into the discussion of the why and wherefore of this acknowledged fact, but in brief it may be considered as mostly due to the conditions of mental worry and strain, with their consequent elevation of blood pressure which the conditions of modern life impose. Lack of balanced or correlated physical exercise is also an undoubted factor in this relation, for it is very doubtful if, when the results of dissipation are eliminated, hypertensive conditions develop in lives typified chiefly by physical output.

Insufficient and irregular sleep are also undoubted factors of great importance in the evolution of those disease conditions which develop peculiarly in middle life. It is more probable that it is the insufficiency rather than the irregularity of the sleep which is chiefly responsible, for the hunter or warrior seem to have suffered but little from irregular rest, which was as insistent a factor in his life as the attending of medical societies is in ours.

We have probably generally underestimated the importance of recreation in the prevention of the hypertensive and degenerative disturbances of the vascular and renal system in middle life. Unfortunately with us most of those engaged in lives of great mental activity also take their pleasures in a mental way, they study or read perhaps other subjects, but always with the same type and direction of energy dispersion, using even in rest the same overworked mechanism. True, many of us are learning to imitate the red man and go to the hills and streams for our pleasures, and the hill man comes to our cities to hear our music and to read our books and to go to our colleges, while we go to sit at the camp fire of this or that man who lives close to nature. Burroughs, Thoreau, Jim Simpson, and Tom Buffalo teach and treat us.

Another type of disease which also becomes a very serious element in middle life and which also seems to be dependent for its predisposing essentials in great measure on the customs of civilization embraces the disturbances of the respiratory tract. The chronic catarrhal conditions of the cities and of the dusty occupations, the emphysema of the gouty and the subject of the occupational disease first become of serious import during middle age. The tuberculosis contracted in the class room or the sweatshop or in the compact community of the prison, may not become seriously disqualifying until this age. These are of course typically the diseases of civilization, conditions which history shows us beyond doubt were infrequent, almost unknown in primitive man. Anthropological authority states that with the primitive Americans these diseases were unknown. However, following the observation first made by Darwin (Voyage of the Beagle), that when any infection is introduced to a primitive and utterly unaccustomed people it rages for a time with terrific vigor, tuberculosis has raged among the reservation Indians and syphilis among the Christianized islanders of the Pacific. It is interesting to note that for our really basic principles of treatment of these conditions we have mostly reverted to the life environment of that man who, in our superiority of civilization, indexed by the Zeppelin and U boat, we have called the savage.

Pneumonia, which assumes its most serious and

grave aspects in middle or late life, is a disease of civilization. We are lately almost of the opinion that this disease, which always has been one of communities, is a transmissible infection or perhaps contagion. In our prophylaxis, and even in our more sensible hygienic treatment, by the open air method, we have reverted again to the habits of our red progenitors.

The numerous disorders of digestion usually become most annoying, if not most insistent, during the period allotted to me. The man who hitherto has been able to go to public dinners indiscriminately, who has overnourished himself with rich and unnecessary foods, now becomes interested in diets, in calories, in pepsin and the antacids, and in various food fads that he may undo the harm which the dietetic customs or temptations of civilization have offered him. When one enters closely into the analysis of most of these cases of dietetic disturbances, one finds that the elemental flaw is in the taking of too rich a diet, if not as a whole in actual calories, then in certain parts of the diet and notably in the nitrogen elements. It is of course foolish to think that any one diet can be fitted to all classes of men—for instance, that the food of a soldier or sailor is that suitable for the student or artist. The food must be adapted to the energy needs, to the habits, habitat, and occupation of the patient. In civilized youth and early adult life the taste of the patient together with his opportunities chiefly determine; in savagery it is necessity and obligation. But in middle life a more careful study is demanded, and, say what we will, it becomes in the end a study in individualism, since neither two persons nor two horses demand the very same diet in quality or quantity.

It most cases where dietetic changes for one or another reason are difficult or impossible, the same result may often be encompassed by changes in the other factors of life. The sedentary man finds that he can comfortably take an ordinary diet when he favors combustion by adequate and suitable physical effort. The trainer or soldier of middle life finds that he can manage his customary diet by more physical inactivity, by a short period of rest after eating, as the sensible animals do, or by a more sensible spacing of his meals.

Middle life is notably the period in which the diseases of metabolism become most manifest. It is then that diabetes becomes most frequent in occurrence, though of course by no means so serious in its fatalities as when it develops in earlier life. Let us see to what extent the habits of civilization contribute to the disorders of this character, obesity, hyperacidity, and the large group of hepatic disorders. Nearly all these conditions entail, as a primary essential in their treatment, two factors—change or elimination in diet, increase or alteration in exercise. In nearly every concrete instance even you will note that the alteration is in a direction harking back nearer to the custom of our ancestors. The native who secured his sugar mixed with much cellulose or other form of vegetable pulp, as from cane or from the sap of maple or box elder or from the juice of natural fruits, suffered little from strain of his sugar tolerance and the man whose meat supply was contingent on a climb to the haunts of the big horn or a brisk gallop on an unsaddled pony in the buffalo drive, did not contract gout. The tribes whose starchy foods must be carefully and laboriously collected from the fields of wild rice or painfully nurtured in a Hopi cornfield and stored up for the winter or those whose fats were won with bow and arrow, have not suffered from hyperacidity. The Esquimo, who must struggle and scrimp for every ounce of his essential fat, has not required the service of Oertel or von Noorden. All the diseases in this protean class are essentially the result of the customs which civilization compels or invites. Their cure lies in practically a reversion to the conditions of uncivilization as we still speak of it.

Middle age is the period of carcinoma. It is of course most difficult to judge statistically of a subject so dependent for accurate diagnosis on methods which involve to so high a degree the detail of modern science. However, if we may be permitted to judge from the general lack of study and description of the neoplasms by the ancients, we must conclude either that the conditions were rare in olden times, certainly more so than now, or that the scientists and physicians of that date failed to observe them. This would seem unlikely when we consider the accuracy and astuteness with which many other disease conditions were described by our medical ancestors.

Study of wild animals born and bred under natural environments indicates the exceeding rarity of neoplasms among them as compared to impure species or those which have undergone at least semidomestication, as has the dog, the horse, the white rat and mouse, or our pet birds, especially canaries and parrots among which neoplasms are frequent. It is the universal remark of those who have lived with, or extensively studied the primitive and pure races that neoplasms are but little known among them, notably so if we exclude the granulomata. It is, of course, altogether too sweeping a statement for so few premises to conclude that therefore civilization is a potent factor in the evolution of neoplasms, but it certainly is a fact that uncivilization is exceedingly infrequently associated with new growths.

As a clinician I should not think my time well spent in such a study as this did I not feel that it presented much which can be well utilized in the prevention or mitigation of disease and as a contribution to happiness and to the real welfare of man. I bespeak a return in many ways to uncivilization so that we of middle life may live long in the land which the Lord our God giveth us. Incidentally that we may turn out as much or even more work of higher and more original character.

The keynote is in the living of better balanced and less specialized lives. The artist must again be in part artisan, the thinker also workman. Few sculptors now actually hew and chisel their marble; that is done by workmen; yet Michael Angelo, soldier, musician, engineer, sculptor, and painter, shaped his own immortals and is still rated as a good artist. We have delicate machinery and perfected tools, beside the crude implements of Amati and Gunarius; we think that the science of acoustics is comprehended by us, and yet the vibrations of the souls which the artisan Stradivarius shaped in his fiddles still thrill the world, and he and his Cremonese colleagues have no equals.

Years ago, when Columbus was a puling infant, the Duke of York, said to be the same kindly and quite modern gentleman who preceded the army of the King with the head of his uncle on a pike, wrote a description of rabies which, aside from the vaccination treatment, has left little for civilized science to discover or originally describe. (The Master of Game).

But we of civilization are learning. I doubt if there be a really good trout stream in America which is not known to some clergyman, doctor, or professor. A great surgeon has become a nut culturist. The banker and broker have their weekly day on the golf course. We are studying our diet and our exercise, we are finding that the greatest in any art, craft, or science is often achieved by a balanced life, of mingled physical and mental effort, by a sparing and individually studied diet, that is by a busy life, seamed and savored with a vein of diversion and relaxation, which are as essential to a healthy and productive middle age as are salt and water to our diet. When we have fully comprehended that much of civilization is disorganizing and much of savagery elevating and healthful, we shall have prolonged middle life and freed it in large part of many of its most serious disease conditions. We shall have also extended and improved our usefulness and originality.

5 West Ninth Street.

THE EARLY DIAGNOSIS OF TUBERCULOSIS.

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Tuberculous processes in the lungs may be classified according to their location and nature into two main types: those chiefly developing upon the inner surface of the air passages and those extending along the bronchial sheaths and not entering the air passages. A combination of the two forms the mixed types.

Tuberculous processes developing upon the secretory surfaces of the air passages attack the functional tissues of the lungs and are called parenchymatous; those extending along the sheaths of the bronchi and not attacking the functional tissues of the lung are called interstitial.

Parenchymatous tuberculosis resembles catarrhal pneumonias: there is an inflammatory reaction resulting in hyperemia, transudation, exudation, proliferation, desquamation, increased secretory activity and the accumulation of the products of inflammation. The cellular proliferation, the accumulation of cellular débris, fluids, mucus and pus gives more or less density to the tissues which is manifested physically by tactile and vocal fremitus and dullness; the inflamed surfaces of the air passages and pressure from the surrounding infiltrations exaggerate and roughen the breath sounds: Necrosis, caseation, mucus, etc., cause the appearance of râles. The decomposing tissues and tubercle bacilli liberate toxins which destroy the ability to assimilate food and the desire for it so that there is a loss of appetite, weight, and strength. The irritated tissues demand the removal of pus and mucus by coughing: vasomotor relaxation is expressed by dyspnea on exertion: increased temperature and a rapid pulse show the toxemia, etc.

The characteristic feature of parenchymatous tuberculosis is the broncholobular pneumonic reaction caused by the presence of tubercle bacilli upon the secretory surfaces of the air passages. Unless the site of attack is too deeply covered by a cortical layer of normal tissues, these pneumonic densities are betrayed by physical signs. Their nature produces physical signs and symptoms.

Interstitial tuberculosis is exactly the opposite. There is no attack, no defense, and no inflammatory reaction. Just as connective tissue infiltrations creep through the liver, spleen, kidneys, and pancreas and cause the atrophic, cirrhotic liver, the granular, contracted kidney and the sclerosed spleen and pancreas so does this interstitial sclerosis of the lung gradually obliterate one functional lobule after another until finally fibroid phthisis results. The interstitial infiltrations of these organs are all analogous with each other and all characterized by the subtle extinction of functional capacity, and a prolonged course which is not associated in the earlier stages with physical signs or symptoms. The absence of inflammatory reaction corresponds to the absence of diagnostic data, but this absence never proves that there is and can be no danger in the future from these tuberculous infiltrations.

Fibroid induration of the lung—or interstitial sclerosis—begins at the hilum probably as extensions of tuberculous processes from the bronchial glands; whether the bacilli are carried along by the back wash of sluggish stasis in the circulation surrounding the hilum, or whether they advance point by point by direct contiguity does not greatly matter. The important feature of these infiltrations is that they are not processes of inflammation but of organization. They are connective tissue reactions outside of the parenchyma. These sneaking, creeping infiltrations thread their way through the lungs—without doing any great harm—until they advance along the walls of air passages unable to withstand their contracting influence so that their lumen is narrowed, when the air passes through less freely and the weight of the atmosphere is not well transmitted. Often the air passes on to the terminal lobuli more freely than it can return, because the stenosis is relieved by inspiration and enforced by expiration. The insufficient entrance of air causes a reduction in the force of the breath sounds, the tardy return of the air causes prolonged expiration. The degree of constriction not being the same through all the smaller air passages, the degree of stenosis varies and with it the ability of the inspired air to distend the lobuli with equal force and promptness. Instead of the uniform prompt unfolding of all the lobuli, one after another expand often with creaking and grumbling, so that the unequal entrance of air causes interrupted breath sounds, or cog-wheel breathing. As the stenosis increases, the terminal areas supplied by the obstructed air passages collapse and form areas of atelectasis which furnish tactile fremitus, but not dullness, which is one of the last signs to appear. These atelectatic areas are not inflated by inspiration and the intercostal spaces

covering them remain depressed as the air passages become stiffened and thickened by the scaly barnacles covering them. They lose their ability to stretch as the chest wall is pulled out and the intercostal spaces lag in inspiration. As the stiffness begins in the hilum there is often dimpling over the roots of the lung, until even the ribs are held back and flattened-lagging areas are seen. The lumina of the larger air passages are not compressed—they remain open and their air content, instead of being diminished, is often increased by the delayed expiration and lack of the normal force of collapse of the terminal areas to drive the imprisoned air out against the weight of the atmosphere. There may be, therefore, no dullness but rather better resonance than normal, even over flattened lagging areas.

In our experience we have found that these connective tissue infiltrations are most apt to follow the main bronchi up from the hilum through the paravertebral or parasternal regions on into the apex. The first physical sign obtained is increased tactile fremitus in these regions. Then suppressed uneven interrupted breath sounds and prolonged expiration-areas of lagging and flattening are characteristically seen between the second rib and the clavicle, dullness is sooner and more often found over the hilum and paravertebral or parasternal regions—the supraclavicular regions have not been affected as soon in our cases. D'Espine's sign has almost always been present.

The final danger from sclerosis of the lungs is loss of breathing power, but this is too remote to be often reached as a typical result. Before the sclerosis completely strips the bronchial branches of their breathing spaces, necrosis, or perforation of an air passage or rupture of blood vessels changes the purely fibroid into fibro-caseous or caseous-fibroid and parenchymatous types with their physical signs and symptoms.

From the beginning of extension of tuberculous processes from the bronchial glands into the lungs to their logical termination in fibroid phthisis, or in parenchymatous pneumonias, their progress is complicated and uncertain. They may persist throughout life with little or no impairment of health, and good working capacity, or they may rapidly cause death by hemorrhage, acute miliary tuberculosis, the typhobacillemia of Landouzy, or caseous pneumonias. In their purity, sclerosing infiltrations are of indefinite duration, and, as a rule, they do not affect the health specifically as the parenchymatous inflammations do, so that they are apt to be overlooked until complications develop or until a sufficient advanced stage is reached. Until this happens these tuberculous processes remain clinically inactive and constitute the great world of concealed tuberculosis, which we are just beginning to explore. Latent or concealed or clinically inactive tuberculosis represents that period of development of sclerosis of the lungs which has not created symptoms associated with the diagnosis of tuberculosis. When we discover physical signs in the lungs, showing beyond question that they are of a tuberculous nature, we say that the case is of no importance clinically unless we recognize the bad effects of tuberculosis by cough, pulse, temperature, loss of appetite, weight and strength, etc., etc. When we dip down into the sea of clinically inactive or concealed cases of tuberculosis and fish up a case with physical signs, but no symptoms indicating any bad effects, we say that it requires no treatment, is of no clinical importance and drop it back again among the other concealed cases just as we would drop back a fish not large enough to fry. The questionable point in this procedure should be whether it is better to dismiss or retain such a case under observation. We know of any number of such cases with excellent working capacity often hampered somewhat by lack of strength, but by no means justifying a tuberculous regime. If we should withdraw every case of tuberculous sclerosis of the lungs from active pursuits what an extraordinary accumulation would result. All professions, all ranks, all classes would be represented. With sufficient training the detection of sclerosis of the lung becomes so easy and the number of cases so great that it is not the difficulty of finding them but their classification after they are found which staggers us. We must avoid ruining a man's activities, but we must also remember that every case of manifest tuberculosis passes through this prodromal stage. We are fully informed of the universality of tuberculous infections of our people. Are we equally well informed concerning the frequency with which this infection results in sclerosis of the lungs? And do we know anything definite concerning its ultimate outcome? Virchow said that at some time or other we all develop tuberculous processes to a greater or less extent. Behring said that the first verse of the funeral chant heard over the grave of a victim of tuberculosis was sung over the cradle of a newborn babe. Phillippi says that the first act of the tragedy of tuberculosis of the lungs is played in the bronchial glands of infants. Naegeli showed that 90 per cent. of all autopsies had more or less pronounced traces of tuberculosis. Hamburger and many others have taught us that an exceedingly high percentage of tuberculin tests are positive. We know that nothing is more common than infection by tubercle bacilli and its consequent termination in tuberculous processes in the bronchial glands and lungs. What we do not know is to what extent these infiltrations are permeating our people. We are told that the proportion of manifest to concealed cases of tuberculosis is as one to eight, but this is merely guess work. We can have no positive knowledge until all our people are examined and reported. Until then we cannot know anything about this world of concealed tuberculosis in which now and then a manifest case is discovered, fished out and put under treatment. During all the periods of delayed manifestations we say that the case is not important clinically. As long as Humpty Dumpty sits on the wall we let him alone, but when Humpty Dumpty has a great fall we do our best to accomplish what all the King's horses and all the King's men could not do. It seems very probable that the future prevention of tuberculosis may consist more in trying to prevent clinically inactive cases from being transformed into manifest ones, than in gathering up the fragments of what should

never have been broken. Less patchwork, less palliation and infinitely more prevention is what we need to keep occult from becoming evident tuberculosis.

We must begin further back and lock the barn door before good health is stolen away from us. How shall we begin this work? To properly work we must first be taught. We need enough research work to establish the necessary foundation for our belief that the new-born babe enters the world of concealed tuberculosis very soon after its birth for the reason that coincidently with other development tuberculous processes begin; that latent, concealed, clinically inactive tuberculosis is prevalent throughout infancy and childhood as well as later life; that this class of concealed cases is characterized by the extension of tuberculous processes through the lungs which do not create the physical signs or symptoms we are accustomed to depend upon for the diagnosis of tuberculosis; that a certain small percentage of these cases become manifest during infancy, early childhood, young manhood, and later on in life, but that the greater number permeate our people without ever being recognized.

In cases of physical signs of tuberculosis of the lungs without symptoms we should know all that the gradual obliteration of the lungs by interstitial sclerosis can accomplish in impairing health. Just because the symptom complex we are accustomed to rely upon does not appear does not justify us in saying that there is no danger. We must remember that all cases of manifest and fatal tuberculosis pass through this period and also that it is quite possible that there are other symptoms equally reliable which were not handed down to us by Hippocrates. If we are to depend upon symptoms, we should know all that can be known concerning them because our sanatoriums are filled, not with victims of tuberculosis, but with victims of ignorance, of lack of knowledge, of mistakes, of blunders, of criminal inability to recognize symptoms offering abundant testimony.

The classifications of these symptoms must include all those caused by all kinds of tuberculous processes in the bronchial glands and lungs because there is no way of knowing whether any symptom is caused by one or the other. We cannot tell whether a cough is caused by pressure from enlarged glands or pneumonic consolidations or adhesions. Systemic injuries caused by tuberculous processes without regard to their location furnish a comprehensive classification and a good working basis for the early diagnosis of glandular and pulmonary tuberculosis which, as a rule, are synonymous with each other.

Combé, Gagnoni, and others think that the first influence of tuberculous toxins is felt in the vasomotor system and is manifested by a fall in blood pressure. The relaxation of vascular walls may be shown in the skin by erythemas, tinea versicolor, erythemia nodosum, acneform eruptions, tuberculides, eczemas, etc. In our histories we find that the exudative diathesis has very frequently preceded the manifestation of tuberculosis and this, together with the beneficial influence of a mountain climate, has led to the belief that it is a form of tuberculous vasomotor insufficiency. Cyanosis of the lips and finger nails is said to be another form of vasomotor dilatations and it is interesting to observe that all these relaxations are aggravated by alcohol and benefited by adrenalin. The same is true of cold, clammy hands and feet, even chilblains, and tendency to sweat which suggests that they are possibly due to lack of sympathetic stimuli. Josue describes four cases of tuberculosis with death from adrenal asystole caused by exhaustion of the adrenals. Heisler reports a case of cardiac insufficiency treated for heart failure which was due to tuberculosis of the bronchial glands without a single symptom suggesting tuberculosis. Pollak thinks that sluggish circulation in the skin underlies the increased growth of lanugo, especially over the temples, the chin, and between the shoulder blades, and the long silky curling eyelashes so often seen in tuberculous children. It is possible that many cases of thick, blotchy complexion with eruptions suggesting syphilis, are really tuberculides of the face and that the acne-like eruptions so often seen on the back and chest are not always caused by indigestion and may be tuberculides also.

As a consequence of vasomotor insufficiency, the circulation in the hematopoietic and gastreintestinal systems is said to become relaxed with consequent stasis, hyperemia, and disturbance of function. In the hematopoietic system the most common disturbances are chlorosis and anemia The chlorotic patient has the same cardiovascular and gastrointestinal and menstrual disturbances with the same depression of the nervous system as the tuberculous patient. One so often represents the other and their frequency is so great, that it seems reasonable to demand the exclusion of tuberculosis in all chlorotic cases.

The anemia is simple or approaches pernicious anemia with the same blood picture of large, dark, oval red blood cells, increased color index, poikilocytosis, etc. Although there have been many descriptions of the blood picture in tuberculosis, we have found it more a matter of personal condition of the patient than an indication of tuberculosis. Secondary infections, empyemas, etc., may give a nuetrophilic count of over 12,000. In some cases there is, even in children, an almost complete absence of lymphocytes; in others they are increased. In cases with almost no leucocytes save the large mononuclears of the myeloblastic series, an exhaustion of the bone marrow has been inferred comparable to the appearance of nucleated red blood cells. In some of our cases we have found a remarkable activity in platelets characterized by their grouping together into rosettes like trypanosomes and showing two distinct types of growth: an elongated form looking something like an attenuated trichomonad and circular forms varying in size and density of staining. The monad forms sometimes suggest a further development like a flagellate like organism sometimes pointed into red blood cells as if about to enter them.

The gastrointestinal disturbances begin even in earliest infancy and are characterized by typical disorders of function seen in gastrointestinal diseases proper or by a highly negative condition leading to atrophy. Infants with positive tuberculin

reactions may continue to gain in weight for an indefinite period and to maintain the appearance of perfect health. The first sign that the infant is not withstanding the toxins of its tubercle bacilli is failure to gain the proper amount of weight. At first this failure is not regarded as important, but thought to be simply accidental until as the months go by loss of weight appears and the babe is seen to be losing in every way. Eventually marasmus results in a typical picture described by Pollak as the tuberculous habitus. Aronade comments on the unsuspected frequency of tuberculous lesions in these atrophic infants. It is probable that many cases of gastrointestinal disturbances are treated upon the basis of functional or structural disorders when they are really symptomatic manifestations of tuberculous toxins. In these masked cases there are two extremes of depression and stimulation of functional activities. In the depressed type the babe does not want to eat, leaves its bottle unfinished and turns away from it with a fretful cry. Older children have to be coaxed to eat and if left alone until they are hungry, the longer they go without food the less they care for it. The secretory activity of the gastrointestinal tract seems to be paralyzed and peristalsis is so inefficient that obstinate constipation results. The abdomen is distended, there is a good deal of trouble with gas, and many of these older patients find their way to specialists for the treatment of dyspepsia. In cases of over-stimulation there is over-secretion with hyperacidity, gastralgias, enteralgias, pain in the right hypochondrium, and region of the appendix. Pain in the epigastrium may be severe enough to simulate gastric ulcer or even the gastric crisis of tabes. In erosion of the esophagus, pressure upon the branches of the vagus has caused the typical picture of gastric ulcer before any sensations of discomfort were felt in the throat. In infants and young children, hyperacidity, diarrheas, gastric distress, nausea, etc., are especially apt to become conspicuous after an acute infection, measles, grippe, etc., or even after a bad cold. Sometimes an exceedingly acid condition develops with inability to assimilate food although the appetite is ravenous and immense quantities are eaten. Since all types of indigestion and dyspepsias and functional disorders of the gastrointestinal tract are induced by tuberculous toxins in infants, children and adults, would it seem unreasonable to exclude a tuberculous foundation?

In the nervous symptom fatigue, loss of strength and inability to produce sufficient energy may be the most marked symptom of tuberculosis. The neurasthenia of hysteria is often laughed at and the patient is told that he is "hipped" or else overworked and needs a little vacation. The infant is listless and depressed; the child wants to keep quiet, does not want to play, and avoids physical efforts as much as it can. This is not always due to lack of energy or ambition, but rather to an instinctive sense of self-protection. The child knows that if it gets tired it will feel badly. Its legs and back and head will ache, it will lose what little appetite it has and feel weak and sick all over. As a rule the child does not explain why it does not want to do things, but when urged to get out to play it evades and remains as inactive as possible. On the other hand, a boy may realize that he is not as strong as his mates, so he takes all the exercise he can get hoping to get stronger and stronger by so doing. He tries to train himself, but instead of getting stronger he feels badly, does not want to get up in the morning, loses his appetite, feels that he is too tired to eat. He sleeps badly, is cross and fretful. After a few days' rest he recovers appetite and good spirits and is himself again. Such a boy often shows rather extensive infiltrations, which makes watchful care highly desirable. Often the heart is stretched and resembles the stretched heart of an athlete.

In the autonomous systems the effects of pressure and toxemia upon the vagus and sympathetic are confused. Some of the pressure effects are well defined as when the fibres of the vagus are compressed in erosion of the esophagus by enlarged tuberculous glands, when there is pain in the larynx amounting even to laryngospasm and marked changes in the quality of the voice, with no changes in the larynx. In these cases the first sign of tuberculosis has been pain in the epigastrium and the clinical picture of gastric ulcers. Lucas reports a case of the removal of a normal appendix for pain caused by tuberculous processes in the bronchial glands. Tabetic changes in the nerve roots in cases of chronic tuberculous meningitis have caused girdle pains and typical gastric crises, together with pain in the abdomen. Are the sensations of abdominal pain coming on before pneumonias due to pressure of the pneumonic infiltrations upon intrathoratic nerves? If so, may abdominal pains be considered as symtomatic of pressure upon the phrenic and vagus nerves by tuberculous or other infiltrations? May the same be said for the pains in the cervical region, the spine and the muscles supplied by the branches of the last four cervical nerves? Pain in the trapezius is a classical symptom of very frequent occurrence and often pain in the epigastrium, especially on a line connecting the tenth ribs, is equally significant. Tracing out the branches of the phrenic and vagus nerves, we find that pain in their terminal areas is very common in tuberculosis. Irritation of the phrenic nerve may be demonstrated by pressure along its course, and the descriptions of sub-diaphragmatic pleurisy suggests that its clinical picture based upon irritation of the nerve endings in the diaphragm may be paralleled by irritation of the nerve trunks. If so, then pain in the terminal areas of the phrenic, whether upon the under surface of the diaphragm or in the cervical region, or down the arm, or even many of the pains commonly regarded as pleuitic, might represent a neuritis of the phrenic nerve. We have had cases of supposed pleurisy coming to us in which the pain accurately followed the insertion of the diaphragm from the sternum to the spine and others with the pain running up towards the axilla so severe as to demand narcotics for weeks, in which the pain entirely disappeared and the temperature also after adrenalin was given. We are beginning to consider many pleurilic pains as really a manifestation in terminal endings of a neuritis rather than inflammatory processes on the pleural surfaces.

In the history of tuberculous patients, chorea and spasmophilia occur so frequently that a cause of relationship is suggested by the influence of tuberculous toxins upon the vagus. Sufficient research might show that vagotonie and sympathicotonie

were induced for the same reason. In the same way, herpes zoster and angioneurotic edemas are so often associated with tuberculous conditions that, like the exudative diatheses, the relationship seems more than accidental. All these allied conditions occur so frequently in the histories and in manifest cases, that we have come to regard them as manifestations of the influence of tuberculous toxins upon nerve trunks. As a rule they are intractable to treatment and we have had better results with adrenalin than any other method, which suggests that these edemas may be associated with vasomotor instability and depression of the sympathetic system.

We see other sympathetic disturbances manifested by the unequal pupils, the flushed cheek, the protruding eyeball, exophthalmos, the rapid pulse, the depressed type of gastrointestinal disturbances, etc. Gagnoni believes that the sympathetic may be more or less unequally affected in three segments: the cervical, the solar plexus, and the pelvic. Can it be that sympathetic changes influence the development and functions of the ovaries and uterus? Can that be why we so often find infantile genitalia and menstrual disturbances in tuberculosis? Certain it is that nothing is more common or marked than menstrual irregularities. Menstruation is hard to estabish—is apt to be delayed—or too soon—too scanty or too profuse. It may be so painful as to demand operative interference, but its chief characteristic is its undue influence upon constitutional irregularities as well as upon the specific manifestations of tuberculosis. Any disordered function may be aggravated by menstruation. The neurasthenia, lack of appetite, loss of weight, nausea, spitting up of food is increased, and when menstruation is skipped the patient does not feel as well until it reappears at the proper time. The cough is worse or only appears at this time. The pain, stiff neck, headache, sense of pain, weight and depression through the upper part of the lung and the physical signs of tuberculosis are all increased. Hemorrhages, often only slight, are especially symptomatic and when no physical signs are found they are apt to be disregarded until the increasing severity arouses suspicion. In the menstrual disturbances of young girls a local examination may not be as instructive as the exclusion of tuberculosis and operative interference not as beneficial as tuberculin.

When enlarged bronchial glands compress the superior vena cava or even obliterate it the return of the blood to the heart is interfered with so that the veins of the face are distended, especially those of the nose, and there are edemas and cyanosis of the eyelids and conjunctival sacs, cyanosis of the lips and finger nails, unilateral distensions of the veins of the neck, especially prominent after exercise, a venous network across the upper surface of the chest and abdomen, dyspnea, etc. Such a condition has developed for years with death at sixty-four without ever having occasioned any suspicion or recognition of its tuberculous nature. Another case, with supposed death from pneumonia, would never have been understood without the autopsy. We have had cases of transient edematous swelling of the conjunctival sacs and side of the nose, brought on by overexercise and overheating, and one of these cases usually had an attack of furunculosis after such edemas. In another case the pressure was so increased by overexercising that the blood was held back in the neck almost like an aneurysm.

Pressure on the trachea and bronchi causes coughing, usually explosive, paroxysmal, high pitched and so closely resembling whooping cough that a diagnosis is difficult, especially when vomiting follows the coughing. Under three years of age, this paroxysmal coughing with expiratory dyspnea and râles means tracheobronchial stenosis, which is apt to terminate fatally. After this age the stenosis becomes chronic and may cause periodical attacks of asthma aggravated by the approach of menstruation or overexercise or acute infections or any factor increasing the hyperemia of the enlarged glands. The degree of enlargement is not constant, so that the pressure varies and the attacks come and go at greater or less intervals.

The paroxysmal coughing or sudden extreme dyspnea may herald perforation and obstruction of the trachea or main bronchi by caseating glands and death follow rapidly. These cases coming on suddenly in robust children are usually mistaken for croup or diphtheria. In other cases fever, nausea, vomiting, cyanosis, unconsciousness, and death resemble tuberculous meningitis. The presence of tuberculous processes is seldom suspected in these well children, but a few diagnoses have been made in time and the dangerous glands removed. If all cases of sudden death from croup or suffocation could be autopsied it would help us in our knowledge of tuberculosis. Further consequences of tracheobronchial stenosis are bronchitis, asthma, emphysema, atelectasis, and bronchiectasis. Pain anywhere in the chest may be caused by pressure, but it is especially significant over the root of the lung posteriorly, where it may be so aggravated by bending over, as in writing or sewing, as to become intolerable. The interscapular region may be especially sensitive to cold, and the patient knows well that chilling between shoulder blades means a bad attack of bronchitis. A tendency to colds, to bronchitis, to pneumonia, etc., may betray an unusually sensitive condition of mucous membranes which is highly characteristic of the effects of tuberculous toxins. In these cases overexercise or too much strain of any kind may mean a bad cold or even bronchitis. We have repeatedly seen "colds" and "bronchitis" brought on simply by the production of too much hyperemia for the relaxed blood vessels to stand. Hamburger says that it has been shown at autopsies that any tuberculous focus in the body is, as a rule, associated with tuberculosis of the bronchial glands and lungs. Could it be possible that the tuberculous processes in the bronchial glands and lungs might precede all other distributions? Hamburger says that scrofula, enlarged cervical glands, tuberculides, phlyctenular ulcers, hygromas, spina ventosa, coxitis, and all tuberculous lesions of the bones and joints presuppose tuberculosis of the bronchial glands and lungs. If so, which is the primary source of infection and which is the metastatic development? If the tuberculous processes in the bronchial glands and lungs represent the primary source of infection, could we by recognizing their presence prevent the secondary development of Pott's disease, spondylitis, psoas abscess, and other bone and joint lesions? If it could be proven that the orthopedic surgeon simply cor-

rected metastases, could we do anything to prevent these migrations?

From the work of Combé and Pollak it appears that our knowledge of concealed or clinically inactive tuberculosis must be applied to infancy and childhood. We have the same world to explore that we find in later life, and the prevention of tuberculosis may have to begin with infants in good health, with no heredity, and no history of exposure.

RELATIVE VALUE OF MASSAGE, EXERCISES, AND BATHS IN THE TREATMENT OF AFFECTIONS OF THE HEART.

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"Give me a calm and peaceful heart,
From every murmur free."
—*Old Hymn.*

HARVEY, in 1650, narrated the case of "a man who, in consequence of an injury or an affront which he could not revenge, was so overcome with hatred, spite, and passion that he fell into a strange disorder, suffering from extreme compressions and pain in the heart and breast from which he received some little relief only when at last the whole of his chest was pummeled by a strong man as the baker kneads dough."

Physical or external therapeutics, in contradistinction to medical or internal remedies, have come much into favor in the treatment of disease of the heart in the past few years. These are massage, resistive movements, saline baths, and mountain climbing. Of these, massage is the most generally applicable. It can be used in cases so weak as to preclude the possibility of applying any of the others. In almost every conceivable form of weak and diseased heart I have been called upon to do massage, and usually with marked relief and comfort, before Schott or Oertel were ever heard of. While it was being done, and for some time after, the patients have generally been able to lie on either side or flat on the back, and often go to sleep in this position, what they could not have done before. In other cases, where it was impossible for them to lie down at all, I have masséed with relief until within a short time of their death.

Massage of the chest, over the region of the heart, has a powerfully tonic and sedative effect on this organ, as either physicians or patients can prove by observing its effects in their own persons by means of Bowle's excellent stethoscope. Even a well but lazy heart will be found to beat much better and with a clearer accentuation after a few minutes of massage, reminding one very much of the effect of using the bellows on a fire that burns slowly. This is most marked in the flabby neurasthenics.

The enthusiasm of Professor Oertel over massage of the heart may have gone a little too far, but perhaps this may have been necessary in order to wake up the profession to its great value. In his latest work on this subject he considered that massage acts upon the heart the same way that it does upon the muscles of the extremities. In order to do this the chest wall would have to be removed, so that the heart might be grasped and directly masséed, a procedure that would hardly be justifiable in the human being, except in extreme cases. While the patient stands, he advises that gliding pressure should be made upon the chest walls downward and inward, the benefits of which, he states, "are not only referable to its influence in perfecting expiration, but also to the direct pressure upon the heart, influencing its nutrition precisely as massage benefits the muscles of the extremities." The patient would have to be pretty well to stand while this was being done. The influence of massage over the heart is indisputable, but evidently it must be more indirect and sympathetic than direct. Oertel very properly considers this treatment indicated: "(1) When the heart muscle is weak from deficient nutrition, anemia, or corpulence. (2) When the arterial system is imperfectly filled, and there is passive congestion as a result of insufficiency of the myocardium. (3) When there are valvular lesions or obstructions to the circulation, the pressure of tumors, or constriction of the pulmonary orifice, emphysema, or curvature of the spine. (4) As an accompaniment of treatment of the heart by mountain climbing. It is contraindicated in acute or recurring endocarditis or pericarditis, in acute and subacute myocarditis, the result of sclerosis of the coronary arteries, and in general arteriosclerosis."

I have never seen a case of arteriosclerosis that was harmed in any way by massage, nor have I met any one who has. Such a statement is made on purely theoretical grounds.

General massage, carefully administered, is of great aid to the peripheral circulation, lessens the work of the heart, tranquillizes the nervous system, and induces sleep in the worst kind of heart disease; and massage of the abdomen often works well as a diuretic and to relieve the stasis of the mesenteric veins and all the other abdominal veins.

Next to massage, in its universality of application, and under circumstances in which patients have been too weak to undergo saline baths or mountain climbing, come resisted movements. These, combined with the saline, sparkling waters of Nauheim, were first brought prominently to notice by the Drs. Schott, who up to 1891 had treated in this way 2,700 cases of cardiac disease, mostly with great benefit or recovery. Each resisted movement of extremity or trunk is slowly and completely executed, followed by a pause, after which the opposing movement alternates in the same way, while the physician or person who makes the resistance is ever watchful to avoid anything like fatigue, difficulty of respiration, or increased disturbance of heart; and should such arise, a longer pause is given. Some of the advocates of this method state that no movement is to be repeated twice in succession to the same limb or group of muscles, but I have yet to learn that Schott himself is so absolute in his directions.

The immediate effect of the bath is not quite so marked as after the exercises, but it lasts longer, while the exercises can be used repeatedly on the same day and without regard to place. In illustration of this, the resistive movements were given

to a boy who was weak and anemic. Percussion showed dilatation of the heart. Two skiagraphs were taken, one before, the other fifteen minutes after, a quarter of an hour of exercises of moderate resistance. It was evident that the heart had contracted strongly on both sides, and that it had changed from the shape of an orange to that of a lemon, and was one-half inch smaller by measurement. For the sake of comparison, and in order to ascertain the effect of the Nauheim effervescent baths alone, Dr. Schott had a somewhat similar case, a girl of fourteen years, carried to the bath, and after this back to the table. It was found, as a result of the bath that the heart had contracted about one centimeter (less than half an inch) in its horizontal diameter. This is getting matters down pretty fine.

It has also been shown by Dr. Schott, to the satisfaction of impartial observers, that wrestling until the breathing becomes short or excessive, and bicycling, produced dilatation of the heart and weakened it, from which he has deduced the axiom, "Systematic exercises strengthen the heart, unsystematic exercises weaken it."

Dr. W. Bezly Thorne of London, who has witnessed the effects of systematic resisted movements in many cases, says of them: "The results are such as would scarcely be believed by any but an eyewitness. It is by no means uncommon in cases of dilatation to see within one hour the oblique, long diameter of the heart's area of dullness diminished by from three-quarters of an inch to an inch and a quarter; and, perhaps more surprising still, to observe a diminution by as many as two inches in vertical measurement of a liver which at first extended to the umbilical level, and to hear the patient, at the conclusion of what cannot be considered an ordeal, volunteer the statement that a load has been removed from the precordia, that he breathes easier and more deeply, and experiences a sense of general relief."

When such good results can be obtained from massage or resistive movements alone, it would seem almost superfluous to burden patients with baths besides other than what may be necessary for cleanliness. Indeed, the advocates of the mineralized baths are not very clear in their ideas as to when the one or the other should be used, or when they should be alternated or combined, so that these problems must be left to the discretion of the attending physician, who will be guided by the effects upon the patients. Dilatation of the arterioles and reduction of high arterial pressure may be obtained by slow, deep kneading of the muscles of the system at large; while, on the other hand, increase of the strength of the systole may be brought about by gentle resistive movements of the limbs and by friction or stroking of the limbs and body toward the heart.

The waters of Nauheim consist largely of a solution of chloride of sodium and chloride of calcium with an abundance of carbonic acid gas, and are of varying degrees of strength. Similar combinations are for sale at the drug stores, which can be dissolved in one's own bath tub; but employed in this way, the results are not so favorable as they are at Nauheim, where pleasant scenery, bracing atmosphere, and absence from the cares of home all contribute beneficial influences. The duration of the bath at first should not exceed ten minutes, and the temperature of the water should be about 92° or 93° F. At the commencement, the bath should be omitted every other day, then every third day, next every fourth day. Later, the baths are given oftener and longer, their mineral ingredients are stronger, and the temperature is cooler, down to 88° or 85° F. Though the immediate effect of these sparkling waters conveys the impression of a bath of champagne and induces a sense of exhilaration, yet the first few baths are apt to be associated with a sense of oppression at the precordia, and the patients breathe more slowly and deeply for a few minutes. Respiration then becomes easy and continues slower. When infiltration or deposit has occurred in accessible places, careful massage succeeds the bath. Sometimes the resisted movements are used to prepare patients for the baths, and they should be continued sufficiently long after until the patients can climb mountains. After the completion of the bath and exercise treatment, Dr. Schott says he has seen patients make extensive tours through the Alps, and even climb Mont Blanc and Monte Rosa without any difficulty. Nothing is said about the duration of the treatment. It must vary greatly to suit different cases, and be limited or extended by the convenience of the patient.

It is certain that but few American patients who are well enough to go to Nauheim would be willing to submit to this treatment at home for a sufficient length of time to do any good at all.

Respiratory exercises are often of great value, even when not enforced by the exhilarating exercise of mountain climbing. John Hunter, in the graphic sketch of his own case, stated his belief that he had often prevented himself from dying by deep breathing. Deep respiration alleviates the suffering of many cases characterized by extreme arterial pressure as well as those attended by cyanosis. It probably acts by unloading the right cavities of the heart and by relieving pressure from the aorta (Gibson).

It is emphatically declared that gymnastics or physical exercises by means of mechanical appliances should form no part of the system of resisted movements, and they are even opposed to it as harmful. They ought to be helpful when improvement has sufficiently progressed, especially exercises with elastic cords, as their use gives alternate resisted movements each way.

Possibly the advocates of the saline bath in disease of the heart have not taken sufficient account of the fact that when a body floats in water it is buoyed up by an elastic resistance equal to its own weight, and this presses the venous blood and lymph back to the heart from the parts that are submerged. This is massage by hydraulic pressure of the immersed portions of the body.

According to Fleischi, the shock of the blood sent into the capillaries at each cardiac systole has a mechanical action in aiding the chemical processes of tissue change in somewhat the same way, though to a less extent, as a blow upon a percussion cap. If a heart is too feeble or the resistance in the vessels too great to allow the blood entering the aorta at each systole to give a distinct

forcible impulse to the blood present in the arteries, the chemical changes in the tissues will be sluggish and imperfect. It is therefore of the utmost importance in the treatment of disease to maintain the action of the heart and to stimulate it when flagging (T. Lauder Brunton).

Dr. Douglas Powell[2] helps to define more clearly the use of massage and exercise. He tells us that massage is a means of helping on the convalescent stage of acute heart disease and of combating the tendency to stagnant circulation in those who are disabled by chronic heart disease. The treatment, he thinks, is still more useful in maintaining the circulation and mildly stimulating the coronary circulation in those who are bedridden, and, on that account, suffer from impairment of heart nutrition and chilly extremities, feeble pulse, torpid digestion, and passive congestion of the lungs. The treatment is not advisable in acute affections of the heart.

The effects of the Schott or Nauheim exercises are a stimulation of the heart's action, with a steadying effect or increased completion of the systole, improved circulation through the coronary vessels, and an increased motility of the blood by its readier passage in greater bulk through the muscles, thus relieving stagnation in the great internal organs, especially of their veins. The graduated exercises may be regarded as a counsel of perfection, as a preliminary to the return to this increase of active life of which the condition of their heart admits, and also as a guide to what that measure of exercise will be. Resistive exercises are especially adapted for the initial treatment of those flabby, irritable, "stuffy" hearts, applying this term to cases of fatty infiltration and impaired metabolism which are met with in people of venous plethora. Irritation of a sensory nerve causes general contraction of blood vessels.

In cases of chlorosis with dilated heart, after a preliminary week or two of rest, the Schott treatment is valuable if combined with a dry, bracing air and a mild chalybeate. It is useful in commencing failure of the heart, in chronic valvular lesions, combined with less of other exercises, and also after such cases have been restored to a certain extent by digitalis. It is unsuited in all cases of acute endocarditis while there is any trace of activity of lesion left, and in cases of advanced cardiovascular changes of the nature of sclerosis, or in introspective people with neurotic hearts.

An excellent summary of this treatment of heart affections was given by Sir Grainger Stewart before the British Medical Association at Carlisle. He has fully satisfied himself on the following points:

1. That in the great majority of cases of cardiac dilatation the area of cardiac dullness diminishes perceptibly during each administration of massage.

2. That the character of the cardiac sounds and the rhythm and strength of the pulse correspondingly improve.

3. That although the immediate favorable effects pass off in a few hours, yet they frequently do not pass off completely, for he has often found the line of cardiac dullness within that with which they had started at the previous séances.

4. That the patients usually experience a sensation of comfort and feel the better for the treatment.

5. That repeated applications of massage bring about a permanent diminution of the area of dullness, with improvement of pulse and of the patient's sensations.

6. He has seen a case in which the so-called Schott treatment produced deleterious effect, rendering the heart more irregular and intermittent. It was afterward treated by massage alone on the following day with most striking benefit. It turned out that the patient was not sufficiently well to bear the active movements, but was greatly benefited by the passive ones.

7. That on one or two occasions he has seen the manipulations produce unfavorable effects, apparently because the heart was too feeble and the patient was fatigued at the time of application.[3]

(In this last case it is possible that the massage was too vigorous, or that the manipulator himself was not in good condition. The writer one day had to walk three-quarters of a mile in the teeth of a cold wind to give massage to a patient with a weak heart. The result was the only unfavorable one of the kind he had ever had: the patient was unduly fatigued. If he could have ridden to the patient's door, the result most likely would have been different.)

Dr. Albert Abrams[4] finds that any cutaneous stimulant—mechanical, chemical, or electric—will produce diminution of the size of the heart with temporary dilatation of the lungs. Vigorous cutaneous friction by means of a wire brush seemed to afford him results in heart disease nearly as good as those obtained by the more elaborate treatment by means of baths, massage, and exercises. He quotes Moccucci, who sprayed the left half of the abdomen with ether in twelve cases of enlarged spleen with the result of decrease in volume of the spleen in all the cases. In repeating these experiments, Dr. Abrams noticed a decided diminution of the size of the spleen in all the people he tried it on, irrespective of the fact whether the spleen was enlarged or not. Ether spray over the heart and over the liver caused decrease in size of both these organs. The results were confirmed not only by percussion, but also by sight, by means of the fluoroscope.

Maas[5] has reported two cases in which patients apparently dead from chloroform syncope were resuscitated by compressions in the region of the heart. In both cases, respiration and radial pulse had entirely stopped, and the pupils were dilated. The manipulation of the heart in both cases was carried out for over an hour. Compression over the heart was used one hundred and twenty times a minute, and soon after it was begun the pupils became smaller and the paleness of the face disappeared. Afterward both patients suffered from mental derangement, difficulty of swallowing and speaking, all of which passed off shortly.

Doubtless sufficient importance is not always attached to the fact that collapse is often due to sudden relief of the intraabdominal pressure.

Physiologists have not been idle in their efforts to show how weak and failed hearts may be revived; indeed, some good men give them credit for leading the way.

If any more confirmatory testimony of the efficacy of massage for weak hearts were needed, we certainly have it in the experiments of Professor Prus,[6] in which dogs were suffocated and brought back to life by massage of the heart. The supply of air was shut off by clamping an India-rubber tube which connected the tracheotomy cannula with an artificial respiration apparatus. Immediately after the death of the animals some of the rib cartilages in front of the heart were removed, the pericardial sac was incised, and the heart exposed. After it had been ascertained that there was no trace of any contraction of either auricle or ventricle, Professor Prus waited fifteen to sixty minutes before he began his efforts at artificial resuscitation. Then the clamp was removed and artificial resuscitation started. The heart was grasped in the right hand so that the thumb rested on the right ventricle, and the four fingers surrounded the left ventricle. Both ventricles were then compressed with moderate force, the compressions being made to imitate the systolic and diastolic action of the heart. In 31 cases, or 70 per cent., life was restored. In chloroformed dogs under the same conditions, 76 per cent., and in dogs shocked by the electric current, 14 per cent. were brought back to life. An attempt to try massage of the heart was made on the body of an alcoholic who had committed suicide by hanging, but without success, as might have been expected.

Statistics gleaned from various sources at home and abroad by Prof. William W. Keen[7] show that of 28 cases of apparent death in the human being, during chloroform narcosis, four recovered by massage of the heart. But this treatment should not be relied upon alone. Artificial respiration should also be carried on and the patient should receive sufficient oxygen. For the purpose of restoring vasomotor tone adrenalin should be employed.

In the great zeal to collect statistics on this interesting subject, doubtless many of them come from the same sources. Thus Lanermant[8] has collected 25 cases, of whom 4 were restored to life Mauclair and Zezas report 28 cases with 6 successful results.

Three methods are employed to do massage of the heart:

1. Incising the anterior wall of the chest so that the hand can grasp the heart.

2. Incising the diaphragm and then passing the hand up from the abdominal cavity.

3. Seizing the heart through the diaphragm without cutting it. In syncope the diaphragm is relaxed enough to render the last method easy. It has given the greatest percentage of recoveries (5 out of 9). It is the least mutilating and the only one that should be employed. Although the number of deaths seems large, it should be remembered that all the cases saved would doubtless have died without the use of this method.

When babies are born, if their respiration and circulation are at fault, they are promptly rubbed and slapped without waiting for a diagnosis, and usually with the result of bringing them around all right. So the poet of the future may have a chance to express himself with regard to massage somewhat as follows:

When this world you enter, if you're gasping for breath,
'Tis the first thing they do to save you from death;
If too soon you would leave this terrestrial sphere
'Tis the last thing they do to keep you long here.

REFERENCES.

1. Schott: MEDICAL RECORD, March 26, 1898.
2. Powell, Douglas: *British Medical Journal*, April 9, 1898.
3. Dowse, T. Stretch: "Mechanotherapy in the Treatment of Heart Disease," 1898.
4. Abrams, Albert: *Medical News*, January 7, 1899.
5. Maas: *Berliner klin. Wochenschrift*, No. 12, 1892.
6. Prus: *Treatment*, October, 1900; MEDICAL RECORD, November, 1900.
7. Keen, W. W.: *Therapeutic Gazette*, April 15, 1904.
8. Lanermant: *Revue de Chirurgie*, No. 3, 1906.

520 BOYLSTON STREET.

INSTRUMENTS OF PRECISION FOR THE PERCY TREATMENT OF UTERINE AND OTHER CANCER.*

A. THE ELECTROPYROMETRIC HEATER.
B. THE DISTENSIBLE HYDROTHERMOTAXIC HEATER.

BY A. ERNEST GALLANT, M.D.,
AND
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NEW YORK;
PROF. LOUIS BLISS AND E. N. LIGHTFOOT,
WASHINGTON, D. C. NEW YORK.

THE purpose of this communication is to present for your inspection and consideration two newly designed instruments for the accurate application of a low degree of heat (Percy's method) for the devitalization and destruction of cancer involving the uterus and vagina, the alimentary tract and other cavities.

It is to J. C. Percy[1] of Galesburg, Ill., that we owe a debt, as the first to apply, in a curative way, the well established principle that the continuous application of a relatively low degree of heat, 43° to 46° C., when delivered directly into the cancer mass, for from 20 to 60 minutes, will cause a disintegration and destruction of the malignant tissues to a depth of from two to three or more inches outside the point where the heat is applied, and that without injury to any of the contiguous healthy structures.

In thus applying heat, Percy made use of an electrically heated plumber's soldering iron, the copper heads being modified in shape to resemble the tips of a Paquelin cautery.

When we take into consideration the facts that most of Percy's patients were "of the utterly inoperable cases, the kind with 100 per cent. mortality,"[2] with some alive after two, three, four, and even seven years, we must admit that the method has a definite place in the treatment of uterine and vaginal cancer. In brief, Percy's technique is: (1) Open the abdomen. (2) Use a low degree of heat. (3) Pass the heating head through the cervix to the fundus; keep it in one position until the whole mass contiguous to the heating iron is made so hot that it cannot be held longer in the surgeon's hand when incased in a medium weight rubber glove. (4) Apply the heat until all the structures that

*Read at the eighteenth annual meeting of the American Therapeutic Society, held in New York City, June 1, 1917.

were fixed at the beginning of the application are freely movable.

After witnessing Percy demonstrate his method at the General Memorial Hospital, and listening to his paper[3] before the Academy of Medicine, New

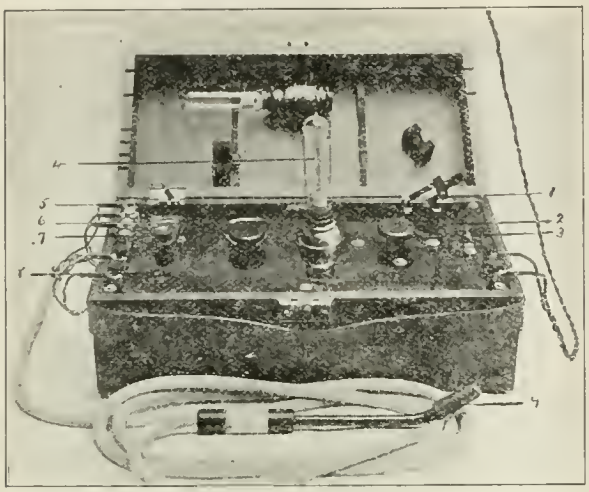

FIG. 1.—Electropyrometric heater: 1, heating switch; 2, rheostat; 3, fuse; 4, resistance lamp; 5, test switch; 6, galvanometer "tell-tale"; 7, temperature setting handle and scale; 8, galvanometer button; 9, copper heating head.

York, April 15, 1915, and a careful consideration of his technique, one could not but be impressed by (*a*) the absolute sincerity of the operator; and (*b*) the possibility of rendering the immobile uterus freely movable, and that without any apparent depressing effect on the patients at the close of about an hour's application in each case.

After some months of study and fruitless efforts, my associate, Dr. L. Howard Moss, was successful in interesting, from a humanitarian standpoint, the generous services of Professor Louis Bliss, of Washington, D. C., who, from our crude drawings, developed the pyrometric heater herewith shown you, and formerly presented[4] to the Medical Association of the Greater City of New York, June 15, 1916, which has been named the "Electro pryometric heater," and offers the following special features (Fig. 1):

1. For *heat localization* a specially designed heating coil placed in the ½ x 2-inch copper head wherein all the heat is generated and localized within the cancer mass, the handle remaining cool.

2. *Introduction* through an ordinary bivalve speculum has been made easy, as the head has been united with the handle at an angle similar to that of an uterine sound.

3. *Heat measurement* has been accomplished by inserting in the head the wires of a thermocouple that registers the actual degree of heat generated in the head, which can be adjusted to any temperature between 100° and 200° F.

4. *Heat control* is obtained by "setting" the regulator at the desired temperature, turning the rheostat and pressure on the "tell-tale" which will indicate if the heat being delivered in the head is above or below the desired degree.

5. *Heat safety* is insured by a very delicate fuse protecting the patient and instrument from short circuiting.

6. *Heat dissemination* can be facilitated in the enlarging cavity, as the treatment progresses, by slipping over the head metal caps ¾ and 1 inch in diameter.

7. *Heat radiation*—From our limited experience in one human patient, and numerous experiments with animal and vegetable tissues, we find that owing to the rapid distribution of heat from the considerable area of the surface of the head, there is a difference between the internal and external temperatures of from 15° to 20° F.

The following is the report of a case of inoperable epithelioma of the cervix, uterus and broad ligaments, treated by the pyrometric heater:

Mrs. C——, aged 47, multipara, last menses four years ago. For the past nine months has had a bloody vaginal discharge, with a very bad odor; alternating constipation and diarrhea; dysuria. "The pain is wearing her out." She had made arrangements to enter a home for incurables, but learning of the "heat" treatment, entered the service of Dr. N. C. Goodwin, at the Jamaica Hospital, who made a cystoscopic examination and found disseminated ulceration of the vesical base. Examination showed that the cervix had been removed, leaving an inverted cone leading into the uterine cavity, but 2 inches to the fundus, and the whole firmly fixed by the thickened broad ligaments out to the pelvic walls.

Jan. 3, 1917.—The first "heating" lasted an hour, with the galvanometer "set" at 138 F., and the heat developed in the uterus at 106° to 108° F. One hour prior to the treatment a hypodermic injection of morphine, gr. ¼, hyoscine, gr. 1/100, and cactin, gr. 1/67. At first she was a little nervous, but dozed from time to time, occasionally complaining of backache, which she attributed to the lithotomy position. The application was made through an ordinary Graves' bivalve speculum. During the following week she lost considerable blood, but the vaginal odor was much less evident. Jan. 17.—The vault presented a craterlike appearance. The heating lasted one hour, at the same temperature as before, and during the next three weeks the bleeding stopped, the odor was no longer obnoxious, pain lessened, the appetite and sleep were markedly improved, and she sat up almost daily. No morphine was given for pain after the first treatment, but she was very homesick for her children. Feb. 3.—The excavation has nearly doubled in size, the edges of the vaginal vault came together when the speculum was removed, and we felt greatly encouraged at what was being accomplished. The third heating of one hour was given, but a few days later her friends (?) took her from the hospital to the home for incurables, though it was evident to all who saw her that she was improving in every way. We have no opportunity to follow up the case.

However, we had learned (*a*) that a temperature as low as 108° F. would and did devitalize can-

FIG. 2.—The distensible hydrothermotaxic heater: 1, water pan; 2, heat regulating switch; 3, motor driven pump; 4, double current applicator enclosed in a rubber bag; 5, glass tube, enclosing thermometer 6.

cer tissue; (*b*) that it would stop hemorrhage and odor, and lessen pain; (*c*) that it was followed by absorption and temperature; (*d*) that the patient's condition improved in every respect; and (*e*) that with the pryometric heater the heating could be

made without anesthesia, through a bivalve speculum, without opening the abdomen; and last, but not least, that though our instrument was built to develop 140° F. in the heating head, it would have to be changed to attain a much higher temperature; and that only experience can demonstrate just what the temperature will have to be to deliver 120° F. (or higher) into the tissues, the degree which Percy seems to imply is necessary to penetrate deeply into the tissues, and destroy the whole of the pelvic neoplasm.

We can but feel that with the right degree of heat, applied through the pyrometric heater, the local destruction of cancer can be effected.

While the pyrometric heater was in course of construction, I became obsessed with the idea that the use of hot water as a heat conductor might afford several advantages, and, through the untiring efforts of Mr. E. N. Lightfoot, herewith we present, for the first time, the result of the past two years' work, which has been christened (Fig. 2) "The distensible hydrothermotaxic heater," the components of which are:

A *water heating system* consisting of a pan (1) holding about a quart of water, under which are fastened electric elements for heating the water; and (2) a heat regulating switch which controls the current and the temperature of the water.

A *pumping or circulating system*—The heated water from the pan is forced by a motor-driven pump (3) through tubing and the double-current applicator handle, filling and distending the rubber bag (4) and returning through the handle, follows the tubing back to the water pan. The pumping and heating are accomplished by the same 110 to 120-volt, direct or alternating street current.

The *heat regulation* can be accomplished by (*a*) by increasing the electric current to the water pan; (*b*) by speeding up the pump and accelerating the flow of water through the applicator, or (*c*) by combining these two methods.

Heat Determination—Borrowing the ingenious idea from J. J. Tate[5] a glass tube (5) inclosing a thermometer (6) has been connected up with the tubing before the water enters the handle of the applicator, and as it surrounds the thermometer in the glass tube, it permits the operator to see the exact temperature of the water as it enters (or leaves) the applicator.

For determining the degree of heat being *delivered to the tissues* a curved thermometer is placed between the tissues and the bag within the mass, and the reading will show the heat being delivered to the *tissues at the point of contact.*

Advantages of the water distended applicator for the application of water-borne heat in the treatment of cancer—The novel and most important feature of this apparatus is the dissemination of water-borne heat, through a distensible rubber bag, a method which we believe offers the following practical advantages:

1. *Insertion*—With the rubber bag collapsed the applicator can be easily introduced into a moderately dilated cervical canal, or through a stricture of the esophagus, pylorus, or any other portion of the alimentary canal (after opening the gut).

2. *Adaptability*—Under the internal pressure of the pump-driven water the bag will distend and adjust its size and shape to every nook and corner of any canal, cavity or excavation.

3. *Dissemination*—As water is the best heat conductor, and the thin-walled rubber bag in actual contact with the tissues, we have the most favorable conditions for the uniform dissemination and the deepest penetration of the necessary degree of heat, throughout the widest possible area, and for securing the greatest disintegration and destruction of the malignant structures.

4. *The technique* is of the simplest, requiring only a bivalve or Ferguson speculum; the introduction of the collapsed applicator; the raising of the water to the required temperature; the adjustment of the pumping to the necessary speed; and to keep it going for 30 or more minutes, or until the rigid mass has become mobile.

5. *Drainage* must be efficient to avoid absorption and can best be secured by inserting one of our two or three-inch fenestrated rubber drains, with a roll wick,[8] the latter to be changed from day to day.

6. *Subsequent treatments* can at any time be carried out, and as frequently the condition seems to indicate; as the whole procedure can be accomplished without anesthesia; without opening the abdomen; without pain or discomfort to the patient, simply by the injection of morphine, one-quarter grain; hyoscine hydrobromide, 1/100 grain, cactin, con. 1 67 grain, one hour before operation, and repeated if necessary.

Favorable reports have been made by Clark[7], Gelpi[8], and Balfour[9], who says: "Percy has developed a method which derives the full value of this agent (low heat) in the treatment of cancer of the cervix. I became interested in this method about two years ago and from experience in more than 100 cases am convinced of its great value. . . . The method undoubtedly offers more to the patient with advanced cancer of the cervix than any treatment with which I am familiar. Its value is so definite in the advanced stages that serious consideration must be given its possibilities in the earlier stages of the disease." If we accept these reports, then with the pyrometric heater and the hydrothermotaxic applicator, or both, we certainly ought to be enabled to avoid the not-unlooked-for results reported by Boldt[10], and Leonard and Dayton[11], where the pathological reports seem to point unmistakably to the need of just these instruments of precision which we now offer you.

From the experience of Fulton[12] with heated bougies for gonorrhea; the use of hot water in urethral stricture, by Stern[13], and our own experience[14] with a double current pelvic cooler in pelvic peritonitis, proctitis, etc., it would seem that the field of usefulness for the distensible hydrothermotaxic heater may be a widely useful one.

REFERENCES.

1. Percy, J. C.: *Journ. Amer. Med. Assn.*, 1914, Vol. LVIII, p. 696.
2. ———: *Surg. Gyn. & Obstet.*, 1916, Vol. XXII, pp. 77-79.
3. ———: *Amer. Journ. Obstet.*, 1915, Vol. LXXII, p. 298.
4. Gallant, A. E.: Year book, Med. Assn. Greater N. Y., 1916, p. 217.
5. Tate, J. T.: *Surg. Gyn. & Obstet.*, 1917, Vol. XXIV, p. 242.

6. Gallant, A. E.: *N. Y. Med. Journ.*, Oct. 10, 1914.
7. Clark, S.: *Surg. Gyn. & Obstet.*, 1915, Vol. XX, p. 558.
8. Gelpi, M. J.: *New Orleans Med. & Surg. Journ.*, September, 1915.
9. Balfour, D. C.: *Surg. Gyn. & Obstet.*, 1916, Vol. XXII, pp. 74-76.
10. Boldt, H. J.: *Amer. Journ. Obstet.*, 1916, Vol. LXXIII, pp. 1-15.
11. Leonard & Dayton: *Surg. Gyn. & Obstet.*, 1917, Vol. XXIV, pp. 156-151.
12. Fulton: *Northwest Medicine*, December, 1913.
13. Stern, M.: *N. Y. Med. Journ*, 1917, Vol. CV, pp. 302-305.
14. Gallant, A. E.: *Amer. Journ. Obstet.*, 1914, Vol. 1, No. 4.

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Medicolegal Notes.

Registration of Osteopathic Physicians.—The Illinois Supreme Court holds that one who practises osteopathy pursuant to the certificate of the State Board of Health authorizing him to treat human ailments without the aid of medicine and without performing surgical operations is a physician entitled to registraton under Section 15 of the Illinois Vital Statistics Act of 1915. It holds that the term "medicine" is not limited to substances supposed to possess curative or remedial properties, but has also the meaning of the healing art—the science of preserving health and treating disease for the purpose of cure—whether such treatment involves the use of medical substances or not. In common acceptation, any one whose occupation is the treatment of diseases for the purpose of curing them is a physician, and this is the sense in which the term is used in the Illinois Medical Practice Act. An osteopathic physician is a "legally qualified physician" under Section 7 of the Vital Statistics Act, which provides for death certificate and requires that the certificate shall be made and signed by the "legally qualified physician," if any, last in attendance, or, if none in attendance, by the coroner or the local registrar. If such a physician is legally qualified to treat the disease the court considered there is no reason to suppose that he is not legally qualified to give the medical certificate required by the act. The statute authorizes osteopathic physicians to treat human ailments without the use of medicine and without performing surgical operations, and the court holds that under such authority they may treat cases of pneumonia, gastritis, rheumatism, paralysis, and other diseases. The purpose of the Vital Statistics Act is to provide a system of registration of births and deaths throughout the State.—People vs. Siman, 115 N. E. 817.

Authority for Coroner's Inquest.—An illinois statute requires a coroner, whenever or as soon as he knows or is informed that the dead body of any person is found or is lying dead in the county supposed to have come to his death by violence, casualty, or any undue means, to summon a jury and hold an inquest to inquire into the cause and manner of the death. The Illinois Supreme Court holds that under this statute a coroner was not authorized to hold any inquest over the body of one who died under the care of a physician, of tuberculosis of long standing, there being no supposition that he came to his death by violence, casualty, or any undue means.—Albaugh-Dover Co. vs. Industrial Board, 115 N. E. 834.

Following Particular Schools of Medicine.—In an action for malpractice the issue was whether the defendant was guilty of malpractice in giving a diet of poached egg and toasted bread to a typhoid fever patient. It appeared that the patient's diet was changed from one of beef broth. After the change of diet the patient appeared to be worse, and his wife had him removed from the hospital where he was being treated to her home where he was treated by a homeopathic doctor. He died two days after the removal. The evidence showed that his death might have been due to one of three causes: First, the disease itself; second, the carrying of the patient from the hospital to another place; and, third, the change of diet. The court held that it was for the jury to determine which of these causes resulted in his death. One instruction told the jury that if the defendant did not follow the practice recognized by other physicians in good standing in that locality, and as a result thereof hastened the deceased's death, recovery could be had. The court held that this is not the law. The evidence showed that the defendant was an allopathic doctor. One of the doctors who testified that the treatment given by the defendant was improper was a physician of the homeopathic school. The court said: "Each school of medicine is entitled to practise in its own way, and because one does not use the methods of the other is no reason for holding the one for malpractice. In the case of Dahl vs. Wagner, 87 Wash. 492, 151 Pac. 1079, we said: 'It has been the uniform holding of this court that where doctors of equal skill and learning, being in no way impeached or discredited, disagree in opinion upon a given state of facts, that the courts cannot hold a defendant in a malpractice suit to the theory of the one to the exclusion of the other. This is the logic of Brydges vs. Cunningham, 69 Wash. 8, 124 Pac. 131. It is enough if the treatment employed have the approval of at least a respectable minority of the medical profession who recognize it as a proper method of treatment. Lorenz vs. Booth, 84 Wash. 550, 147 Pac. 31. The reason is obvious. A man who is called upon to exercise professional judgment is bound only to the exercise of reasonable skill, learning, and diligence. He is not liable for mistakes if he uses the method recognizd and approved by those reasonably skilled in the profession.' Before recovery could be had the jury ought to have been told that the defendant did not use his judgment in administering the egg and toast, under the circumstances." Judgment for the plaintiff was reversed and a new trial granted.—Ennis vs. Banks, Washington Supreme Court, 164 Pac. 58.

Medical Works As Evidence.—Scientific books are not admissible in evidence as proof of the facts they set forth, but if a witness assumes to base his opinion on such books, extracts may be read from them to contradict him. Having expressed an opinion upon a matter material to the issue, a medical expert witness may be crossexamined whether that opinion is based upon personal experience or upon books which he has read, and this whether or not he has stated in his direct examination the basis of his opinion. Should he testify for the first time upon crossexamination that his opinion is based upon what he has read, counsel has the same right to interrogate him as to the authorities upon which he relies, and then contradict him with those authorities, if he can, the same as if he had testified in direct examination that his opinion was based upon such authorities. The mere fact that the witness on direct examination has expressed his opinion generally will not foreclose counsel, upon crossexamination, from eliciting from the witness the basis of his opinion.—Wilcox v. International Harvester Co., Illinois Supreme Court, 116 N. E. 151.

Duty of Sanitarium to Patients.—The Arkansas Supreme Court holds that the proprietor of a hospital or sanitarium is bound to give a patient reasonable care and attention, and to have that knowledge of the necessities of his case which would result from such care and attention, and from the possession of ordinary skill in his treatment, and, though he does not contract for the services of a special nurse, is bound to see that the patient has such attention as his condition apparently makes necessary, and is liable for damages if his failure to perform such duty results in injury to the patient.—Durfee v. Dorr, 186 S. W. 62.

Degree of Care and Skill—Proof of Standard.—On appeal from a judgment for the defendant in an action for malpractice in diagnosing and treating an ailment from which the plaintiff was suffering, the only question was as to the correctness of an instruction given the jury as follows: "In considering whether the defendant, in his diagnosis, care, and treatment of the plaintiff's injury or disease exercised ordinary care, you cannot set up a standard of your own, but must be guided in that regard solely by the testimony of the physicians, and if you are unable to determine from the testimony of the physicians what constituted ordinary care and skill under the circumstances of this case, there would be a failure of proof upon the only standard for your guidance, and the evidence would be insufficient to warrant any verdict for the plaintiff." It was held that the instruction was correct, and judgment for the defendant was affirmed.—Norkett v. Martin, Colorado Supreme Court, 165 Pac. 256.

Military Medicine.

TRENCH FEVER.

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DURING the summer of 1916 there presented themselves at some of the hospitals in the zone of the army a number of patients suffering with a malady having certain distinct and characteristic symptoms which marked it as differing from anything heretofore encountered or described, and which was first called to public attention by Dr. Morichau-Beauchant,[1] who detailed the history of eight cases.

The disease presents a clinical history that is sharply defined and readily recognized.

In the first period, without any premonitory symptoms, the subject is suddenly seized with a sharp, abrupt rise in temperature of two or three degrees Centigrade, an intense headache located in the frontal and occipital regions, marked malaise, fatigue, and pains in the bones, but, with the exception of an enlargement of the spleen and a certain accumulation of viscid mucus in the intestinal tract, no visceral signs.

The second period is marked by a rather regularly defined course of fever, separated by intervals of apyrexia; this may be continued over a period of several weeks.

The third period is marked by a subfebrile temperature which may equally exist for several weeks before the patient is freed from the attack and resumes his normal condition.

All of the cases present a temperature curve that is characteristic and remarkably uniform. The clinical history of these cases shows no marked variation one from the other, and presents a picture easily recognized.

The period of incubation, as nearly as can be defined by the patient, is from five to seven days, and is not sufficiently marked by a deviation from the normal seriously to attract the attention of the subject; all he can be persuaded to recall is that he felt some slight malaise.

The onset is always the same, marked by a chill, severe headache, intense fatigue, and the same day, or day following, a fever reaching 39° to 40° C. (102.2° to 104° F.); the dominant symptoms are the fever, fatigue, and ache in the bones.

The headache which marks the onset is of abnormal intensity, referred either to the forehead or occiput; it presents several recurrent paroxysms, and often the patient will complain of photophobia. The patient never ceases to complain of pains in the lower limbs and in the lumbar region, and shows great prostration. The pains in the limbs, at first vague and diffuse, at the end of two or three days become fixed and precise, and are referred to the bones of the lower leg and the thigh. These pains are characteristic, and one of the constant signs by which the disease manifests itself. The pain is the most pronounced in the lower epiphyses of the femur and upper epiphyses of the tibia. They are more pronounced by spells in the night; the patient complains of a gnawing, stinging pain which robs him of sleep; they are irregular in duration, and may be declared over a period of weeks.

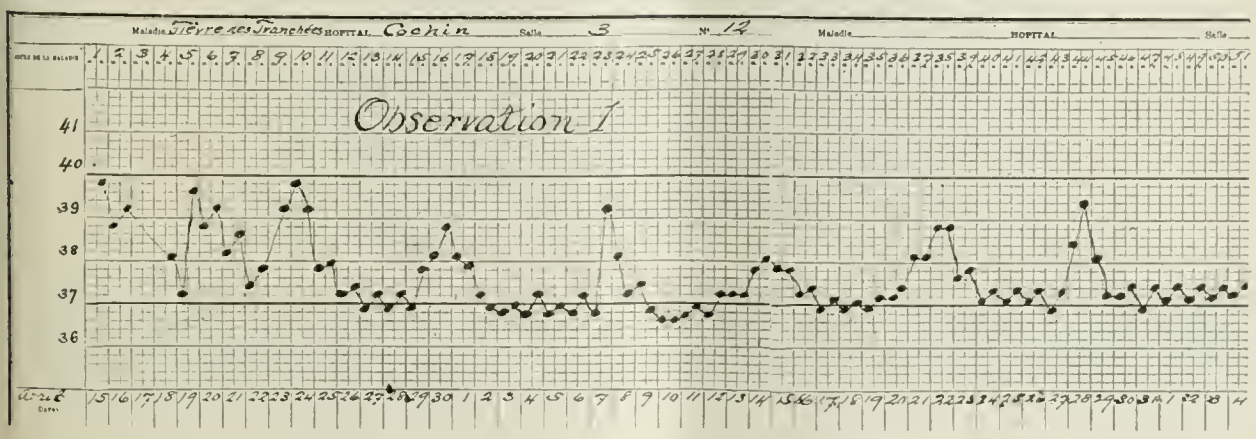
In Charts 3, 4, and 5 the temperature returns to normal the third day. In Charts 1 and 2 the onset is for a longer period; but in every instance, when it falls to normal after the onset it almost at once presents a second access and again mounts to 39° C. (102.2° F.) or more, when it again almost at once begins to recede to normal, with a third access, and sometimes a fourth, when it subsides to normal or subnormal. In Chart 6 the first period of recession is maintained a longer period than in the previous observations.

Besides the fever and rachialgia, the symptoms of lesser prominence can be grouped as follows: Coated tongue, loss of appetite, constipation. There are no visceral symptoms other than a swollen spleen, no vomiting, no diarrhea, no swelling or tenderness over the liver. The pulse in relation to the fever is more frequently lower than otherwise. There are no chest symptoms, except once in a while some slight evidence of a preexisting bronchitis. Besides the intense headache there exists with fair constancy a marked accentuation of the vasomotor response, but no other phenomenon attached to the nervous system.

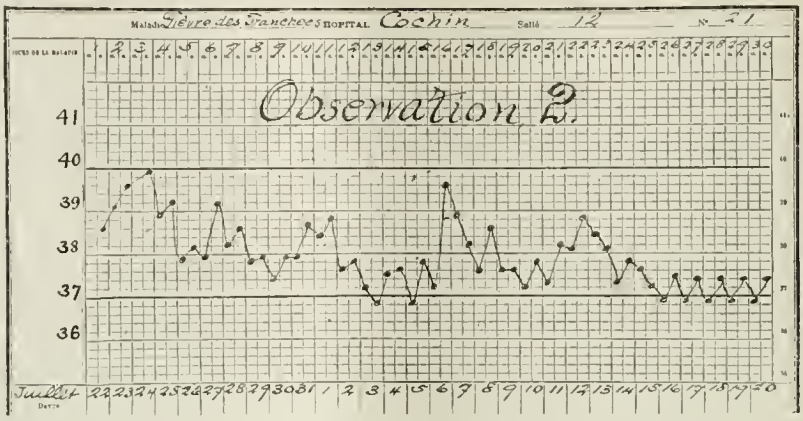
There is absence of sugar and albumin in the urine; sometimes there appear isolated vesicles, apparently resulting from the profuse perspiration.

Following the fall in temperature the patient appears quite relieved, and apparently the attack is over. He recovers his appetite, the pains in the bones subside, and he sleeps well; but from the third to the fifth day he has a repetition of the accidents.

He is again seized by a chill, intense headache,



the lumbar pains and those in the legs redouble in intensity, the temperature jumps at once to 38.5°, 39°, even to 40° C. (101.3° to 104° F.); in short, we have a repetition of all the symptoms which marked the invasion of the malady. This attack continues



two, sometimes three days, then the temperature returns progressively again to normal, and all the troubles again disappear. The fall in the temperature is always marked by profuse sweats; these return also during the quiescent intervals and chiefly at night.

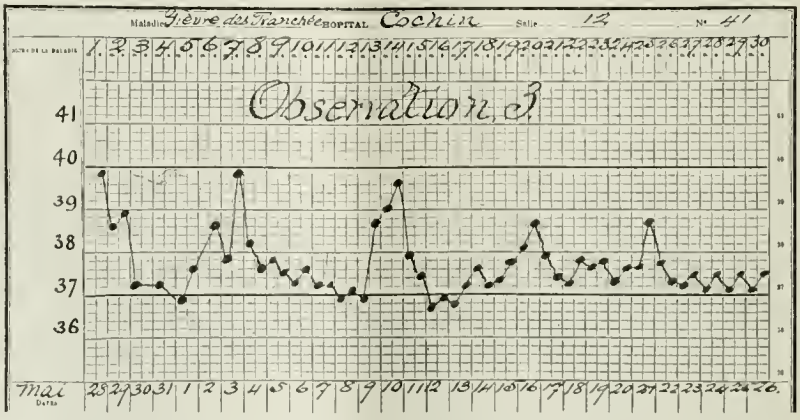
As a rule, the intensity of the symptoms diminishes with each access of the series to the end of the attack, the duration of which varies from fifteen days, as shown in observation No. 4, to forty-four days in observation No. 1. During the intervals between the accessions the patient, as a rule, feels fairly well, and believes his trouble is over. But almost all cases complain of a continuation of pains in the limbs, increased in intensity at night, and accompanied frequently by headache and night sweats.

When finally the attack has spent itself it cannot be said that the subject is freed, for in every case there is a subfebrile period lasting several weeks. During this period all of the symptoms having almost wholly disappeared, the patient's appetite returns, he begins to gain in weight, the spleen returns to its normal size, and there remains only a certain degree of general feebleness. He cannot remain standing any length of time without fatigue, the pains in the limbs persist, but without disturbing the sleep.

Etiology.—It is interesting to note that all of the eight cases cited by Dr. Morichau-Beauchant came from the same sector of the army, where there is a marked absence of swampy or marshy land; there was no complaint as to the presence of mosquitos, but these men, like most of those in the front line, were afflicted with body lice.

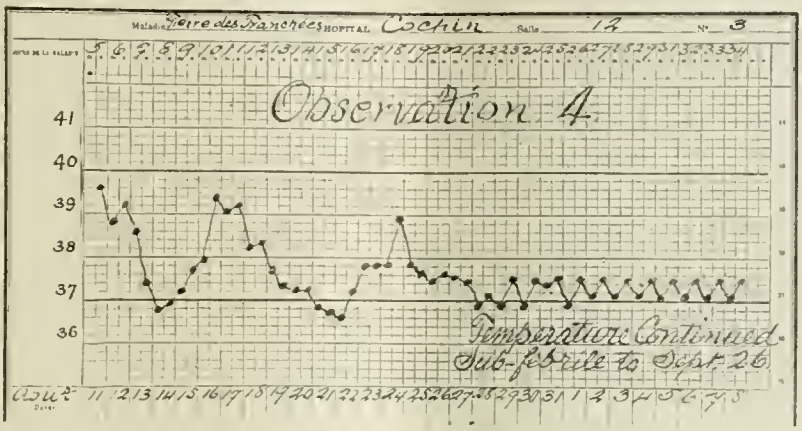
The clinical history presented by the cases shows that they were all suffering from the same malady, but as to just what it was is difficult to determine. It is not an abnormal type of typhoid or paratyphoid, as shown by the absence of all gastrointestinal symptoms, the character of the fever, and the negative results attending repeated examinations of the blood. It is not grippe, for none of the cases presented any thoracic symptoms, and the rapid succession of the attacks does not belong to the character of this disease. Several examinations were made of the blood at the different renewals of the symptoms without finding the presence of hematozoa.

A circular from the Medical Inspectors' office of the French Army calls attention to a new disease appearing in the English Army in Artois and Flanders, to which the name was given of "Trench Fever," and an examination of the published reports[2] revealed this same train of symptoms as observed in the cases here mentioned, excepting that



those observed by our English colleagues seemed to be of a lighter type; none of the symptoms were as severe as in the cases here described which seem to be more profoundly marked, the duration of the disease being more prolonged with a greater num-

ber of accessions. The subfebrile state following in the French cases was not noted in the English ones, and the spleen in the English report was expressly mentioned as not being affected. They also divided their cases into two classes; one the extended, the other the short type of the disease. The prolonged class of cases corresponds in every respect with those here described, especially in the number of relapses. The short form offers the same clinical symptoms, with a fewer number of relapses.



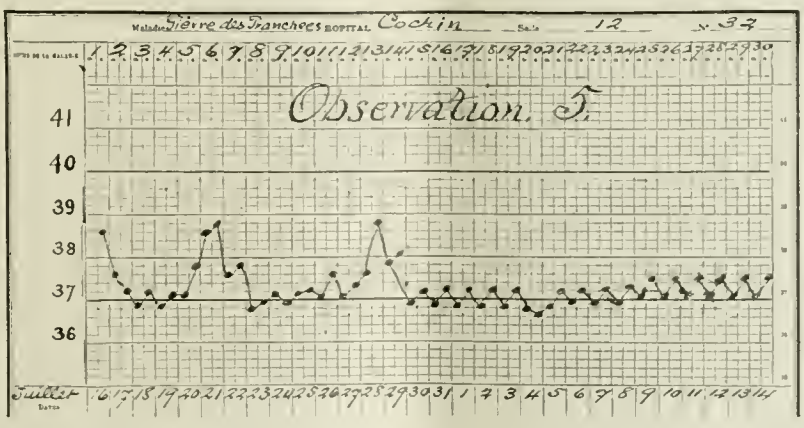
A number of cases similar in character to these were reported at a monthly meeting of the Surgeons of the Fourth Army (Sept. 8, 1916), where the symptoms were typical of those here described, only none gave a history of repeated return of the access and the prolongation of the malady; and it is the length and number of repeated attacks which Dr. Morichau-Beauchant insists on as distinctive of and marking the disease as some new form of malady.

It would appear that the doctor and also the English authors made extensive laboratory researches with cultures of blood specimens in bile, bouillon, and anaerobic cultures, without result; nor were they more successful with cultures from urine, feces, and nasal and pharyngeal mucus. The direct microscopic examination of the blood by aid of various staining agents disclosed neither bacilli, spirilla, nor hematozoa. The blood count also furnished no satisfactory results. The red corpuscles were not diminished; some inclosed basophilic granules; the white corpuscles were slightly increased, but there was no decrease in the hemaglobin.

The English authors sought to discover if the disease was transmissible, and inoculated several soldiers who volunteered for the test. They found that the intravenous injection of 10 c.c. of blood taken from an infected patient reproduced the same train of symptoms after a period of incubation of eight to nine days; and the blood of those inoculated again injected into a healthy subject reproduced the disease up to the fourth series of those subjected to the test. A number of inoculations with the serum or plasma of the blood produced no result; but the red corpuscles, even after washing five times in normal salt solution, still produced the disease, showing conclusively that the elements of infection are found therein.

It was also discovered that the body lice taken from a patient suffering from the disease and placed upon a healthy subject, would transmit the infection.

Certain features of this malady are a duplication of those which mark "military fatigue," a phenomenon which frequently presents itself in the front-line hospital and sometimes deceives the attending surgeon by the intensity of the symptoms and likeness to those which characterize certain well-known diseases. As my conclusions may not be in full accord with those of my French and English colleagues, as to the classification of this new disease called "trench fever," and as I believe fatigue not only plays a considerable and important rôle in the clinical picture, but is in a degree explana-



tory of the phenomena presented, I will enter into a brief description of its characteristics.

It is understood that the soldier's life is as a rule out of the ordinary and under many conditions is calculated to reduce his resistance to fatigue; excessive hours of labor, exposure to all sorts of weather, uncomfortable surroundings, alimentation but slightly varied and often indifferently prepared, long stretches of duty without that period of repose that is of real reparative value, producing a chronic state of fatigue that becomes an important factor in disease, and has been repeatedly noted.[3]

A strong man who has for hours been posted in a position subject to constant bombardment with shells bursting around him; or a man who has been one of a company holding a position against assault, repeated several times during his tour of duty; or the man holding an observation post beyond the front line, with a telephone which he must answer and by which he must constantly report the slightest movement of the enemy, movement of aviators, point, kind, and quality of battery action, and at any moment liable to capture by a rush of the enemy, such a man has his nerves for hours put upon tension. His service terminated, he seeks rest and repose to fit himself for the next call, but does not secure it. His sleep is restless, and unrefreshing; his appetite is poor, as is also his state of digestion, and often there is a passing constipation or diarrhea. He returns to his post unrecuperated and fagged, but brings his will to play and does his full duty, a good soldier. This continues for a longer or shorter period of time, according to the native mental and physical make-up of the man.

One day, brusquely, and without warning, he has a high temperature, 38.5-39°, even 40° C. (101.3°-104° F.); he complains of pains all over, in his head, back, and legs—frontal and occipital headache, rachialgia, and myalgia; he has chills, coated tongue with a distaste for food, but demands drink. The headache is almost always accompanied by vertigo and roaring in the ears; the eyes may be bloodshot. The myalgia is most pronounced in the hips and legs, and not infrequently the patient complains of pains in the joints; nausea and sometimes vomiting are present.

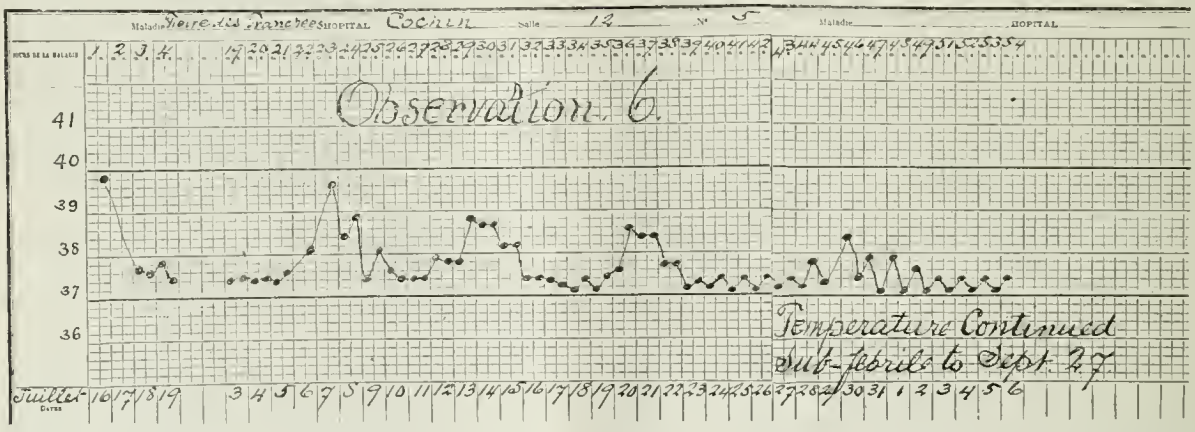
The man may have diarrhea, but more frequently constipation. His pulse is accelerated and in keeping with the temperature, his face is haggard and usually a hectic flush covers the cheeks, although he may be abnormally pale; his eyes are brilliant and restless, or heavy, lusterless, and dead. Some give a history of epistaxis and sometimes vesicles appear upon the lips.

These symptoms last from three to six days. The temperature oscillates, but under the influence of a brisk purge (if constipated) and quinine, falls to normal—in the bad cases possibly to subnormal; but the pains in the bones and muscles persist, and the patient shows great fatigue—even prostration, which usually disappears with repose.

The train of symptoms makes the doctor think of grippe, pneumonia, typhoid, paratyphoid, rheumatism, or malaria.

Sometimes, in spite of the abatement of the fever and of the other disquieting symptoms, the patient seems to lose strength; he complains of continued pains in the lumbar region and legs and neuralgia all over; he complains of muscular asthenia and is without force or energy, to which may be added gastrointestinal atony, and his general condition may become neurasthenic.

There is no doubt but that the long resistance to mental and physical fatigue has so depleted the functional vitality in the subject that the waste products are imperfectly eliminated, and the patient's condition is aggravated by autointoxication which is probably the active agent in upsetting the thermic equilibrium, producing the fever of fatigue, the professional malady of the soldier.



A comparison of the symptoms and condition produced in these two classes of cases will cause the observer at once to note their similarity.

In the cases of trench fever described by the English and French authors, there are the same onset and train of symptoms as observed in army fatigue, with the addition of other signs of greater intensity, the former differing notably from the latter in the repeated accessions of the attack.

To those who have had experience with certain intense forms of malaria in the hot climates, the onset of trench fever by a chill, followed by fever of fairly defined and fixed duration, with the recession marked by profuse sweating; a renewal of these accidents after a given period of repose, which varies only slightly in duration; and the significant fact that the body lice taken from an affected subject will produce the clinical train in a healthy one, as well as the demonstration that the injection of the red blood corpuscles reproduces the malady and that the serum or plasma of the blood of the same patient does not, is fairly con-

vincing of the malarial nature of the malady. From my observation and knowledge and the observations of others on military fatigue, I am led to believe that trench fever is a manifestation of this morbid condition complicated and aggravated by malaria, which presumption would become a conviction if it is found that trench fever yields to treatment with quinine.

REFERENCES.

1. Morichau-Beauchant: Fièvre des Tranchées, *Paris-Médical*, November 25, 1916.
2. MacNee and Renshaw: "Trench Fever," *British Medical Journal*, February 12, 1916.
3. M. Lelong: "Quelques formes de la fatigue à l'avant," *Paris-Médical*, January 20, 1917.

146, Avenue des Champs-Elysées.

College Ambulance Units.—At the United States Army Ambulance Corps instruction camp at Allentown, Pa., there have been in training 4800 college men for service in France since June 8, and many of the units are now ready for service, showing the good results of intensive training. Dr. Van Voast, in charge of the Harvard section, has stated that the camp includes 135 units of thirty-five men each from colleges and universities extending from Yale, Harvard, Princeton, Amherst, Columbia, Pennsylvania and Fordham in the East, to Berkeley and the State of Washington in the West. These men will drive ambulances from the front line to the field hospitals. Each unit has been equipped with twenty-four Ford ambulances, one Packard truck, one Ford truck, one Ford touring car, and one motorcycle with side car.

Surgeons Still Needed for Army Medical Corps.—Surgeon-General Gorgas authorizes the statement that there remain vacancies for surgeons in the Medical Corps of the Army, both in the reserve corps and in the regular service. These vacancies should be filled soon in order that ample training in the duties of the military surgeon and sanitarian may be secured by the dectors desirous of these commissions. Physicians entering the reserve corps serve for the length of the war; those going into the regular service will fill a more permanent commission. Examinations for admission to the regular service are held on the first Monday of every month. Applicants for commissions should apply directly to Surgeon-General Gorgas, and will receive notification of the conditions and designation of the places for conducting examinations. Those desirous of entering the Medical Officers' Reserve Corps should apply to the nearest examining board.

Growth of Medical Work of National Defense Council.—The Council of National Defense, Medical Section, has been endeavoring to secure ophthalmologists for the army, and has been at work on the selection of an approved list of otologists. The research committee, under the direction of Dr. Vaughan, has opened up activities in different parts of the country for the perfection of various practical methods in the preparation of disinfectants for wounds, throat sprays used in the control of carriers of disease communicated by nose and throat secretions, etc. This work is not to be limited to war conditions only, but takes into consideration industrial conditions as well.

Plattsburg Soldiers Forbidden Vermont.—Colonel Wolf issued orders on July 19 forbidding any members of the Plattsburg garrison and training camp to visit the State of Vermont without the written permission of the commanding officer. Such order was issued on account of the presence of infantile paralysis in that State, more than seventy cases having been reported. As yet no cases of infantile paralysis have been reported on the New York side of Lake Champlain.

National Guardsmen in Good Physical Condition.—The work of examining the men of the National Guard going into the Federal service in the city armories in New York has been so thoroughly and quickly done that it is believed the work will be completed in a week, in marked contrast to the delay attendant on the same work at the time of the mobilization of the militia for the Mexican border. Headquarter officers consider it an even chance that the guard may be ready to leave for the Southern training camp by August 1. One of the features of the Federal examination is the small number of rejections for physical disabilities, less than 2 per cent., showing that the men had been subjected to a careful physical examination by the guard medical officers, and it is largely only those who have developed defects since being sworn into service who have been discharged for this reason. The men have been examined a company at a time, and when it is realized that at war strength a company may contain 175 men in it, the task of going over the entire guard of the city can be appreciated.

U. S. Doctors to the Front.—Coordination of America's medical service abroad with the Allies was discussed at a conference in Washington recently by Secretary Baker, prominent American physicians, and medical representatives of Great Britain and France. It is conceded that hundreds of additional American surgeons will soon be sent to France. Americans will continue as virtual heads of certain allied medical services at the French front.

Hospital Train Offered to United States.—The most modern and completely equipped hospital train ever built has been offered to the United States Government by the Western Maryland, Baltimore & Ohio, and Pennsylvania railroads, through the Maryland Defence Council. It will leave Baltimore for Washington, D. C., with several doctors and half a dozen nurses, the staff of the train, who will volunteer their services at the same time. The train consists of five cars containing an operating room, convalescent room, etc., and is well stocked with bandages and all other necessaries of a hospital.

Dr. Pearce Bailey of New York, chairman of the Committee on Furnishing Hospital Units for Nervous and Mental Disorders to the United States Government, a sub-committee of the National Committee for Mental Hygiene, has been invited by the Surgeon-General of the United States Army to accept a commission as major, serving as personal advisor to the Surgeon-General in all matters pertaining to psychiatry and neurology. Major Bailey is now on duty in the Surgeon-General's office. Dr. Frankwood E. Williams, associate medical director of the National Committee for Mental Hygiene, has been appointed vice-chairman of the committee and placed in charge of the work in New York.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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New York, July 28, 1917.

RADIUM IN THE TREATMENT OF FIBROUS ANKYLOSIS.

NOTWITHSTANDING the many and great advances effected by orthopedic surgery during the past thirty years, even yet the best to be expected in the treatment of tuberculous arthritis, except when begun in the very earliest stages, is a stiff joint. This, while better than abscess and joint disintegration, is not a result in which the surgeon can take much pride, and various measures have been tried to restore motion. Bony ankylosis is, of course, practically hopeless, but fibrous adhesions continually tempt the orthopedist to renewed efforts to restore mobility. At one time thiosinamine was regarded hopefully, but the results of its employment did not come up to expectation. Forcible breaking up of the adhesions may restore motion temporarily, but the risk of lighting up the old trouble or of an even worse outcome is too great to warrant the undertaking in most cases.

Recently some encouraging experiments have been made with radium in this condition. The good results reported in the use of radium in mobilizing joints stiffened by arthritis deformans suggested to J. J. Nutt the employment of the same remedy in cases of fibrous ankylosis following tuberculous arthritis, and he reports in the *American Journal of Orthopedic Surgery*, No. 2, Vol. XV, six cases of ankylosis of the joints in which this mode of treatment was essayed. In most of the cases a radium pad was worn directly over the knee, radium solution containing two micrograms was given per os three times a day, and intravenous injections of radium element were given, the amount injected varying from 10 micrograms up to 50 or 100 micrograms, or one or more doses of 25 micrograms were given as conditions indicated. In the cases receiving the smaller amounts the injections were given about a week apart until the larger doses were reached when the time was extended to one to two months between injections. When the larger doses were employed but one or two injections about two months apart were given.

The process toward recovery was apparently definite but slow, as some of the cases were under treatment for over a year, although in one or two of the milder cases slight movement was obtained within about two weeks after the beginning of treatment.

The degree of motion obtained varied of course according to the amount of deformity and stiffness previously present. All of the patients were under continuous hospital care, and were made the subjects of routine hospital analyses as to blood, urine, etc. The Wassermann reaction was negative in each case. Nutt states that no general effect was noted besides that attributable to an excellent tonic; the patients themselves insisted that they felt better under the treatment. The results locally were more or less definite, even before any mobility was shown. A looseness was felt in the knee, more noticeable in the mornings than after use. When movement began to be perceptible, the knee assumed a slightly flexed position and offered a little difficulty in straightening, though this did not appear to be the same expression of muscular spasm as is met with in active knee-joint disease, but was rather an uncertainty of the muscles with regard to relaxation as motion increased. Heat or swelling was never present.

Since this is but a preliminary report, much is yet to be worked out before definite results as to permanency of cure or relief can be assured. As Nutt suggests, larger doses may hasten the process of recovery with perfect safety and other combinations of methods in administration of the radium may give quicker or surer results.

UNWISE PUBLICITY.

PICKING up recently the Sunday edition of one of the leading New York dailies, we saw the headline, "Says Doctors Fail in Tetanus." The article following occupied well over half a column. This seems to us to be an excellent example of unwise publicity in medical matters. Such a headline, published as it was in a leading metropolitan newspaper which has a large local and out-of-town circulation, was sure to attract the eye. The reader, glancing over the article, came across such statements as these: "Tetanus still prevails, chiefly because thousands of physicians do not avail themselves of tetanus antitoxin." "Tetanus is a preventable disease; why, then, this neglect on the part of the general practitioner? . . . It is an expensive remedy. And yet how inexpensive when measured against the value of a human life!" "Why is it that American physicians, supposed to be the most able and the most resourceful in the world, are so slow in taking up this experience and applying it in civil practice? Can any one answer? We confess it's too hard for us."

What is the inevitable result of such an article? Among the many readers of it will undoubtedly be

some who will have lockjaw, or know intimately persons who will have it; their physicians are, of course, discredited. Even aside from the actual occurrence of tetanus the profession as a whole is disparaged, and the impression given that the American practitioner remains behind the times, even at the cost of his patients' lives. It is no defense of such an article to say that it is quoted from a medical magazine. There are many matters of medicine about which a difference of opinion exists, many methods of therapeutic procedure are still *sub judice*, and the history of medicine is full of mistakes, false theories, and ignorance. But the display of these things to a lay public will be productive of more harm than good. The lay reader, untrained, as a rule, in scientific or judicial modes of thought, fails to bear in mind that the profession acts, on the whole, according to the best knowledge available, and that its individual members have ever the welfare of their patients at heart and conduct their treatments with this in view.

Referring to the actual point of issue—the universal use of tetanus antitoxin—we do not hesitate to say that it is not well taken. When we consider how many cases of lockjaw in civil life follow trivial injuries, perhaps a scratch or cut forgotten by the patient himself, and also how low the incidence of the disease is, we fail to see the grounds for the recommendation that tetanus antitoxin be administered in all cases of wounds. The physician who adopted this routine in his everyday practice would cause in the course of a year much needless inconvenience and pain to hundreds of patients, not to mention expense that they could perhaps ill afford.

The writer quoted gives in defense of his theory the experience of the armies in France, the high incidence of tetanus at first, and its spectacular decrease following the routine administration of prophylactic doses of antitoxin to all the wounded. Unfortunately, the analogy is not on all fours. The reason for the great prevalence of tetanus in Flanders has been stated over and over again in the medical journals of all the countries at war to have been the richly cultivated soil on which the battles were fought, soil fertilized for years by layers and layers of manure. Hardly a wound occurred which was not impregnated by this soil, an ideal breeding place for the tetanus bacillus. It would have been surprising, indeed, if there had not been a great deal of lockjaw.

It is quite generally conceded now that all wounds occurring in persons working about stables or in gardens, as well as wounds which are infected from the first or are inflicted by rusty weapons, should include in their treatment a prophylactic injection of antitoxin, but not that every man who happens to cut himself while shaving or every woman who runs a needle into her finger should be obliged to spend several dollars and submit to the pain of an injection.

It is doubly unfortunate, then, that such publicity should be given to advice with which so many authorities disagree, and which cannot but do harm. The question of public health is so important, especially now, when the nation is preparing for war, that the promulgation of risky theories or unjustifiable criticism of the profession, causing the public to lose faith in the source whence must come its aid, is greatly to be deplored.

ANOTHER VEXATIOUS LAW.

We called attention last week to a law passed by the New York Legislature, purporting to deal with traffic in habit-forming drugs, but actually treating only of opium and its derivatives; a law accomplishing no good purpose and only causing needless vexation to the physicians of the State. This law does no serious harm to anyone, but is merely fool-stuff. There is another law, however, passed by the same Legislature, which, if literally interpreted and enforced, will put an end to the practice of genitourinary surgery in this State. The law reads as follows:

Sec. 1142-a. *Advertisements relating to certain diseases prohibited.* Whoever publishes, delivers or distributes or causes to be published, delivered or distributed in any manner whatsoever an advertisement concerning a venereal disease, lost manhood, lost vitality, impotency, sexual weakness, seminal emissions, varicocele, self-abuse or excessive sexual indulgence and calling attention to a medicine, article, or preparation that may be used therefor or to a person or persons from whom or an office or place at which information, treatment, or advice relating to such disease, infirmity, habit or condition may be obtained, is guilty of a misdemeanor and upon conviction thereof shall be punished by imprisonment for not more than six months, or by a fine of not less than fifty dollars nor more than five hundred dollars, or by both such fine and imprisonment. This section, however, shall not apply to didactic or scientific treatises which do not advertise or call attention to any person or persons from whom or any office or place at which information, treatment, or advice may be obtained, nor shall it apply to advertisements or notices issued by an incorporated hospital or a licensed dispensary or by a municipal board or department of health or by the department of health of the State of New York.

Among other things this means that no medical journal can be circulated in this State, whether published here or not, which contains an advertisement of salvarsan or any of its substitutes, mercury, cubebs, santal, potassium iodide, or any other drug which may be used in the treatment of the disease mentioned, or of any suspensory bandage, catheter, sound, or other instrument which may be employed for such purpose. It would also forbid the distribution by mail or messenger of circulars or announcements of such medicines or instruments. It is a question whether, strictly interpreted, it might not also prevent the publication in a medical journal of any article on a genitourinary subject, published over the name of its author or containing the author's office address, since such articles would not then be embraced in the exception of any "didactic or scientific treatises which do not advertise or *call attention* to any person or persons from whom or any

office or place at which information, treatment, or advice may be obtained."

It is probable that the author of this law had the intention only of putting an end to the advertising of quacks in the lay press and by handbills, but a careful reading of the bill shows it to be much more far-reaching. It is really so obstructive to medical progress that we cannot understand how it was allowed to pass seemingly without comment or protest from the legislative committees of the State and county societies. The act goes into effect September 1.

ALCOHOLISM IN GRAND CANARY ISLAND.

Although the inhabitants of this well known isle have an excellent water supply and their famous native wine, they are noted for their abuse of spirits. They import annually 627,533 liters of distilled alcoholic beverages, 85,561 liters of alcohol and 22,290 liters of liqueurs. To these amounts should be added 2,851,200 liters of native wine, the total being equivalent to 570,886.8 liters of 100 per cent. alcohol consumed annually by the less than 150,000 inhabitants. These figures of Ramos in the *Gaceta Médica Catalana* for May 15 seem incomplete, as no mention is made of the amount of wine exported and no emphasis is laid on the amount of alcohol drunk by the floating population, chiefly "sailors from every port in the world," who start in on a spree the moment they land.

Ramos seeks to explain why natives of a warm climate, who should from analogy be wine drinkers, are so addicted to the use of spirits. A Canarian is famous for excuses to drink. He has his eye opener, his appetizer, his digester. He drinks when he is cold and when warm he drinks to be cool. Above all, he drinks because it is a universal custom. Ramos believes that the following factors are operative: First, the bad example of the sailors. Second, the monotony of the fare, for most people live on maize flour, milk, cured fish, and a few fresh vegetables. Aside from the fish they are practically vegetarians. Moreover, they greatly abuse spices and condiments, which abuse provokes thirst. Third, a certain monotony of life and the absence of certain kinds of amusements and diversions.

The effects of spirits consumption are shown in the records of the police courts, for 90 per cent. of those who come before them are, or were, "drunk and disorderly." Prostitution and syphilis flourish, as they have for centuries, and, computing the morbidity and degeneracy which result from spirits abuse, Ramos seems unaware that syphilis must play a rôle at least equal to that of alcohol.

The author has no remedies to suggest and only deplores a state of affairs which he perhaps believes to be irremediable. Despite the baneful effects of alcohol the Canarians are naturally loyal, men of their word, harmless, frugal, and charitable. It is a fact that no one has ever died of starvation on the island. Aside from offenses like adultery, for which alcohol is held largely responsible, Grand Canary has less crime than any other Spanish territory. The men are great sportsmen and athletes.

The Bacteriology of Icecream.

Icecream has been declaimed against on various grounds, principally, perhaps, on account of its frequently reported uncleanliness. There is no question, however, that icecream made under strictly hygienic conditions is, in addition to its grateful palatability, especially in hot weather, a nutritious food, and its use in certain complaints is of considerable value from the dietetic standpoint. The statement has been made that the distribution of bacteria in icecream is markedly uneven, that there is so great variability in the bacterial counts of different portions of the same container that any small sample selected for analysis will not represent the whole mass of the icecream. This statement is disputed by S. Henry Ayers and W. T. Johnson in Bulletin No. 503, U. S. Department of Agriculture, who give an account of the manner in which they determined bacteria in icecream. As a result of their investigations they came to the conclusion that the method of collecting samples and making bacterial counts used in the experiments gives results which indicate that bacteria in commercial cream are distributed quite evenly, and that an analysis of one sample from a gallon of icecream gives results which will hold for any other similar sample from the same gallon. Storage of icecream for eleven days in a commercial icecream cabinet, or in a hardening room for a period of two months, did not seem to cause an uneven distribution of bacteria. In a series of from five to ten samples taken directly from a large commercial freezer, the bacterial counts on each sample checked within the usual limits of error of bacterial analysis. No greater variation in bacterial counts between samples was observed when the plates were incubated at 37 deg. C. for 48 hours than when incubated at 30 deg. C. for a period of five days. When dilutions were such that about 200 colonies were present on the plates a lower variation between counts of samples of icecolonies per plate. The variation in plates made from the same sample was found to range from 7 to 26.6 per cent. Among duplicate plates a variation as high as 41 per cent. was observed.

The Baruch Public Bath.

On Tuesday of last week the Board of Aldermen of this city passed unanimously a resolution naming the Rivington Street baths after Dr. Simon Baruch. This is a well-deserved though tardy recognition of Dr. Baruch's labors during long years in establishing the system of free baths in this city. He began to agitate the question of free public baths in 1890, but met with so much opposition from the city officials and even the Board of Health that it was not until 1901 that the first public bath was opened at Rivington and Goerck Streets. Since that time several other bath houses have been built in other localities, and now the number of free baths given by the city is over 7,000,000 annually. It is a satisfaction to recall the fact that the Medical Record was always a firm supporter of Dr. Baruch in his fight for cleanliness and health.

News of the Week.

Tetanus Bacilli Spread by Germans.—W. B. Smith, Federal chemist, reports that court plaster, which is being sold throughout Kansas, is laden with tetanus bacilli. This report has caused the arrest of five Germans on orders of Fred Robertson, United States Attorney in Kansas City, Kan. The men posed as venders of court plaster, and when the farmers through the corn and wheat belts refused to buy, the plaster was given to them. Three Missouri chemists also verified the presence of the tetanus germs. Peddlers have also been reported selling imported plaster in New York and other States.

Enforcing the Dog Muzzling Law.—The Weekly Bulletin of the Department of Health, New York City, July 14, announces that 782 dog owners were summoned to court during the previous week for not muzzling their dogs and were fined a total of $1,211.

Paralysis Alarm in Vermont.—The Vermont State Board of Health has issued an order forbidding the holding of fairs, chautauquas, street carnivals, and circuses in that State until further notice, in an effort to check the spread of infantile paralysis. Sixty-eight cases have been reported this year, with six deaths; all but three cases were in Washington County.

Enlargement of Bellevue Hospital.—The growing demands of New York City, together with the demands arising as a result of America's entrance into the war, have necessitated an enlargement of the plant of Bellevue Hospital. The Board of Estimate is now arranging for the purchase of the block to the north of the hospital grounds, between Twenty-ninth and Thirtieth Streets, First Avenue and East River.

New Medical Plan Founded.—The National Social Unit Organization, which was created last year in New York City, has established a national social laboratory in Cincinnati, Ohio. A group of thirty-three Cincinnati physicians, living or practising within the Mohawk-Brighton district of Cincinnati, containing a population of 15,000 people, and comprising the social laboratory district, have organized as a group, have appointed an executive committee, and have elected a director for the purpose of conducting the health work of that neighborhood. These physicians serve as a local health department and the man whom they elect will serve as the health officer for the neighborhood. Clinics and classes in the prevention of disease will be established. Each physician will receive remuneration for the work he does; if the work thus performed interferes with private practice, an increased remuneration will be made. The necessary government of the social unit laboratory will be in the hands of these physicians. Dr. J. H. Landis, health officer of Cincinnati, president of the Cincinnati Academy of Medicine, is chairman of the committee which has developed this plan.

Birth Control Film Barred.—The Appellate Division of the Supreme Court has expressed disapproval of the exhibition of motion picture films dealing with birth control.

Women Medical Students at Columbia.—Announcement is made that a gift of $50,000 from George W. Brackenridge of San Antonio, Tex., will enable Columbia University to open its doors to women students this autumn. Work will be begun at once on the addition to the present building to provide extra laboratory facilities in the departments of chemistry, pharmacology, pathology, and bacteriology.

George Simmons has been appointed as messenger boy at $480 per annum in the office of the Chief of Naval Operations, Navy Department, and the *Official Bulletin* announces that the President permitted his appointment without reference to the civil service rules.

German Synthetic Drugs Banned.—Licenses under which German chemical firms have been exporting to the United States through northern European neutral countries serums, vaccines, antitoxins, and other biological products were formally revoked on July 21 by the Treasury Department. The order of revocation cites the inability of Treasury inspectors to inspect the plants of the companies because of the war. Seven of the chief chemical firms of Germany are involved.

Obituary Notes.—Dr. LUCIEN F. BACHELDER died at his home in Rockland, Me., on July 12, aged 81 years. He was a veteran of the Civil War, a member of the G. A. R., and also a licensed Methodist preacher.

Dr. EDWIN N. MAYBERRY, a graduate of the University of Vermont College of Medicine, Burlington, in 1882, died of apoplexy on July 14, at his home in South Weymouth, Mass., aged 60 years. He was a member of the Massachusetts State Medical Society, Norfolk Medical Association, and a fellow of the American Medical Association.

Dr. HARRY R. JOHNSON, a graduate of the University of Tennessee, Medical Department, Memphis, in 1887, and a practising physician of New Hope, Ala., died at Huntsville, Ala., on July 9, aged 55 years. He was a member of the Madison County Medical Society.

Dr. F. G. MARRERO, a graduate of Tulane University of Louisiana School of Medicine, New Orleans, in 1884, died on July 11, in the Presbyterian Hospital, New Orleans, from paralysis, aged 62 years. He was a resident of and had practised in Covington, St. Tammany Parish, La., of which town he was mayor for two terms and at one time coroner of St. Tammany Parish.

Dr. SAMUEL B. TOBEY, a graduate of the University of Michigan, Department of Medicine and Surgery, Ann Arbor, in 1860, and a pioneer physician of Pottawattamie County, Iowa, died in Omaha, Neb., from paralysis on July 8, aged 80 years. He was a veteran of the Civil War and a member of the G. A. R.

Dr. CHARLES B. JAMES, police surgeon of Denver, Col., died in St. Luke's Hospital, Denver, on July 8, from Bright's disease, aged 52 years. He was graduated from the Kentucky School of Medicine, Louisville, in the class of 1891, and for ten years served as county physician, previous to his later appointment.

Dr. EDWIN D. FARROW, a graduate of the University of Pennsylvania, Department of Medicine, Philadelphia, in 1874, and for years county physician of Tulare County, Cal., died at his home in Visalia, Cal., on July 6.

Correspondence.

HOW TO EMPLOY THE PHARYNGEAL INSUFFLATION APPARATUS IN CASES OF EMERGENCY.

To the Editor of The Medical Record:

Sir:—I find that my article on "Resuscitation," published in the issue of the Medical Record for July 7, is too extensive to be of practical use for teaching of and learning by first-aid men how to employ "Meltzer's Pharyngeal Insufflation Apparatus" for artificial respiration in cases of emergency in man. I would ask you therefore to publish the following:

On finding an unconscious individual, without any, or with very insufficient respirations, employ immediately the apparatus (when at hand) in the following order:

1. Put the board on the abdomen (over the clothes) and compress it by the hand; the tightening of the belts can be finished later.

2. After examining mouth and throat for the presence of tobacco, false teeth, etc., pull out the tongue by means of the forceps (present in the hand bag) and insert the pharyngeal tube (the smooth side of the tube resting on the tongue) until it reaches the posterior wall of the pharynx; the tying of the tongue to the pharyngeal tube can be done later.

3. Start immediately working the bellows with one foot and moving the ring of the respiratory valve from right to left and from left to right (respiratory cycle) about twelve cycles per minute.

4. Start immediately to screw down the rubber tubing (which should be open at the beginning) attached to the T tube, while watching the chest for heaving (respirations); as soon as there is a definite heaving discontinue screwing the clamp screw. (In order that the screw should not fall off, it should be attached by means of a piece of cord to the metal T tube.)

5. Now tighten the board and tie the tongue (not too tight!) to the pharyngeal tube; the forceps may be then taken off. (If the respiration appears insufficient it is usually due to the falling back of the tongue; it should be pulled out again. If there is a steady tendency to fall back, either the tying should be made more tight or the tongue must be kept pulled out constantly by means of the forceps.)

6. After the respiration has been continued for about a minute turn the plate on the outside end of the pharyngeal tube and insert into the opening the stomach tube (present in the bag) and push it down into the stomach, or at least until it is noticed that air escapes from the external end of the tube. Throughout these manipulations the working of the bellows and of the respiratory valve should not be discontinued.

If several individuals are present, and willing to lend a hand, the very first act should be the attempt of resuscitation by means of the Sylvester method, while another person compresses the abdomen and tightens the belts for the abdominal board. As soon as this is done the Sylvester method should be discontinued and the pharyngeal tube inserted; the rest should be continued as outlined above. During the performance of artificial respiration other individuals may remove the clothing and various forms of stimulation may be applied; but the artificial respiration should under no circumstances be discontinued to allow of any other performances.

S. J. Meltzer, M.D.

13 West 121st Street, New York.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

COMPULSORY VS. VOLUNTARY TRAINING OF CRIPPLED SOLDIERS—REPORT ON THE MILK PROBLEM—INCOMPLETE MEDICAL EXAMINATIONS—ALLEGED UNFAIR TREATMENT IN REEXAMINATION OF EXEMPTED MEN—DEATHS OF MEDICAL MEN.

London, June 30, 1917.

Sir A. Boseawen, M. P., at a conference of stallholders and exhibition work by wounded soldiers, spoke of the value of voluntary work which is being done at various military and other hospitals, and said they were anxious to discover whether it is expedient or possible to introduce the compulsory system of training such as exists in France and Italy. There were many he said who refused to avail themselves of the opportunities given them, who were discharged from the army without training in a useful occupation, who had contracted habits of idleness when in hospital, and it was a difficult problem how to provide for them. Mr. Montague Barlow, M. P., presided and discussed the question from several points of view, the feeling generally expressed being adverse to compulsion. King Manuel, who has taken a personal interest in the working of orthopedic hospitals, mentioned that at the Shepherd's Bush Institution out of 1,100 patients 140 were undergoing training without compulsion. The employment of those men in the hospitals was a part of their treatment and had been most successful. Lord Charnwood said that in France it was found that very few men learn anything under compulsion. It was a plausible theory for quite young fellows, but applied to older men with wives and families it would be found they were dealing with very refractory material. An enormous amount of work could be done without using the word "must."

An interim report of the committee on the milk problem has been presented to the Houses of Parliament. It deals with the methods of encouraging and preserving supplies as well as with their distribution. The constitution of the committee is very representative, entitling it to speak on behalf of the great dairy interest in all parts of the country. It had to report upon production, conservation of supplies, to provide for the special needs of children in urban centers, organize supplies, and kindred subjects. To maintain the supply in time of war is recognized to be a complex problem. A shilling's worth of milk contains more nutriment than can be bought with the same money in the common cuts of meat or fish. Yet since the war began beef has risen in price 112 per cent., eggs 78 per cent., fish 138 per cent., and milk only 62 per cent. The price should be based on the cost of production. It is of importance to the dairy farmer to be able to obtain feeding stuffs, so full supplies of hay and roots must be secured. During May, June, and

July there is more milk available than the market can accommodate.

At the Law Society Military Tribunal, complaint has been raised of perfunctory examinations alleged to have been made, and one man was sent for reexamination as he was found to be epileptic. Formerly classified as B.1 he was found only fit for C.3. The chairman called it a great reflection on the Medical Board which examined the man in the first instance. He stated that a number of men had been passed for general service who had been altogether rejected when their cases had been reconsidered. It seemed that very rarely had men been thoroughly examined until the tribunal sent the case to the Medical Board. Then they received the examination which ought to have been given in the first instance.

Complaints have been made in the House of Commons of harsh and unfair treatment said to have been accorded in many cases by medical boards and recruiting officers to exempted men who have been called up for reexamination. The Government promised to appoint a committee to investigate the working of the act. This was approved by Mr. Asquith, who said there was overwhelming evidence that men whom no reasonable body ought to have dreamed of passing for any form of military service had frequently been passed in an almost reckless fashion. Mr. Bonar Law claimed that the War Office had tried to carry out its definite pledges and said he was not disposed to come before the House in a spirit of apology. He remarked that if when unpopular things had to be done members stimulated the unpopularity it would be impossible to bring the war to a satisfactory conclusion.

Dr. Edgar Browne (Phiz) died suddenly on the 22nd in his seventy-fifth year. Two years ago he celebrated his fifty years' membership of the Liverpool Medical Institution. He was president of the Dickens Fellowship and had written his father's life.

Deputy Surgeon-General C. J. Mansfield, M.D., M.V.O., R.N., died on May 7. He took the M.B., C.M., Aberdeen, in 1883, entered the navy in 1885, was fleet surgeon 1905-9, and deputy surgeon general 1914-16. He was created M.V.O. in 1909. He was a sportsman of wide sympathies, first-rate fisher, and enthusiastic boxer.

Lieutenant Charles Douglas White of the Flying Corps was killed on May 10. He had won the military cross, was gazetted lieutenant in the King's Rifle Corps in October, 1914.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 12, 1917.

1. An Analysis of 133 Fractures of the Spine Treated at the Massachusetts General Hospital. John B. Hartwell.
2. The Classification of Hay Fever Pollens from a Biological Standpoint. William Scheppegrell.
3. Some Notes on Artificial Pneumothorax. Paul H. Ringer.

3. Some Notes on Artificial Pneumothorax.—Paul H. Ringer states that he never injects more than 300 c.c. of gas at the first sitting (save when the gas is administered for stopping hemorrhage), no matter what the manometric readings may be, and at subsequent injections the gas is cut off when the water manometer shows a mean reading of zero, or, at most, plus one, or two cm. This conservatism necessitates a few more injections per patient, but the displacement of the thoracic contents comes about far more gradually, and subjective and objective signs of discomfort and oppression are less marked. In checking profuse hemorrhage these conditions must be disregarded as an emergency is to be handled. He has injected as much as 1000 c.c. at once to control bleeding. The brilliant results obtained from this method have impressed the writer with the importance of artificial pneumothorax as a hemostatic. Pleural effusions have responded in about 50 per cent. of Ringer's cases to this treatment, and it allows of more comfort to the patient. He removes promptly any considerable accumulation of fluid (any amount reaching to the fourth rib) and substitutes gas for it either at the time the fluid is withdrawn or shortly afterwards. Paracentesis is repeated if necessary, and the patient kept under fluoroscopic examinations in order to ascertain the condition of the fluid and the time of tapping. Air embolism is to be guarded against at the initial injection, as the needle may be pushed too far in and puncture the lung, tearing one of the vessels in the walls of the air alveoli, or going through the wall of a known or unsuspected cavity, with resulting air embolism. Avoidance or lessening of this danger may be procured first, by having the field of operation the highest point of the chest; thus, if the midaxillary region be chosen, a pillow or sand bag placed beneath the patient in such a manner as to make the field of operation convex, will serve the purpose; second, by inserting the needle very slowly and steadily through the chest wall until it is thought the pleura is reached, and by not inserting it at a greater depth than three or four cm., though in patients with very thick chest walls this latter rule must be disregarded. It is often possible to obtain only small pockets of gas varying in size from 50 to 200 c.c., and Ringer's experience has been that where typical pockets form it is useless to continue the injections in the hope that the pockets will coalesce and a collapse be obtained. In cases of partial collapse, symptoms of cough and expectoration will not wholly subside, a certain amount of absorption of toxic material will always take place, and gas injections must be indefinitely continued. The duration of collapse in such cases where a complete result has been obtained should be from eighteen to thirty-six months, preferably the latter, and Ringer is loath to advocate re-expansion under three years or more. He states that we may *think* healing has taken place; we do not *know*. Ringer takes the position of a conservative enthusiast with regard to artificial pneumothorax, save in those cases where gas is administered for the control of hemorrhage, when he becomes an unreserved enthusiast. He admits of no result in tuberculotherapy more brilliant than the change wrought by the successful induction of pneumothorax. The return to health and the subsidence of symptoms are sometimes so rapid as to be almost uncanny. However, on the other side of the picture we see few bluer and more despondent patients than those upon whom pneumothorax has been tried without success. They feel that the last straw has snapped, and in the vast number of cases they are right. Judgment and more judgment is needed in the selection of cases.

New York Medical Journal.

July 14, 1917.

1. X-Ray Diagnosis in Diseases of the Chest. George E. Pfahler.
2. Blood Transfusion. Charles Gordon Heyd.
3. A Study of Thirty-seven Cases of Epidemic Cerebrospinal Meningitis. Randle C. Rosenberger and David F. Bentley.
4. Acute Appendicitis. Alexander Nicoll.
5. Observation and Inspection in the Physical Examination in Pulmonary Tuberculosis. Charles Rayevsky.
6. Cardiac Arrhythmia. C. L. Palmer.
7. Mesenteric Venous Thrombosis Following an Abdominal Hysterectomy for Fibroids. M. Rabinovitz.

3. A Study of Thirty-seven Cases of Epidemic Cerebrospinal Meningitis.—Randle C. Rosenberger and David F. Bentley state that in this series of thirty-seven cases of epidemic cerebrospinal meningitis, observed during the latter part of February and during March and April of 1917, all the characteristic symptoms of the disease were present when the patients entered the Philadelphia General Hospital. Kernig's sign was pres-

ent in all cases, while the Babinski was present in the adults and only in a comparatively few of the children. Brudzinski's signs were also present in some cases; strabismus and pupillary changes were frequent, and in one case ptosis was observed. Herpes developed in four cases among the adults and only one was noticed in the children. In only four cases were rashes demonstrable, varying from a slight erythema to purpuric and ecchymotic spots. Cheyne-Stokes respiration developed in one case after a too rapid administration of serum, and "sportive delirium" was seen in two adults after a deep stupor. The fluid withdrawn varied in amount from ten to 400 c.c., depending upon the time the case was under observation and the number of punctures made. The diagnosis was made in every case from spreads when the fluid was first delivered to the laboratory. In most cases the organisms were few and the extracellular as well as intracellular characteristic Gram negative diplococci were found. After a dose of serum was administered, and, although the fluid was still turbid and polynuclear leucocytes were abundant, it was most difficult to demonstrate meningococci. In some instances cultures were made upon blood agar after a diagnosis was made in spreads from the initial fluid. In four fatal cases a nonhemolytic streptococcus was found in addition to the meningococcus, and in the one case of fracture of the skull pneumococci were present. Studies of cultures upon blood agar were made from the nasopharynx in thirty-five cases including patients, resident physicians, nurses and attendants. In only three was a Gram negative diplococcus corresponding to the meningococcus biologically and morphologically found. As soon as a bacteriological diagnosis was made injection of antimeningococcus serum was given. In some cases 15 c.c., but in most cases 20 to 30 c.c. were given as the initial dose. In some cases where the illness lasted over a week or ten days a total of 300 c.c. was given, and where these large amounts were administered from 300 to 435 c.c. of cerebrospinal fluid had been withdrawn. Following the administration of the serum headaches were common, cramps in the legs were almost constantly noticed, and in only one case was syncope present, and this followed the too rapid introduction of the serum. Forty adults were treated, of whom twenty-three were white and seventeen colored. In this group the mortality was approximately 55 per cent., fourteen white and eight colored. Eleven patients convalesced. The number of children treated from two months of age to eleven years was twenty-seven, of whom fifteen were white and twelve colored. In this group the mortality was 40.7 per cent., seven white and four colored. It is the belief of the writers that if these cases had been diagnosed earlier and the serum given immediately the mortality rate would have been decidedly reduced; also the meningococcus may have been of an extremely virulent type, as was proved by animal inoculation. A wise procedure would be also to give a dose of antimeningococcus serum in suspicious cases of meningitis where a cloudy cerebrospinal fluid is withdrawn upon puncture. Lumbar puncture should be made in all cases of suspicious meningitis.

Journal of the American Medical Association.

July 14, 1917.

1. Splenectomy in the Anemias and Other Blood States Associated with Enlargement of Spleen and Liver. William D. Haggard.
2. Sanitation in the Trenches. Champe Carter McCulloch.
3. Argyria Localis Due to Organic Silver Preparations. George Manghill Olson.
4. The Relative Values of Public Health Procedures. Charles V. Chapin.
5. Primrose Dermatitis and Its Relation to Anaphylaxis. C. Augustus Simpson.
6. The Prevention of Endemic Typhus in California. James G. Cumming and H. F. Senftner.
7. Lymphatic-Nodular Keratoconjunctivitis (Phlyctenules). L. J. Goldbach.
8. The Pathogenesis of Ophthalmia Eczematosa: A Preliminary Report. Michael Goldenberg.
9. The Early Diagnosis of Diabetes: A Simple Method Involving Strain on the Capacity of the Tissues to Utilize Glucose. Thomas Addis.
10. Primary Nonpigmented Sarcoma of the Skin. Joseph Zeisler and Erwin P. Zeisler.
11. Still's Disease with Report of a Case. Arthur S. Rosenfeld.
12. Exostoses, or Gonorrheal Spurs of the Os Calcis. E. P. Merritt.
13. Medical Service in the British Area on the Western Front. Thomas Herbert Goodwin.

3. Argyria Localis Due to Organic Silver Preparations.—George Manghill Olson states that a very unsightly permanent pigmentation of the skin may follow the local use of argyrol and the various other organic silver preparations. The use of freshly prepared solutions of argyrol does not diminish in any degree the danger of argyria; the bluish green or slate gray color is not due to a bluish green or slate gray color of the silver deposits, but to the fact that the dark brown silver deposits appear bluish green or slate gray when seen through the uninvolved translucent epidermis. The occurrence of localized argyria following the use of argyrol, protargol, etc., is uncommon, but the resulting blemish is so unsightly that every care should be taken in the use of these substances. The solutions should never be forcibly injected into any cavity or canal as the tear ducts, urethra, etc., and should not be applied when the skin or mucous membrane is not intact. The general opinion is that the condition is irremediable. Olson's conclusions warrant a more hopeful prognosis. Local measures, such as blistering and electrolysis, are possibly of some value in causing an inflammatory reaction that favors absorption of the silver deposits. The hexamethylenamine treatment should be given a trial in every case of argyria due to organic silver compounds. Hexamethylenamine used in local injections in 1:7,500 and 1:250 strength solutions may give striking results, as was obtained in the cases of two patients so afflicted, but Olson considers that it must be given more trial before definite conclusions can be reached.

The Lancet.

June 23, 1917.

1. A Lecture on the Treatment of War Wounds. Supplemented by Additional Matter Relating to Antisepsis and the Method of Carrel. Almroth E. Wright.
2. Masks for Facial Wounds. Francis Derwent Wood.
3. Albuminuria in the Trenches. H. B. F. Dixon.
4. A Universal Arm Splint. George Ewart Wilson.
5. Temporary "Pilons." A. H. Bizarro.
6. A Case of Pharyngeal Diverticulum. James McClure.
7. The Development of Trained Nursing in France. E. Montizambert.

1. A Lecture on the Treatment of War Wounds. Supplemented by Additional Matter Relating to Antisepsis and the Method of Carrel.—Almroth E. Wright discusses Carrel's procedure of intercalating between the complete dressings a frequent flushing and refreshing of the wound surface and for carrying out this flushing unlaboriously. He considers that by this method there has been made by far the most important contribution to surgical technique since the beginning of the war, and that while Carrel's procedure gives us a new and improved technique for the application of antiseptics, much more does it give us a new and improved technique for physiological treatment. Wright calls Carrel's method a "combined antiseptic and physiological treatment." Carrel's treatment is not in any sense a *therapia magna sterilisans*. Regarded as an antiseptic method, it is one of "*fractional sterilization*" requiring for certain types of cases at the rate of twelve douches a day, a series of sixty to 144 antiseptic douches in the given time for thorough treatment. There is, according to Wright, superadded to the antiseptic, a series of sixty to 144 physiological attacks upon the microbes, each such attack starting from an atryptic condition. While Carrel's work constitutes a very notable practical achievement, regarded as science it comes short in the respect that adequate control experiments are lacking. Wright states that he does not mean that it has not been demonstrated that Carrel's treatment accomplishes what was impossible by the old system of syringing with antiseptics and leaving the wound afterwards to fill with pus. The inefficiency of the old method was attested by tens and hundreds of thousands of control experiments. What he does mean is that there are not in Carrel's work any control experiments with more potent and penetrating antiseptics to negative the idea that with these one could with less than sixty to 144 consecutive douches convert a light surface infection into a negligible one. Again, we have not from Carrel any control experiments with a well-thought-out physi-

ological treatment to negative the idea that one could achieve a similar sterilization by sixty to 144 successive physiological attacks upon the microbes, starting each time from an atryptic condition. To remain in the spirit of science every unwarranted assumption must go. There must be no assumption that when we have successfully combated a surface infection by a series of sixty to 144 therapeutic operations finality has been reached. Much less must we, from the fact that a treatment successfully combats surface infections, infer that it is also an effective treatment for infections which penetrate into the deeper tissues. It ought to come home to us instead that we must never look to find for quite different categories of wound infections—*i.e.* for quite diverse conditions any one routine (antiseptic or physiological) treatment.

British Medical Journal.

June 23, 1917.

1. The Work of British Pathology in Relation to the War. F. W. Andrewes.
2. Bacteriology at the Front. W. P. Herringham.
3. Trench Fever and Its Allies. W. P. Herringham.
4. Biochemistry and War Problems. H. D. Dakin.
5. The Croonian Lectures on Adaptation and Disease. J. G. Adami.

2. Bacteriology at the Front.—W. P. Herringham states that bacteriological investigation in hospitals of the front line has been a novel feature of this war. Nothing of the kind has been practised in any of the previous English campaigns, and it has been rendered possible by equipping motor vans as mobile laboratories. The first, which was sent out in October, 1914, had been a pleasure caravan, but it was fitted out to meet the needs of a laboratory. These vans have been attached to a clearing station or a group of clearing stations, and the officer in charge is provided with a small motor car, so that he can go to any place in his area where his services may be wanted. These officers perform three functions: (1) They examine all kinds of morbid products from the hospital wards, and thus aid in the diagnosis of enteric fevers and other epidemic diseases on the medical side, and of the various forms of infection that attack surgical wounds. (2) They examine contacts in cases of infectious fever and search for carriers both among the troops and in the civil population. (3) They investigate new forms of disease that appear among the troops in order to discover their causes and the means of prevention. Instances of the first-class methods of work are the examinations made of the blood and excreta in cases suspected of enteric fever, of malaria, or of dysentery, and of the cerebrospinal fluid, or the nasal mucus where cerebrospinal fever is in question. In the first year diagnosis of enteric at the front was comparatively easy; but, when, in January, 1916, the triple inoculation against typhoid and paratyphoid A and B came into use, difficulty was encountered. Firstly, the culture of the bacilli from the blood is very uncertain in inoculated patients after the first three days of fever, and, since the early symptoms are slight and are not distinguishable from those of many other fevers that prevail, few patients arrive at a clearing station within that time. Secondly, the triple inoculation so complicates the agglutination test that it is only after three or four trials and a comparison of the results that a conclusion can be reached. This takes twelve or fourteen days, so that it can only be carried out at the front in comparatively few cases that are retained in the infectious hospitals there, nor is it, even with the repeated examinations of the excreta in addition, always possible to obtain bacteriological evidence where the clinical symptoms render the diagnosis certain. In the case of cerebrospinal fever, Ellis, of the Canadian Mobile Field Laboratory, established at the same time as Mervyn Gordon at home the existence of different types of the meningococcus distinguishable by agglutination and absorption tests. During 1915 cases were observed in which, with acute symptoms just like those of cerebrospinal fever, the cerebrospinal fluid, though under high pressure, contained no polymorphs and no meningococci, but lymphocytes in excess. This condition was termed lymphocytic meningitis. It was never fatal. Later on several cases of meningococcal septicemia, which is a very acute and rapidly fatal disease, were discovered by the bacteriologists. Certain cases of dysentery occurred and were accompanied by a considerable amount of nondysenteric diarrhea. The next function of these officers is to discover the source of an infection and to stop it from spreading. In cases of enteric the work was very elaborate. In the first place a systematic search was made for recent or chronic carriers among the troops. In one regiment a carrier was discovered in the regimental kitchen; in another, which had lately received reinforcements, no less than ninety-six men had to be examined before the carrier was found. The source of infection was not always in the troops. The part of Flanders held by these particular troops was a hotbed of enteric, and many cases were found in the civil population. The search for these, in which the bacteriologists were aided by the Belgian sanitary officer, Dr. de Wulf, and also by the Society of Friends, was very difficult. In one village cases of enteric occurred in three successive formations that were billeted there. No civil cases could be traced until news was brought of a child that had been sent away to convalesce at a neighboring farm. The clue was followed and the family to which the child belonged were identified as the source of the outbreak. They kept an *estaminet* and sold food to the soldiers. Herringham also states that many carriers of dysentery have been discovered and isolated. The conditions of warfare make it harder to obtain contacts of cerebrospinal fever at the front where the men are moving, than at home where a man may be stationary for weeks. The subject is difficult and one method of diagnosis does not satisfy every bacteriologist; also, Herringham states that he cannot remember any instance in which they could connect two cases of the fever as cause and effect. As instances of the examination of new or little known forms of disease, he mentions trench fever, spirochetal fever, gas gangrene, and the histology of the prevalent nephritis.

La Riforma Medica.

June 9, 1917.

Case of Vagotony.—Pezzi describes a case of hypertonicity of the vagus in which the action of atropine was paradoxical. The case itself was of the type described by Laslette and by Wenckeback. There were subjective sensations (vertigo), accompanied by total arrest of the heart's action. When atropine was administered to offset this behavior it apparently set up new disorders—a ventricular automatism, with a false nodal rhythm and an inverted false rhythm. Slowing of the rhythm may follow the use of 1 mgm. atropine in certain normal subjects. This slowing is but one phase, as it is succeeded by a phase of acceleration, during which compression of the eyeball will cause a return of slowed rhythm. In some youthful subjects without cardiovascular symptoms an injection of atropine, irrespective of special dosage, promptly caused acceleration of the heart's action without preliminary slowing, extrasystoles or auriculoventricular dissociation. In attempting to explain this paradoxical action of atropine in some subjects in which the drug seems to "balk," it could be due in theory, at least, to too small a dose. Leaving out this possibility, the author says, this negative or inverse action of the drug should be dependent on the presence of certain organic or functional affections of the heart.

Etiology of Myasthenic Bulbar Paralysis.—In a recent number of the *Berliner klinische Wochenschrift* there is a report of two cases of this affection. One was due clearly to general bulbar myasthenic paralysis. The symptoms appeared at intervals, beginning with progressive weakness of the muscles of the lips and tongue and of the facial muscles. Then the muscles of the extremities and eyeballs were involved. The second case began as a Landry's paralysis, but this disappeared to return as ordinary bulbar myasthenic paralysis with ophthalmoplegias. It was learned that both these patients had had diphtheria and the same history can be found in similar cases. However, a survey of all the case material shows the operation of a great number of toxins, whether formed in acute disease, or through some perverse activity of the internal secretions or from exogenous sources (alcoholism).

Le Progrès Médical.

June 2, 1917.

Autoserotherapy of Pleural and Ascitic Effusions.—Louis-Auguste states that this therapeutic resource goes back in history to 1894, when it was first used by Gilbert in a case of serofibrinous pleurisy. In France it was used at intervals without much enthusiasm, but in Russia Tschigayew became a partisan of the procedure (1904); while later (1909) Marcou published a series of favorable results. The present author studied the subject under the latter and made it the subject of his graduation thesis. He always found it difficult to get material from other clinicians. As a matter of fact, the earliest results were not encouraging. He has now a total of 20 cases, which may be summed up as follows: In certain instances, for one reason or another, treatment was not essayed until an advanced stage of the disease, in patients some of which had coincident lesions of the lungs, while some had been tapped unsuccessfully one or more times. The results here were not startlingly good, but the patients did recover in time. Irrespective of this series the majority of patients were not able to continue under treatment and some remained under care only long enough for the necessary injections. Nevertheless they did very well. The Marcou technique used by the author is as follows: An exploratory puncture is made in any suspected case, using Luer's 2 c.c. syringe. If a transparent citrine fluid comes away (the presence of blood is no contraindication) the author goes ahead with the procedure. He draws off from 5 to 10 c.c. of fluid and several days later injects it in one dose. Personally he has never used over 5 c.c. Subsequent injections may cause anaphylaxis. The reinjected serum causes a thermic reaction, rapid absorption of the exudate and abundant urination. Less constant are prostration and albuminuria. In pleuritic effusion it is, of course, possible for absorption to be spontaneous, but this is unlikely. The author has used the treatment in 2 cases of ascites with negative results, but when this condition is due to tuberculosis the reverse has been the case, although no data are given.

La Presse Médicale.

June 14, 1917.

Glycosurias of Renal Origin.—Roger states that the doctrine that glycosuria always presupposes hyperglycemia is a mere hypothesis. The discovery of phloridzin glycosuria showed that exceptions are possible. There are no less than 5 elements concerned in glycosuria. 1. The liver, which contains in its cells the sugar reserves. 2. The tissues which utilize the sugar (muscles). 3. Some of the organs of internal secretion (pancreas). 4. The nervous system. 5. The kidneys. Even the normal kidney is not a perfect barrier to the sugar in the blood. Even in very slight hyperglycemia a small quantity enters the urine, and in depancreatized dogs sugar appears freely in the urine when the sugar in the blood is not above 2 per 1000. A meal rich in starches, sugar, sweet wines, etc., may be followed by glycosuria in a perfectly normal subject. This matter has been tested in numerous people who have partaken of the same kinds of food, and in all but one out of eleven some alimentary glycosuria was present. Drinks alone in large quantities—wines, beer and cider—gave the same result. If the renal epithelium has normally the function of holding back sugar it is evident that in certain alterations of these bodies sugar may leak through, even with normal sugar content of the blood. A true renal glycosuria should not be influenced by diet and should occur in subjects free from hyperglycemia. The amount of sugar excreted should not be large. We know from studies on diabetics that there is no necessary parallelism between the per cent. of sugar in the blood and that in the urine. The kidneys seem to play a selective rôle. Animal experiments appear to show that the kidney accumulates sugar before its elimination. In other words, the kidney plays an active rôle in concentrating the sugar in the urine. Excretion is a two-stage process. In adrenalin glycosuria there is a notable disproportion between the degrees of glycemia and glycosuria, or rather a tendency to vary inversely. This form of glycosuria suggests a renal origin. It has been known for very many years that various salts of metals and also organic principles (cantharidin) are able to produce glycosuria along with polyuria. This type of affection is believed to be due to injury to the renal epithelium which affects the permeability. When the latter is evidently present addition of alimentary sugar will greatly increase the glycosuria, even in subjects with very low sugar content of blood (0.5 per 1,000). Clinically the number of well authenticated cases of renal diabetes on record is very small—not over 16. In nearly all of these there were no symptoms of functional character. In all such cases blood tests are necessary and it must be shown that hyperglycemia is absent. The sugar content of the blood fluctuates within normal limits and the degree of glycosuria must also be low in order to characterize cases as renal diabetes. In 13 cases the per cent. of sugar in the urine was 0.5 to 30 per 1,000. In regard to the nature of renal diabetes this cannot be surmised from the few cases on record. In one case heredity was apparent. In another there was evidently nephritis (albumin and red cells in the urine). In several cases especially tested general renal insufficiency was present, while there is also evidence of hepatic insufficiency. The number of hypotheses illustrates our lack of knowledge of the subject.

Correspondenz-Blatt für Schweizer Aerzte.

May 5, 1917.

Fat Embolism from Causes Other Than Fractures.—Katase edits the prevalent opinion that fat embolism is almost essentially a complication of severe fractures due to the absorption of liberated bone marrow by showing that it occurs after simple wounds of soft parts; further, that fat in the blood is by no means always held up in the pulmonary circulation. Again, fat emboli, even when present, are not necessarily the cause of death after severe accidents; and despite severe injuries to bones and joints fat embolism does not result because the marrow of the bones is found to be intact. In a case cited the source of the high degree of embolism must have been the subcutaneous tissue, for when the condyles of the femur and head of the tibia were sawed through there was absolutely no lesion discovered. Another question requires an answer—may not fat embolism occur without antecedent trauma? This may be answered in the affirmative as far as demonstrable wounds are concerned, but the definition of traumatism is not limited by size. Certainly in a small number of cases fat embolism occurs as a complication of parenchymatous nephritis, presumably when fatty degeneration is present. These cases, however, are complicated, because the circulatory system is not normal and again because a lesion of the lungs is a prerequisite. The arrest of fat in the lung capillaries occurs, therefore, under conditions very unlike those present in simple fracture of certain bones. In 111 miscellaneous autopsies of non-fracture cases 49 showed no evidence of fat emboli in the lungs and in 37 others there were only traces of fat present. If we add 18 others with small incidence of fat there remain but 7 cases in which fat was present in abundance. Of these "three and four plus" cases 5 presented some form of nephritis (4 parenchymatous, 1 atrophic unilateral). Four of the 5 presented lesions of the lungs. Miscellaneous complications included typhoid fever, icterus, diabetes, endocarditis, aortic degeneration, tuberculosis, etc. Of two patients without renal lesions one had pulmonary lesions and gastroenteritis hemorrhagica, the other miscellaneous internal hemorrhages. But in certain "controls" with similar complication of disease there were no fat emboli. This is also true of nine separate cases in which fracture was present. The subject is one of considerable forensic interest. In a death claim for damages for fall and fracture the presence of nephritis might cloud the responsibility and cut down the indemnity.

Carbuncle in the Palm of the Hand.—Gallois would hardly have ventured this diagnosis had not the patient presented an ordinary carbuncle on the back of his neck. Incision showed that a carbuncle, not a phlegmon, was the lesion. The center was excised and the lesion healed under glycerole of borated starch.—*La Presse Médicale.*

Book Reviews.

THE BIOLOGY OF TWINS (mammals). By HORATIO HACHETT NEWMAN. Price, $1.25 net. The University of Chicago Press, 1917.

Dr. NEWMAN is quite right that there is much in his book which will appeal to anyone who is a "twin or has personal acquaintance with a twin." The subject of twins is one which of itself arouses much interest. Though those not trained to scientific thinking will find the book very difficult reading in part, they will find it worth the necessary effort. The armadillo, being especially adapted for the study of twinning, has been the experimental animal in this study. The process of twinning is considered due to a "period of quiescence" of the fertilized ovum in the early stages, which allows the separation into distinct embryonic premordia. The question of sex determination is discussed, as twinning offers a special opportunity for the study of this subject.

In this connection the explanation of freemartins is given, that the male differentiating hormones develop earlier than the female and so the zygotic female, influenced by the male hormones, develops male characteristics. We are still at the beginning in an understanding of hormones and internal secretions, to which subject interesting light is thus added.

A TREATISE ON DISEASES OF THE SKIN. For Advanced Students and Practitioners. By HENRY W. STELWAGON, M.D., Ph.D., Professor of Dermatology in the Jefferson Medical College; Consultant to the Dermatological Department of the Philadelphia General Hospital, to the Pennsylvania Institution for the Deaf and Dumb, to the Pennsylvania Institution for Feeble-Minded Children, and to the Widener Memorial Training School for Crippled Children; Member of the American Dermatological Association; Honorary Member of the Society of Dermatology and Syphilography of Italy; Associate Member of the Society of Dermatology and Syphilography of France, of the Vienna Dermatological Society and of the Berlin Dermatological Society. Eighth Edition, Revised. With 356 text illustrations and 33 colored and half-tone plates. Price, $6.50. Philadelphia and London: W. B. Saunders Company, 1916.

LITTLE need to be said concerning Dr. Stelwagon's work on diseases of the skin. It is an old favorite. The present edition contains new articles on occupational dermatoses, paraffinoid, purpura annularis telangiectodes, xanthoma elasticum, and ulerythema ophryogenes, while the articles on pellagra, angioma serpiginosum, erythema elevatum diutinum, pemphigus neonatorum, leprosy, the leucemias, eczematoid ringworm, and coccidioidal granuloma have undergone revision, elaboration, and alteration. Thirty-eight new cuts have been added. The book is excellent throughout and supplies a very valuable reference book on diseases and affections of the skin.

A PRACTICAL TREATISE ON FRACTURES AND DISLOCATIONS. By LEWIS A. STIMSON, B.A., M.D., LL.D. (Yalen). Professor of Surgery in Cornell University Medical College, New York; Consulting Surgeon to New York and Bellevue Hospitals; Corresponding Member of the Société de Chirurgie of Paris. Eighth Edition, Revised and Enlarged. Octavo of 946 pages, with 475 illustrations and 39 plates in monotint. Price, cloth, $6.00 net. New York and Philadelphia: Lea & Febiger, 1917.

THE present edition of this work has evidently undergone a real revision and not merely a revamping by the addition or substitution of a few words or phrases here and there. Particular attention has been paid to the description of new methods of treatment and to a more definite evaluation of methods that were *sub judice* when the previous edition was written. In the course of two visits to France during the present war the author was enabled to review the work being done in many war hospitals and form a first hand opinion as to the value of the newer methods called into existence or elaborated through the exigencies of war surgery. According to their importance these are fully or briefly discussed—approved or severely criticised with an air of impartial justice—hence Stimson's treatise assumes added importance now that during the next few months our own surgeons will be preparing themselves for work with the United States forces abroad. The devices for the suspension treatment of fractures that have been most useful by Blake and by the various surgeons attached to the American Ambulance are described and illustrated; and the same may be said for the Steinmann nail extension and other methods that have recently been accepted as available in suitable cases.

It is to be regretted that the initial statistical chapter had not been revised. We still find the statistics of the Hudson Street Hospital for the ten year period 1896-1905, during which time 14,566 fractures and 1,527 dislocations were treated. It would seem that the opportunity should have been taken to add the statistics to 1915, thus doubling the period of record. The one portion of Stimson's book that always has been and still is exasperatingly bad is—*the index*. It should be elaborated to at least twice its present length and the fracture and dislocation indices combined. This is primarily a book for reference rather than for consecutive reading; hence the index should be particularly comprehensive.

DR. LYMAN SPALDING. The Originator of the United States Pharmacopœia. Co-laborer with Dr. Nathan Smith in the founding of the Dartmouth Medical School and its first chemical lecturer; President and Professor of Anatomy and Surgery of the College of Physicians and Surgeons of the Western District, at Fairfield, N. Y. By his grandson, Dr. JAMES ALFRED SPALDING. Price, $3.50. Boston: W. M. Leonard, 1916.

BIBLIOGRAPHIES seem to hold a peculiar fascination for members of the medical profession, possibly because they depict the struggles and victories and hint at the failures of the men and women who have faced life along the same path, thus bringing intimate experience of the peculiar difficulties encountered and means taken to meet them to others in a broad, altruistic way. Whether we admit it or not, physicians are among the lone souls of the world. They are compelled to be, else how could they dare to attempt to bear the burdens, solve the problems, sympathize with or correct the mistakes of the thousands of suffering humans who turn to them for understanding or relief?

Rarely does one physician turn to another for the solving of his problems. He stands alone, each the center of his own world, wielding influence according to the type of mind and spirit he possesses. In the loneliness of his work, in the weariness of the hour, in the happiness of result well accomplished, he so often finds the consoling power, the intimate touch, the encouragement and faith in a biography which offers that needed insight and broad outlook physicians are timid of seeking in their brothers. This reluctance to demand is one of the finest attributes of a busy practitioner, for it means recognition of the other's needed limitations to give.

This biography of Dr. Spalding justifies its existence in every way. It is well written, well published and recalls the days when one man had the power of tremendous influence on the thought and work of his time. That time is fast disappearing, for the day has come when conservation of men and energy—group work—brings to bear the influences to be welded in a large way for large results. Does it mean that the future will hold fewer biographies? That the individual effort will be engulfed in the larger attainments of units of men and women compelled to strive faster *en masse* by the force of the world's drive?

COLLECTED REPRINTS FROM THE GEORGE WILLIAMS HOOPER FOUNDATION FOR MEDICAL RESEARCH. The Department of Research Medicine of the University of California Medical School, San Francisco. Volume I, 1915-1916.

THIS interesting group of papers is the first from the George Williams Hooper Foundation. All the papers have been published before and hence are not new to those who will be most interested. The work on proteose intoxication and bile pigment metabolism is especially well known and appreciated.

Society Reports.

ASSOCIATION OF AMERICAN PHYSICIANS.

Thirty-second Annual Meeting, Held in Atlantic City, May 2 and 3, 1917.

(Special Report to the MEDICAL RECORD.)

THE PRESIDENT, DR. GEORGE DOCK OF ST. LOUIS, IN THE CHAIR.

(*Concluded from page 42.*)

Thursday, May 31—Second Day.

Election of Officers: *President*, Dr. Francis Henry Williams of Boston; *Vice-President*, Dr. John H. McPhedran of Toronto, Ont.; *Secretary*, Dr. Thomas McCrae of Philadelphia; *Recorder*, Dr. Thomas R. Boggs of Baltimore; *Treasurer*, Dr. James Almarin Capps of Chicago; *Councillor*, Dr. Theodore C. Janeway of Baltimore; *Representative on the Executive Committee of the Congress of American Physicians and Surgeons*, Dr. Richard P. Strong of Manila, P. I.; *Alternate Representative*, Dr. Francis Weld Peabody of Cambridge, Mass.

The Occurrence of Bilirubin in the Plasma and Other Body Fuids.—Dr. M. A. BLANKENHORN and Dr. C. F. HOOVER of Cleveland presented this paper, which was read by Dr. Blankenhorn. Four hundred specimens of blood plasma, or thereabouts, obtained free from hemolysis were examined for bilirubin, bile salts, urobilin, and a fewer number of cholesterin. These findings were correlated with an examination of the urine and the appearance of the skin. The presence of pigments other than bilirubin was anticipated and all pigmented plasma were investigated by several tests. In particular Gmelin's test was compared with the Huppert-Cole test. The dialysis through collodion membranes into water, of bilirubin, bile salts, urobilin, and cholesterin, was observed. The specimens were taken from jaundiced patients, patients suspected of jaundice, and many apparently normal. The largest groups studied were those patients with obstruction, cirrhosis, pneumonia, and the anemias. Of 222 cases, 140 were jaundiced, 82 not jaundiced. In 153 cases there was cholemia without choluria. Bile salts were found in the urine in 102 instances. In 133 cases examined for urobilin in the blood, 22 were positive, and urobilin was present in large amounts. Oftentimes they found urobilin in the urine and not in the blood. In Laënnec's disease of the liver there was cholemia without choluria. Cholelithiasis was not demonstrable.

Cases Illustrating the Causation and Curability of Certain Long-Standing Albuminurias.—Dr. DAVID RIESMAN of Philadelphia related some of these cases. Cases of long-standing albuminurias should not be considered as incurable. Albuminuria might be kept up by the presence of stone or some offending foci. When patients were cured of such albuminurias they usually continued to live for years.

Dr. THEODORE C. JANEWAY of Baltimore said that when this condition was first recognized in the earlier days as being associated with Bright's disease, the patients were usually condemned with the diagnosis and prognosis of Bright's disease. In the historical development of albuminuria he said that in 1870, which was forty years after Bright's original article, people awoke to the fact that because a patient had albuminuria did not signify that the kidneys were radically diseased. Finally, it became recognized that postural albuminuria existed and that posture was one of the most significant causes of the albuminuria. Orthostatic albuminuria was an incorrect term; it was often difficult to say whether postural albuminuria was the only condition present. It was stated that many cases when placed in bed for three-quarters of an hour had their albuminurias clear up. This was a mistake, because the kidneys could not recover with such rapidity. Another matter that was tested in regard to simple posture—if the patients ran around they did not get albuminuria, but if they stood still they did get albuminuria. Dr. Janeway recalled a case of renal stone in a patient who always had albumen and hyaline casts in the urine. The radiograph showed the presence of stone. With the removal of the stone there was a disappearance of the casts and albumen. He recalled another case of interest. This man was refused by a life insurance company because of showers. He took up boxing, and later albumen and casts appeared in the urine. Dr. Janeway saw this case thirty years after his father had made this discovery.

Dr. WILLIAM S. THAYER of Baltimore recalled one case of a patient, fourteen or fifteen years of age, who had been brought to him with the suggestion that a warm climate was best for him. He had an infection from adenoids and from the tonsils. Tonsillectomy, together with the removal of the adenoids, caused the symptoms to disappear. Albuminuria often followed the use of cold baths, taken in the early morning.

Dr. LEONARD G. ROUNTREE of Baltimore recalled the case of a man who was perfectly normal except for a renal invasion; there were no signs of nephritis except the presence of albumen and a few casts. He had had tonsils. There had been a tremendous improvement since the diseased tonsil was treated. Sometimes simply the removal of foci of infection from the tonsils and adenoids would relieve the patients of albuminuria.

Dr. MILTON HOWARD FUSSELL of Philadelphia said that one great difficulty when there was found foci of infection in the teeth was in deciding just what to do and what kind of treatment should be employed.

Dr. WILLIAM S. THAYER of Baltimore said that dentistry was an important part of surgery, and dentists should be present at their meetings.

Elimination of Uric Acid in Gout and Other Forms of Arthritis.—Dr. JOS. H. PRATT and Dr. C. W. MCCLURE of Boston presented this paper which was read by Dr. Pratt. They concluded that the retention and delayed excretion of uric acid occurred in other diseases as well as in gout. Hence a retarded and diminished excretion of uric acid was probably not an essential factor in the production of gout. Injected uric acid remained in the blood of gouty patients longer than in the blood of nongouty. Some impairment of renal function was found in all the cases of gout studied by the newer methods.

Dr. LEWELLYS FRANKLIN BARKER of Baltimore said that the observations made were very important and wished to corroborate the statement made regarding the difficult of diagnosing gout in the absence of tophi. The majority of the cases that were diagnosed as gout at the spas were not gouty cases at all, but an infectious arthritis or an osteo-arthritis. The diagnosis of gout without the presence of tophi was very unsatisfactory. The unreliability of the methods of studying uric acid must be emphasized. He thought the evidences favored the view that in gout renal insufficiency was at fault as regarded the excretion of uric acid.

Dr. ABRAHAM JACOBI of New York said that he knew the diagnosis of gout was made when large quantities of uric acid were found in the urine. When there was no uric acid it still was diagnosed as gout because it was concealed and did not come to the surface. He supposed that in the next year or two more papers would appear on the diagnosis of gout.

Dr. JOS. H. PRATT of Boston, in speaking of the endogenous output, said that if the diet was purin free the uric acid was low. He thought it very important to make observations on young individuals.

A Consideration of Calcium and Magnesium in the Blood in Rickets and Tetany.—Dr. JOHN HOWLAND and Dr. WM. MCKIM MARRIOT of Baltimore presented this study which was made by Dr. Howland. He said the object of the paper was to determine the calcium content in the blood in rickets, but they also investigated the calcium content and its close relationship to tetany. They also obtained evidences of a therapeutic procedure in tetany. The calcium was expressed in mgs. per 100 c.c. of serum. The normal was about 10 mgs. In both classes of cases the tendency was for a low calcium content, lower in the severe cases that in the mild, the lowest being 7.5 mgs. There was a diminution of the calcium content in rickets. The relation between tetany and rickets was close. The cases of tetany varied in its severity and it might be low in calcium as determined by the galvanic current. In fourteen out of fifteen cases there were repeated convulsions, and when the convulsions occurred there were 6 mgs. of calcium in the

serum. It seemed, therefore, that calcium was a therapeutic method in the treatment of tetany, but he did not know whether it was of real value or not. However, in six cases in which it was used it seemed to be of great value and no child had had any convulsions after its use.

Dr. SAMUEL J. MELTZER of New York asked if in those cases where the calcium was diminished the amount of magnesium was determined. A most striking experiment was told in which there was a reduction of the calcium in animals by the use of oxylates; if magnesium was then added the animal became completely paralyzed. Then when calcium was given the animal awakened quickly.

Dr. LOUIS B. WILSON of Rochester, Minn., asked if they had determined the ammonia compounds in the blood.

Dr. JOHN HOWLAND of Baltimore said they had not determined the ammonia content in the blood. The consideration of magnesium in the blood would be considered at some future time, but so far they had found the magnesium was not much altered.

The Influence of Pituitrin Upon the Urinary Excretion in Diabetes Insipidus.—Dr. LEWELLYS FRANKLIN BARKER and Dr. HERMAN O. MOSENTHAL of Baltimore presented this paper which was read by Dr. Barker. He reported the case of a patient recently observed suffering from diabetes insipidus in whom by the use of pituitrin the urinary output could be reduced from 8 to 10 liters in the twenty-four hours to a normal output and the specific gravity correspondingly increased. Experiments on the most suitable dosage of pituitrin would be reported and also the effects of other remedies. The patient's response to pituitrin corresponded fairly close to that of a few other patients that had been reported in the foreign literature.

Dr. HERMAN O. MOSENTHAL of Baltimore said that the effect of each injection was marked for about four hours. Single injections, though the dose be large, had little effect. Apparently the dose must be repeated and two injections given. Then the effects were much more pronounced than they were with the first injection. The minimal dose was 1 c.c. and more numerous injections than two were really of no advantage. These conclusions bore out the conclusions of others.

Dr. JAMES A. MILLER of New York said that pituitrin in normal or diseased individuals caused a reduction in the urinary output. They gave a man intravenous injections of 0.5 c.c. of pituitrin, which was followed by a terrific headache, but it was the first time in eight years that he had not been compelled to rise at night to urinate. Intramuscular injections were given without effect. It was the posterior lobe that was effective in these cases.

Dr. THOMAS B. FUTCHER of Baltimore said a point that should be emphasized, which was based upon observations made today as well as those made by others since Frank described in 1912 the case of a man who had been shot with injury to the pituitary fissure and died of diabetes, was that injury to this gland might result in diabetes insipidus. The theory that diabetes insipidus was the result of the inability of the kidneys to concentrate the urine held sway for some time. Later the true etiology of the disease became evident. Investigations showed that pituitrin increased the output of the urine and the specific gravity and the ability of the urine to concentrate salt and nitrogen. Cushing's observations on tumors of the pituitary gland were of interest. In 12 out of 100 cases of pituitary tumor there was an increased flow of urine. Many of these cases had a marked polyuria, and six came to necropsy with the diagnosis of diabetes insipidus. Lack of time prevented him from attempts to explain the pituitary theory of the causation of diabetes insipidus and the associated cases with hereditary influences.

Dr. S. SOLIS COHEN of Philadelphia reported two cases of diabetes insipidus. One was a man 30 years old, a master mechanic at Altoona. In addition to passing large quantities of urine he complained of severe pain in the left hypochondrium. The giving of pituitrin caused the urine to clear up, but the pain continued. There was found an adhesion between the colon and the stomach, the cause of which was not evident. These adhesions were liberated and the urinary output fell from 11 or 12 liters to 2 liters. The other case was a girl 18 or 19 years of age. Her father died of tuberculosis and a sister had exophthalmic goiter, endocrine, and other disturbances. The urinary output was 8 liters a day, and after the administration of pituitrin it fell to 2 liters a day.

Dr. HENRY KOPLIK of New York said that he had been able to collect three cases so far and it seemed to him that it was difficult to separate the two classes of cases. This new therapy might be applied to a certain set of cases.

Dr. JOHN H. MCPHEDRAN of Toronto, Ont., said that polydypsia or polyuria had been spoken of—Was polyuria the general cause of the condition? He referred to a man who was markedly emaciated and who died two days after he first saw him. The question arose, If the disease was organic should the treatment be continued?

Dr. LEWELLYS FRANKLIN BARKER of Baltimore said that the observations of the Mayos were true, that was, there was an inability of the kidneys in certain cases to excrete urine without some form of therapy. If they administered pituitrin this inability was overcome. With regard to the hereditary cases there was something at fault and the pars intermedia seemed to be the actual site of the disease in diabetes insipidus. In cases in which the posterior lobe was destroyed substitution therapy must be carried out so long as the patient lived. Disease of the pars intermedia or the posterior lobe of the pituitary gland might be the cause of diabetes insipidus.

Dr. HERMAN O. MOSENTHAL of Baltimore said that certain studies were not attempted because the patients were so nervous. In the literature some observations were made on the blood and it was in all the cases practically normal.

Report of a Case of "Wilson's Disease," with Post-Mortem Findings. — Drs. CAMPBELL PALMER HOWARD and C. E. ROYCE of Iowa City, Iowa, presented this communication, which was read by Dr. Royce. The patient denied the use of alcohol and said he had never had any infectious disease, but that he was liable to attacks of diarrhea. He was bright, good natured, and from a successful family. In 1916 he had pains in the legs and some difficulty in his gait. He shuffled his feet. He had edema of the legs. For three or four weeks the symptoms persisted. Four weeks after the onset, in December, he had cramps in the legs, hands, and feet, especially the toes of the right foot. He became more ataxic and quite emotional. He suffered so that he was sent to the hospital. He was very sick and complained of severe pains during the examination. The fingers were flexed on the hands, the wrist was flexed on the forearm, and the arm was extended and held closely to the side. The thighs were flexed on the abdomen, the feet were extended and the toes were flexed. They first thought they were dealing with a case of tetany, but there was no mechanical or electric irritability at this or at subsequent examinations. The skin was harsh and dry and the lower extremities were edematous. The hair was scanty. The abdomen was tympanitic. The urine and the blood counts were normal. Careful and repeated examinations of the central nervous system revealed nothing unusual in the motor or sensory tracts. No diagnosis was made by them at this time. The spinal fluid was examined and no cells or Noguchi or Wassermann were determined. The calcium content was unusually high, 13 mg. per 100. There was no dysphasia and no dysarthria. Later the patient had some signs of fever. No organism could be found in the blood. He died with symptoms of a terminal infection, a basal infection. When the abdomen was opened they received quite a shock. The liver was very nodular and studded with large white nodules and suggested an adenocarcinoma or a tumor of similar nature. The nerve tissue was held for examination. They had carefully searched the literature in order to obtain aid in making a diagnosis of this peculiar condition, and found that in 1912 Wilson had described a new symptom complex. He collected four cases of his own and six in the literature and described the clinical phenomena; their case was similar to those described by Wilson. Since Wilson's paper there had been nine such cases collected in this country. It was of special interest that the symptoms of a condition called pseudocirrhosis were identical with Wilson's

syndrome. The pigment was tested for silver and manganese, but no chemist had been able to determine just what discoloration of the skin was caused by. In Wilson's disease they might get all grades of discoloration.

Dr. J. Ramsay Hunt of New York said they had some lesions in mind that were circumscribed and confined to the caudate, the lenticular nucleus, and to the corpus striatum. The tremor resembled that of paralysis agitans, but there was also a tendency to a clonic spasm and choreiform movements. Wilson emphasized the importance of this tremor. Gowers first described it as tetanus. One week ago in a study of juvenile paralysis agitans he found the lesion was situated in the corpus striati and limited to the larger motor cells. Paralysis agitans was a type of disease due to atrophic disturbances in the large motor cells. Huntington's chorea was a type of destruction of the smaller cells. The massive lesion in Wilson's disease was a combination of the destruction of the two systems.

Dr. Lewellys Franklin Barker of Baltimore said that this was the first case ever presented before this Association. There were two or three things that might be confounded with this disease. The remarks made regarding "cheese brain," that the brain looked like a slice of Swiss cheese, might be explained by the presence of the gas bacillus after death.

Dr. Royce, in closing, said that the hilus in the base of the brain was not at all pathognomonic of Wilson's disease. So far as he knew there was no case of pseudocirrhosis or Wilson's disease ever exposed to manganese. There were some evidences of a symptom-complex in which the manganese marked a somewhat similar type as the disease under consideration.

The Use of Foreign Protein.—Dr. James L. Miller of Chicago presented this communication in which he reported his experience with the administration of foreign proteins in various conditions besides typhoid fever. The reports of the treatment were rather uniform. Patients who had iritis, for example, showed evidence that something had happened after receiving this treatment. Abroad arthritides of the gonorrheal type had been studied; the speaker also had been treating the arthritides by this method. In iritis, in addition to the protein, they used collargol; the patients invariably had a chill for thirty minutes, which was followed by a profuse sweat. The leucocytosis appearing in from six to twelve hours required from twenty-four to forty-eight hours to return to normal. With a modification of the procedure, it was found that there was a definite rise in the blood pressure; at the end of six hours another chill occurred, and then there was a drop in the blood pressure. The systolic and diastolic pressures paralleled each other throughout the entire procedure. Not infrequently there was vomiting or nausea, with headache. Herpes often occurred and developed as a severe reaction. Typhoid vaccines, 100,000,000, were given intravenously. The patients, as a rule, said they felt better after the sweat. During December and January thirteen cases required a second injection. Not all would clear up after the single injection. In some cases the symptoms cleared up, but soon recurred. As a rule, the recurrences were slight. After the second or third injection the patients were, as a rule, free of their symptoms. During March and April they discharged from the hospital fourteen patients who had had acute arthritis; in this group the patients received one injection every day until three had been given; among these fourteen there was only one recurrence. This patient was taken to the hospital not improved. They used the typhoid vaccines. They got no beneficial results from the use of the gonorrheal vaccines, yet they did get them from the use of the typhoid vaccines. In the subacute or chronic cases the results were less marked. They had used them in eight or nine cases of pneumonia and the reactions were quite violent. One patient had a temperature of 109.2°, which dropped to 97° and then went up to 103°, dropping again to about 100° and remaining there until the normal time of crisis. They had treated more than 200 cases and given more than 500 injections and they had not had a fatality. If one was careful in the administering of this agent there should be no bad results. After using this treatment for one and a half years it had given them more marked results than any other treatment employed. They had always looked upon the temperature reactions as being essential to the patient's recovery.

Dr. Ernest Edward Irons of Chicago said that in considering the possible nonspecific elements in the phenomena of disease, it was not proposed to supplant the older ideas of specificity, but to discover in what ways these non-specific reactions helped or hindered the specific factors, or acted independently of them. Studies of the changes brought about in the animal body by the introduction of foreign protein had not only developed new conceptions, such as those of the mobilization of serum proteose and the relation of normal ferment and antiferment, which seemed destined to throw light upon a number of unexplained phenomena of disease, but had also broadened their views in regard to the older theories of the more specific factors. In this discussion of the effects of foreign protein in disease their interest centered in two main topics: (1) The relation of the phenomena observed to those which occurred in the natural recovery from disease, (2) the clinical results which followed the use of foreign protein in disease.

1.—Specificity in biological reactions had been the guiding principle of those who had attempted to devise methods of study and therapy of infectious diseases, and while modifications in the original theory of antigen and antibody had from time to time been found necessary, it was along this line that most of the progress to within the past two or three years had been made. While the reactions which they spoke of as specific differed from those they called non-specific, in the conditions and methods of demonstration, they might conceive of both classes as dependent on physicochemical principles, differing only in the degree of fineness of their adjustment. The findings of Hektoen indicated that in carefully controlled animals, the introduction of one antigenetic substance might cause the appearance not only of antibodies specific to the recently injected antigen, but also antibodies specific to another different antigen, in an animal previously sensitized to this later antigen. Bacterial antigens in suitably prepared rabbits had been found by Conradi and Bieling to produce like results. The recognition of this interrelation of specific and nonspecific reactions was an important step in understanding the problem of the effects of foreign protein in infections, and of the effect of one infection upon another in the human body.

2—To what extent did results warrant the use of intravenous injections of foreign protein in infections, especially typhoid fever and arthritis? The published reports had led to a widespread employment of the procedure, especially in arthritis, often by those untrained and uncritical in judgment. In typhoid fever a number of favorable reports had appeared. On the basis of their own observations and those of others they had not felt justified in further extending their use in this procedure in typhoid fever. In patients suffering from arthritis, very striking amelioration of pain and swelling in joints had been noted following the reaction by the intravenous injection of bacterial or other foreign protein. There was always the danger that the routine use of a nonspecific remedy might lead to the incomplete or careless study of patients. In addition to weighing the successes and failures in the alleviation of the symptoms of disease, they must take into consideration also the other effects of the injection upon patients. It was perhaps difficult to estimate the probable remote effects of the introduction of foreign protein and the attendant shock upon the kidneys and other organs, though there was some evidence that such unfavorable effects were produced. He referred to three instances in one hospital within six months in which patients died following intravenous injections of bacterial protein. The study of the nonspecific elements in disease was of great importance and promised to open for them new avenues of attack. From a therapeutic point of view, however, he believed they should warn against the indiscriminate and routine use of these methods until they had been more thoroughly studied and the dangers as well as the reputed advantages better defined.

Dr. S. Solis Cohen of Philadelphia said that some years ago a certain manufacturing firm introduced a

substance supposed to be toxic filtrates, and he had some experiences with that product. Fortunately, he had no deaths, but he had several frights that warned him against any further use of this substance. In some cases of pneumonia happily they recovered, but by more violent reactions than he expected, and he made up his mind that this line of treatment should not be pursued further. He had, however, used colloidal silver and gold and obtained satisfactory results in cases of profound sepsis and the toxemias of various origin, especially in streptococcus infections. In no instance did he have any violent reactions. In regard to the treatment of arthritis by intravenous injections he referred to the use of formalin; in almost every instance there was an immediate disappearance of the pain. When the patient recovered it was prompt and continuous and there were no relapses and no violent reactions.

Dr. Milton Howard Fussell of Philadelphia said that it seemed to him from what they had heard from Dr. Miller that if the Association allowed itself to recommend the use of the intravenous injection of foreign protein in various types of disease it might do a great deal of harm. He believed that the remarks of Dr. Irons should be in the hands of every practitioner. He knew of at least two deaths that had occurred in typhoid cases.

Dr. James L. Miller of Chicago believed that Dr. Fussell's suggestion was a good one. They refused to give the injections in patients when they did not think they could stand them; they were first tested out with very small doses. He believed, however, that with proper precautions they were secure against bad results, but they should be careful in their selection of cases.

Renal Function During Acute Infections.—Dr. Channing Frothingham, Jr., of Boston presented this paper and asked what tests were available for studying the renal function at the present time. The best test was the socalled renal test and the diet test today. Another test was the estimation of the amount of fluid the kidney put out, the phenolnaphthalein test. Another test of the renal function was the estimation of the total amount of nitrogen or urea in the blood. His report was on the results of estimating the blood urea, the index of urinary excretion, and the ability of the kidney to put out phthalein. The group of cases studied consisted of young people, with no evidences of kidney disease. His results were shown by charts. The practical point given was that during the course of acute infectious diseases there was no serious injury to the kidneys, and that it was better to use a high caloric diet.

Dr. Theodore C. Janeway of Baltimore said it was interesting to note the high index of urea in febrile and other acute diseases. He recalled an instance of hyperthyroidism, which showed quite regularly an extremely marked increase in the output of urea. Another case of pneumonia showed a decrease in the high index.

A Case of Primary Thrombophlebitis of the Hepatic Vein and a Case of Primary Sarcoma of the Epicardium.—Dr. Nathan E. Brill of New York said that in the wards of Mt. Sinai Hospital they had two cases of infections which perhaps were among the rarest in human pathology. There was very little about either to be found in the literature. The first case was the first to be reported in this country.

Case I.—During the afternoon of December 4 a woman was carried into the ward moaning with pain, and she stated that she had never before been ill. She was twenty-four years of age, married four months, and pregnant two months. Her disturbance was referable to the abdomen. For four or five days before admission she suffered from pain in her epigastrium and down to the lateral aspects of the abdomen. The examinations of heart, lungs, etc., were negative. The liver was enlarged 2 cm. below the free border of the ribs. The pain was very intense and she was unable to lie down at all, and she moaned all the time. The question arose, was she suffering from some surgical condition, but as her attack was acute and a diagnosis could not then be made, she was left until the following day. The blood count was made and there were found 21,000 white cells, with 80 per cent. polymorphonuclears. On the following day the liver was found to be 4 cm. below the free border of the ribs. The fecal examination proved negative, and they were no nearer a diagnosis than before. The blood count showed 17,000 white cells and 85 per cent. polymorphonuclears. On the next day the liver was found to be larger, 7 cm. below the free border of the ribs, and for the first time the spleen was felt. On the day following the spleen was found to be three fingers below the free border of the ribs and the liver was at the crest of the ilium. There was a tremendous accumulation of fluid and the abdomen was distended to an enormous size. Dr. Brill objected to an operation, but finally consented to an exploratory one. About one liter of perfectly clear fluid was evacuated and the liver was found to be down to the iliac crest. The spleen was 4 cm. below the free border of the ribs. The uterus was evacuated at this time. She lived from the 4th to the 26th of December. The necropsy showed a liver considerably shrunken in size with a shrivelled capsule. A similar condition of the spleen was found. The abdominal viscera showed no infectious process and there was no portal vein infection. Exposing the vena cava at the entrance of the hepatic vein for a distance of 0.5 cm. was found a blood clot. This was traced along the hepatic vein and showed soft clots connected with the periphery by a little tissue. The clot extended all over the branches of the hepatic vein. There was a primary thrombus in the hepatic vein terminating at the vena cava. The diagnosis he made was wrong but near enough. In all there were but three cases reported in the literature of this nature. This woman had an absolutely negative Wassermann. This was a blood condition and with no signs of inflammatory tissue whatever. The woman died because of an utter suppression of hepatic function.

Case II.—This was a woman, 22 years of age, unmarried. She came into the hospital in June with a frank attack of pneumococcus infection, a lobar pneumonia. There was an endocarditis associated with an effusion. After a stay of a few weeks she was discharged as cured. She left in July and returned in September, and a diagnosis was then made of a pericardial effusion. On the second day after admission the pericardial sac was tapped and they obtained a small quantity of blood-stained fluid, which was sent to the laboratory. At the same time the needle was introduced in the mid-mammary line and about 2 c.c. of blood-stained fluid was obtained. A diagnosis of pericarditis with effusion was made. When Dr. Brill first examined her he found the chest flat on percussion and he felt that she had an effusion in the left pleural sac. The sounds were indefinite and he could not make out the apex beat at all. He then became skeptical about the diagnosis of pericarditis with effusion. She had developed an adherent pericardium and dilatation of the heart with a large amount of effusion in the left sac. He demonstrated this case before his students as one of polyserositis. The patient lived until the middle of January. At necropsy, when the sternum was removed, the pericardial sac was found to be 20 cm. in length, 24 cm. in width, and 14 cm. in depth. There was noted little flat creamy eminences. Upon opening the pericardium there was found a large tumor mass and a small amount of brown colored fluid. The mass enveloped the entire heart, but the entrance of the veins was not occluded at all. The tumor mass was homogeneous and was cellular in nature and was separated from the endocardium by a line of connective tissue except at the right auricle. This woman had suffered from a tumor which involved the entire epicardium. On section the tumor showed a large number of spindle and round cells; the type of these cells was embryonic. The whole thing was a delicate fine reticular structure. An important point was this: In going over the history after the autopsy the sheet on which the findings should have been recorded, there was no report whatever of the findings in the fluid. If such a report had been where it should have been he might have been able to make a diagnosis. In the body of the history sheet, however, he found a little note stating that "fluid from pericardial sac was tapped and the cells indicated malignancy," which was signed by Dr. F. S. Mandelbaum. Only eight cases of sarcoma of the epicardium had been reported in the literature. There was no metastases.

Some Points Respecting the Localization of Syphilis Upon the Aorta.—Dr. Oskar Klotz of Pittsburgh read this paper. He said the distribution of syphilis upon

the aorta was unique, being localized in certain areas more commonly than in others. When compared with other infections a similar distribution was found. In the majority of instances where infection localizes upon the tissues of the aorta, it was found to begin in the outermost layers and from here to attack the adventitia and media. The localization had been mainly ascribed to a distribution by the vasa vasorum. The reactions were found to follow the course of these vessels, making it appear that they had to do with the bringing of the infectious agents to the particular sites. On the basis of the hematogenous distribution it was not possible to account for the more frequent localization of infection upon the ascending and transverse portions of the aorta. A study of the aorta and its lymphatic distribution demonstrated a greater number of lymph channels in given regions. This was particularly true for the first portion of the aorta. The prominence of these lymphatics and evidence as serving for routes of infection was seen in several cases of pneumonia. A similar correlation of the lymphatic system to the distribution of the infectious agent was noted in syphilis. The lymphatics in the aortic wall followed the course of the vasa vasorum, thus giving rise to a perivascular infiltration which was so prominent in syphilitic aortitis. The lymphatics appeared to be more important structures for the distribution and localization of syphilis than the small nutrient vessels.

Specific Treatment of Pneumonia. — Dr. RUFUS I. COLE of New York said that he had made observations which showed that in specific exudates might be formed substances which inhibited the action of immunity principles. The treatment was tried before the observations were made. The bacteria grew in the tissues and were not free in the fluids, and they accidentally found that the fluid in the body formed substances which would overcome the bacteria if in sufficient amounts, but they must use soluble substances. They then attempted to learn if the serum used appeared in the blood and they found that if they were to render the blood immune the serum should be given early and in large amounts intravenously. There was no reason to believe that they affected the course of the disease other than by causing immunity in the patients. The results had been excellent in the Type I cases. Of great importance was the value of the serum and they learned that the blood infection was immediately overcome and body immunity occurred early. In regard to the socalled serum reactions of various kinds following the administration of immune serum, there did follow reactions of several kinds. (1) There were the intoxications due to the administration of the serum. These reactions were definite drawbacks to the treatment, and they knew of no method of preventing them. They had treated more than 200 patients with Type I and Type II. The serum should be given slowly. If the patients had any reactions, stop the treatment immediately. Some patients had a certain amount of idiosyncrasy. (2) There were the true anaphylactic reactions. These were rare. Every patient as soon as he was admitted to the hospital received the intracutaneous test to find out if he was sensitive to horse serum. This aided in sensitizing. (3) There was the serum sickness and this group of symptoms occurred in 50 per cent. of the people who received the serum. In 10 per cent. of these the symptoms were quite intense. He never had seen a case of serum sickness which ended fatally, and he thought they could entirely disregard serum sickness.

Dr. LAWRENCE LITCHFIELD of Pittsburgh said he wished to bear testimony as to the efficacy of the serum treatment of pneumonia.

Observations at the Peter Bent Brigham Hospital on Cases of Pneumonia in Relation to Types of Pneumococci and the Serum Treatment of Type I Cases.—Drs. HENRY ASBURY CHRISTIAN and H. L. ALEXANDER of Boston presented this communication, which was read by Dr. Christian. They presented studies on 187 cases of typical bronchopneumonias. A higher mortality occurred when positive cultures were found. The treatment by the serum was confined to Type I cases, 11 in all. As a rule there was a critical fall in the temperature in a few hours after the serum was given; frequently more than one dose was necessary to reduce the temperature. Sometimes there was a rise in the temperature and a chill following the first dose. All these cases were tested with the horse serum protein before the serum was given. Serum sickness occurred in most cases one week after the treatment but was never severe. There were some slight joint manifestations and a slight rise in temperature, but there were no disturbances during the course of convalescence beyond some itching and urticarial lesions. Of the treated patients, one died during the pneumonia, one died during convalescence, and two developed empyema. There was a reduction in the mortality from 42 per cent. in the untreated cases to 18 per cent. in the treated cases.

Dr. THEODORE C. JANEWAY of Baltimore presented on the blackboard some interesting tables showing the results of the serum and no serum treatment of pneumonia in the white and colored races as follows: In Type I cases treated with serum, white, 4 cases and 2 deaths; colored, 7 cases and 1 death, a total of 11 cases and 3 deaths. In Type I treated with no serum, white, no cases and no deaths; colored, 9 cases and 4 deaths, a total of 9 cases and 4 deaths. In Type II, treated with no serum, white, 3 cases and 3 deaths; colored, 15 cases and 4 deaths, a total of 18 cases and 7 deaths. In Type III, treated with no serum, white, no cases and no deaths; colored, 1 case and no death, a total of 1 case and no deaths. In Type IV, cases treated with no serum, white, 5 cases and 2 deaths; colored, 14 cases and 2 deaths, a total of 19 cases and 4 deaths. Altogether there were: whites, 12 cases with 7 deaths; colored, 46 cases with 11 deaths, a total of 58 cases and 18 deaths. This showed there was a definite lower mortality among the negroes. The reactions seemed to have a definite relation to the quantity of serum administered.

Dr. MILTON HOWARD FUSSELL of Philadelphia said that the Board of Health in Philadelphia were giving physicians the serum under the plan advocated by the Rockefeller Institute. Seven patients had been so treated in his wards with no deaths. One had a very severe reaction after being given 60 c.c. of the serum. This patient finally recovered but later developed a pleural effusion which was not purulent. The temperature did not drop to the normal as was usual in those cases not so treated.

Dr. S. J. MELTZER of New York asked Dr. Cole if the antimeningitis serum had been used and if he found any cases of empyema of established specificity. Could not the disease be overcome by the use of another serum as from Type II? Had he studied what effect the serum had upon the circulation?

Dr. RUFUS I. COLE of New York said there had not been observed any specific effect of the serum upon the circulation, but there had been some general effects. The question regarding meningitis was interesting. If the immunized serum was delayed too long, meningitis was liable to develop and death follow. In treating these patients they should bear in mind just what they wished to do; treat these patients as they treated diphtheria and they would lessen the mortality of typhoid pneumonia.

Studies on Uranium Poisoning.—Drs. HOWARD T. KARSNER and S. P. REIMANN of Boston presented this paper, which was read by Dr. Reimann, in which the following conclusions were drawn: (1) Toxic effects of certain aqueous-insoluble salts of uranium. Having in mind the possibility of the employment of uranium in the industries, feeding experiments had been carried out with uranium oxide, the salt most likely to be formed in the presence of high temperatures. Such a salt liberated as a dust could be inhaled and swallowed. A somewhat similar water-insoluble salt was sodium uranate. Uranium oxide, sodium uranate, and uranyl nitrate were fed guinea-pigs, the dose being determined by the uranium content. All were toxic and the study showed the relative degrees of toxicity. (2) Solubility of uranium oxide in artificial and human gastric juice. Having found that water-insoluble uranium oxide is toxic for animals, quantitative determinations were made of the solubility in 0.2 per cent. hydrochloric acid solution pure and with the addition of milk, whey, casein, lactose, washed butter, dextrose, peptone, etc. Similar determinations were made with human gastric juice. (3) Effects of soluble uranium salts on blood, blood plasma, and erythrocytes. These experiments

were performed *in vitro* and dealt with coagulation (?) or precipitation, methemoglobin formation, agglutination, and hemolysis. Variable doses of uranyl nitrate were employed with the blood of dog, cat, and rabbit. (4) Localization of uranium in body tissues. After injections of large doses of uranyl nitrate the organs of cats were incinerated and examined for uranium. It was found that the kidney was the only organ from which uranium could be recovered. Subsequently entire animals were perfused with Locke's solution containing uranyl nitrate. Then kidneys alone were perfused with defibrinated blood containing uranium and finally pieces of fresh tissues were soaked in uranium solutions. (5) Hydrogen-ion concentration of the blood in uranium poisoning. These experiments were performed to determine first the fact of an acidosis in uranium poisoning, and, second, the time relations of the appearance of acidosis and of the signs of nephritis.

On the Focality of Microscopic Lesions in the Brains of Certain Psychopathic Subjects, Especially in Dementia Precox.—Dr. ELMER ERNEST SOUTHARD of Boston reviewed the evidence of the focality of gross lesions (anomalies and scleroses) in dementia precox brains. The paper presented dealt chiefly, however, with microscopic findings in brains without gross lesions. The dissociation of parenchymatous (neuronic) and interstitial (neuroglia) lesions presented last year was reviewed in connection with a study of the stratigraphical analysis of the distribution of lesions found, especially gliosis (including satellitosis) and nerve cell losses. The points of the present communication related chiefly to the topography of the microscopic lesions, both neuronic and neurogliar, both in the outer layers (suprastellate) and in the inner layers (infrastellate) of the cerebral cortex. The functional correlations were briefly reviewed.

A Case of Ventricular Fibrillation in Man with Recovery.—Dr. GEORGE CANBY ROBINSON of New York presented this paper. He said that the interest in ventricular fibrillation as a disturbance of the cardiac activity of man had been centered about the role this phenomenon played in causing sudden death. It had been generally accepted that when the human ventricles passed into a state of fibrillation, death was an almost immediate and an invariable consequence. Ventricular fibrillation could be determined definitely by means of electrocardiograms. The case to be reported was one in which three attacks of syncope occurred. These lasted about four minutes each. During one of the attacks, when the patient ceased to breathe, and when no heart sounds were audible, an electrocardiogram characteristic of ventricular fibrillation was obtained. The patient lived thirty hours after this syncopal attack, during which time numerous electrocardiograms were obtained. The case was the first example of recovery from well-established ventricular fibrillation that has been observed.

The Etiology of Poliomyelitis.—Dr. EDWARD C. ROSENOW of Rochester, Minn., described the organism constantly isolated from the infection atrium and central nervous system in cases of poliomyelitis in man and from the central nervous system of monkeys with experimental poliomyelitis.

Brief Report on Microorganisms from Tonsils, Adenoids and Infected Sinuses.—Drs. C. A. LAUBACH and WILLIAM WEBBER FORD of Baltimore presented this paper. They stated that during the past year various types of microorganisms have been isolated and studied from material collected in the nose and throat clinic of Dr. Crow of the Johns Hopkins Hospital. Some 200 different specimens have been studied. The majority of the organisms found were streptococci and pneumococci. Next in order of frequency were the micrococci. Special attention has been paid to the streptococci, which are best arranged according to the classification suggested by Holman, which promises to be of great assistance from the clinical standpoint.

Atrophy of the Large Motor Cells of the Corpus Striatum in the Pre-senile Type of Paralysis Agitans; a Contribution to the Nature and Pathology of Parkinson's Disease.—Dr. J. RAMSAY HUNT of New York read this paper. He said that paralysis agitans might be subdivided into clinical types, according to the age of onset, and the character of the symptoms. There were presenile and senile types, and a rare juvenile form; also, paralysis agitans without tremor and a rare tremor type of the disease in which rigidity was absent In addition, various irregular and symptomatic forms were recognized. At a meeting of the American Neurological Association, May 6, 1916, Dr. Hunt described certain pathological changes in the juvenile type of paralysis agitans which consisted of atrophy and diminution in number of the motor cells of the corpus striatum. The suggestion was then made that paralysis agitans beginning in early life belonged to the group of motor system diseases, and was dependent upon a primary atrophy of the efferent projection system of the corpus striatum. The atrophic changes in this type of disease were limited to the motor cells of the globus pallidus and were especially marked in the large cells of similar type in the caudate nucleus and putamen. These cells of the globus pallidus type therefore represented a well defined cellular system, the globus pallidus mechanism, which Dr. Hunt regarded as the essential motor system of the corpus striatum. Juvenile paralysis agitans, acording to this conception, was a primary system disease (primary atrophy of the pallidal system) occurring in the course of the striospinal mechanism; while spastic paralysis (primary lateral sclerosis) was a system disease of the corticospinal mechanism. The present study was a preliminary report on the pathological findings in the presenile type of paralysis agitans. In two cases of this disease the large motor cells (giant cells), normally present in the caudate nucleus and the putamen, showed distinct atrophic changes. These cells were reduced in size; the processes shriveled and became tortuous; the nucleus contracted, was displaced, and stained uniformly with hematoxylon. Some of the cells showed an increase of pigment; in others the atrophy was still more marked, and the internal structure of the cell was not recognizable. The smaller ganglion cells of the caudate nucleus and putamen were not affected. The motor cells of the globus pallidus proper showed only slight alterations. Some of these cells appeared slightly reduced in size and presented a somewhat rounded or angular appearance, but these changes were not well defined and the essential lesion was an atrophy of the giant motor cells of the caudate nucleus and putamen. Dr. Hunt therefore regarded the atrophy of these large motor cells of the corpus striatum (viz. the giant cells of the caudate nucleus and putamen) as the essential lesion in paralysis agitans of the presenile type. According to this conception, the corpus striatum was a motor mechanism for the control of automatic and associated movements operating through the extra pyramidal motor tracts. The pallidal system was the motor system proper and terminated in relation to important ganglia in the hypothalamic region; viz., nucleus ruber, corpus Luysii, and substantia nigra, and through these centers exercised a controlling influence by way of the extrapyramidal system on automatic and associated movements. In presenile paralysis agitans the large motor cells of the pallidal system in the caudate nucleus and putamen were chiefly affected and these giant cells of the corpus striatum Dr. Hunt regarded as comparable to the Betz cells of the motor cortex. Paralysis agitans was characterized by three cardinal symptoms, viz., paralysis, rigidity, and tremor. An analysis of the paralytic disturbance showed that this was essentially a disturbance of automatic and associated movements, involving subordinate types of movement which were largely involuntary in character, such as walking, running, rising, sitting, grasping, etc., which, however, were under the control of the will. The peculiar rigidity of paralysis agitans was dependent upon a hypertonicity of the musculature which most authorities agreed was of central origin. This rigidity differed from the spasticity of pyramidal tract origin by the absence of reflex hyperexcitability, as manifested by exaggeration of tendon reflexes and clonus. Dr. Hunt referred to recent investigations which showed that muscle tissue was composed of two essential contractile elements: One was the anisotrophic disc system under the control of the peripheral motor neurons of the spinal cord, viz., the large multipolar cell in the anterior horn, medullated nerve fiber, and motor end plate. The other, a more plastic component, was dependent for its activity upon the sarcoplasmatic substance of muscle, which was under the control of

the sympathetic system, viz., motor sympathetic cell of the anterior horn, a sympathetic nerve fiber and end plate. The differences between the hypertonicity following lesions of the pallidal system (paralysis agitans) and the pyramidal system (spasticity) Dr. Hunt would explain by the relative degree of involvement of these two intrinsic systems of muscle tissue. He would therefore regard paralysis agitans as one of the cardinal types of motor palsy, induced by a lesion in the course of the efferent motor neurones of the corpus striatum; viz., the pallidal system. This system might be the seat of a primary atrophy or abiotrophy, as in the juvenile types of paralysis agitans (primary atrophy of the pallidal system). This system might also present evidences of senile atrophy or vascular degeneration, as in the senile and presenile type of the Parkinsonian syndrome.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading, but it must be with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

COMPEND OF MATERIA MEDICA THERAPEUTICS AND PRESCRIPTION WRITING, with especial reference to the physiological action of drugs. Based on the ninth revision of THE U. S. PHARMACOPŒIA, including also many unofficial remedies. By A. D. BUSH, B.S., M.D. Eighth edition, revised. 274 pages. Price, $1.25 net. Published by P. Blakiston's Son & Co., Philadelphia, Pa.

THE TREE OF LIFE. By Dr. GEORGE W. CAREY. 60 pages. Price, $1.00. Published by Dr. George W. Carey, P. O. Box 293, Los Angeles, Cal.

THE NEW SYSTEM OF GYNECOLOGY. Edited by THOMAS WATTS EDEN, M.D., F.R.C.S.E., F.R.C.P., Temp. Major R.A.M.C., and CUTHBERT LOCKYER, M.D., B.S., F.R.C.S., F.R.C.P. In three volumes, with numerous illustrations in color and in black and white. Vol. I, 761 pages. Vol. II, 875 pages. Vol III, 871 pages. Published by the Macmillan Company, 66 Fifth Avenue, New York City. $36.00 for the three volumes.

THE ROENTGEN DIAGNOSIS OF DISEASES OF THE ALIMENTARY CANAL. By RUSSELL D. CARMAN, M.D. Octavo of 558 pages, with 504 original illustrations. Published by W. B. Saunders Company, Philadelphia and London. 1917. Price, $6.00 net, cloth; $7.50 net, half morocco.

A HANDBOOK OF PRACTICAL TREATMENT. By Many Writers. Edited by JOHN H. MUSSER, JR., B.S., M.D., and THOMAS C. KELLY, A.M., M.D. Vol. IV, 1,000 pages. Illustrated. Published by W. B. Saunders Company, Philadelphia and London. 1917. $7.00 net, cloth; $8.50 net, half morocco.

DESK INDEX TO MUSSER-KELLY TREATMENT TO VOLUMES I, II, III, AND IV. Published by W. B. Saunders Company, Philadelphia and London.

THE INTENSIVE TREATMENT OF SYPHILIS AND LOCOMOTOR ATAXIA BY AACHEN METHODS. By REGINALD HAYES, M.R.C.S., etc. Second Edition revised. Illustrated. 88 pages. Published by Baillère, Tindall & Cox, London, England, 1917. Price, 3/6 net.

INTERNATIONAL CLINICS. A quarterly of illustrated clinical lectures and especially prepared original articles on treatment, medicine, surgery, neurology, pediatrics, obstetrics, gynecology, orthopedics, pathology, dermatology, ophthalmology, otology, rhinology, laryngology, hygiene, and other topics of interest to students and practitioners. By leading members of the medical profession throughout the world. Edited by H. R. M. LANDIS, M.D., Philadelphia, U. S. A. Vol. II. Twenty-seventh Series, 1917. Illustrated. 313 pages. Published by J. B. Lippincott Company, Philadelphia and London. Price, $2.00.

A MONOGRAPH ON THE EPIDEMIC OF POLIOMYELITIS (INFANTILE PARALYSIS) IN NEW YORK CITY IN 1916. Based on the official reports of the bureaus of the Department of Health. Published under the direction of the Department of Health of New York City, 1917. 391 pages, illustrated.

Therapeutic Hints.

Hyperchlorhydria.—The first essential is to remove any mental or physical cause. If a definite physical cause be present, it should be treated and thus give relief of the hyperchlorhydria. If no organic condition be found, then medical treatment can be instituted. Butler begins treatment by ordering the patient from a quarter to half a dram of sodium bicarbonate, preferably in a small amount of water, an hour after each meal and occasionally during the day if the discomfort is great. Later, if necessary, the following may be given: sodium bicarbonate, sodium phosphate, sodium sulphate, āā 30 gms. (1 oz.) M. Sig. Gm. 2 to 4 (half to one dram) with ox gall pills salol coated, 0.25 gm. (4 grs.) after meals. The sodium bicarbonate may also be used with this, but in slightly smaller amount. Should the acidity continue in excessive quantity, atropine may be employed, gm. .003 to .006 (gr. 1/200 to gr. 1/100) repeated once or twice, or tinct. belladonna in gm. .02 to .05 (3 to 5 drops) doses every three or four hours, for a few times is sufficient to control the secretions and generally relieves any discomfort.

The diet must be simple. Butler has practically discarded the full protein diet and uses a carbohydrate and fruit diet. Eggs and meat, if used, must be in very limited amounts, and the patient eats only vegetables, fruit, and cereals. Occasionally the vegetables may be given in the form of a puree, but this is usually not necessary. Three feedings daily are sufficient. For breakfast these patients may be allowed an orange or a grapefruit, stewed apples, stewed prunes, etc., a cereal, preferably cream of wheat or cream of barley, but oatmeal, corn flakes, and rice are not interdicted, a soft-boiled toast or milk toast, and, if desired, a few strips of well-cooked but not crisp bacon. For lunch, rice and cream, apple sauce, a roll and tea, a glass of buttermilk with a piece of angel food or sponge cake, or a cup of bouillon an da couple of slices of bread and butter. For dinner, about 10 ounces of barley broth, vegetable soup or boillon, following this a lamb chop or scraped beef cooked rare in small amounts, the white meat of chicken or turkey, finely ground or chopped not to exceed 50 gm. may be given, but a few strips of bacon are more easily digested. Potatoes, mashed with milk or bread, are well tolerated. Spinach, peas, and asparagus tips are excellent. The various vegetables cooked in a puree offer some variety. Vichy and carbonated waters are enjoyed by the majority of these patients and can be taken three times a day in amounts not to exceed 100 to 150 c.c. (3 to 5 oz.). Kumyss can be used to replace buttermilk for variety, while olive oil one-half to one ounce, taken three times daily, aids in reducing the acidity. Colonic flushing is a strong factor in combination with th eabove treatment.—*Medical Times.*

Acute Cystitis.—A valuable prescription for relief of this condition is:

℞ Fluidextract pichi	f ℥ j	30 c.c.
Potassi nitrat	℥ j	4 gm.
Elix. simplicis	f ℥ iij	90 c.c.

M. S.—One teaspoonful every two hours, well diluted.—*Hughes' Practice of Medicine.*

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Original Articles.

THE DIAGNOSIS AND TREATMENT OF ABORTION.*

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NEW YORK.

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THE diagnosis of abortion should, apparently, not offer any great difficulties, and still, it may, at times, tax the doctor's diagnostic skill to the utmost. The essential considerations in a given case are: (1) Was the patient actually pregnant? (2) Is the abortion spontaneous or induced? (3) Granting the presence of pregnancy, the question arises, have the products of conception been entirely expelled or removed, or are there still remnants of conception in the uterus? (4) Are we confronted with a uterine abortion or with an ectopic pregnancy, or, as occasionally happens, with the presence of both?

1. *Was the Patient Actually Pregnant?*—At the present time when women so frequently run to a doctor or midwife, or use means themselves to obtain relief, as soon as they have skipped a period for one or two days, it not infrequently happens that attempts to interrupt a supposed early pregnancy, are made when pregnancy is not existent at all. Some of the most virulent cases of septic infection that I have encountered have been in just such cases. I will cite one case out of several. It was that of a woman who, when she had passed her period for a couple of days, endeavored to bring on, supposedly, an abortion by introducing an alum stick into the uterus. The next day she had a severe chill followed by a temperature of 105°. That night she was curetted by her family physician, who thought he removed some tissue. Twenty-four hours later, when seen by me, she had had a couple more chills and a temperature of 106° and a pulse of 140. Her blood was swarming with streptococci, as the blood culture taken then showed later. It was my conviction that the only chance the patient had lay in an immediate hysterectomy, which I performed. The patient recovered. The uterus showed a total absence of any signs of having been recently pregnant, but the endometrium was in a state of gangrene deluged with streptococci. What makes these cases of attempted abortion in a non-pregnant uterus so malignant, is the circumstance that in order to infect a non-pregnant uterus, the bacteria must, of necessity, be of the most virulent variety and there is no opportunity of localization of the infection to the ovum as may occur in pregnancy. Furthermore, the attempts are likely to be repeated until free bleeding occurs, thus exposing the uterine tissues to the most severe traumatism.

Neugebauer, the great Russian satistician, in 1912 collected from the literature 15 such cases with a fatal result in 5 cases. Liebeck, a year later, collected 44 cases with death in 14 cases, a mortality of 35 per cent. In many instances, ectopic pregnancy was found in these cases of attempted abortion of a non-pregnant uterus.

Personally, I had seen so many cases of ectopic pregnancy in women who began their attempts to bring on a miscarriage, when they were one or two days overdue, that some years ago I expressed the belief that there might be some connection between these interferences and the arrest of the impregnated ovum in the tube.

2. *Is the Abortion Spontaneous or Induced?*—This may seem, at first blush, somewhat of a refinement in diagnosis, but such is not the case. Some years ago, when in charge of a large dispensary service, I made the observation that a spontaneous abortion or miscarriage, whichever term you wish to employ, is with definite exceptions, never attended with fever. The exception is when the pregnant uterus lies in retroversion or retroflexion and drainage is interfered with. So firmly convinced am I of the reliability of this observation, that when an aborting patient with fever presents herself to me, I straightway accuse her of having had some interference, either by herself or others. No matter how strongly she may deny this, at first, it has been my invariable experience that sooner or later she will admit it. I recall one instance which, at first, seemed to shatter the infallibility of the observation. It was the case of a young woman, pregnant about two months, who was bleeding rather profusely and who had had a chill four days before, and since then a temperature ranging from 101° to 104°. The patient denied stoutly any interference and the circumstantial evidence was strongly in support of her assertion. She had lost the only child she had had and was keenly eager to have another. The case puzzled me considerably. The patient was admitted into Mt. Sinai Hospital, where I shelled out, from the open cervix, the products of two months' pregnancy. The temperature, nevertheless, persisted. I made a tentative diagnosis of typhoid fever. She was seen by one of the internists, who stated he could see no evidence of it, and, a Widal taken proved to be negative. I adhered to my diagnosis, feeling firmly convinced that the spontaneous miscarriage could not be the cause of her continued fever. Later, the Widal was positive, but

*Read before the East New York Medical Society May 17, 1917.

by this time the clinical evidences were so unmistakable as to leave no room for doubt. The disease ran a most violent and protracted course, but finally ended in recovery.

3. *Is a Given Case One of Complete or Incomplete Abortion?* in other words, is the uterus completely empty, or are there still some remnants of the products of conception within the uterine cavity? It may be readily assumed that the presence or absence of bleeding would, of itself, be sufficient evidence whether the abortion was complete or not. As we all know, this is not always the case. The bleeding may have ceased and still the uterus may contain considerable products of conception. Here a bimanual examination will be of great aid in reaching a conclusion, particularly, if the pregnancy was advanced beyond 6 or 7 weeks. When this is the case, there would be appreciable enlargement of the uterus. In very early pregnancies, we may guide ourselves, in the majority of cases, by the absence or presence of bleeding. If there be no bleeding nor fever we are safe in assuming that the abortion is complete. This point will be discussed again, when we come to speak of treatment.

There is a condition to which I would wish to draw your attention, which frequently is rather puzzling. A woman may have had amenorrhea for 6 or 8 weeks and then begin to bleed in various amounts, at times very profusely, at other times rather scantily. When we come to make a bimanual examination, we are surprised to find a uterus reaching to the umbilicus or beyond. We may be led to believe the woman has made an error in the calculation of the date of the pregnancy, or that she has a fibroid growth complicating her pregnancy. When such a discrepancy occurs between the clinical history and the local findings, you must always bear in mind the probability of a hydatid mole. The suspicion will be confirmed, if the much enlarged uterus be unusually soft and doughy. The age of the patient may be of some aid in diagnosis. Molar pregnancy is more frequently met with in multiparæ, who are approaching the menopause. Still, I have met with two cases in very young women, 20 and 21 years of age respectively, and in each instance it was the first pregnancy. In one of the cases a severe attack of eclampsia was present.

Occasionally we meet with a patient in whom the exact opposite condition to the foregoing is present; the woman dates back her pregnancy to 4, 5, or 6 months and on bimanual examination we find a uterus corresponding in size to the gravid organ at 8 or 10 weeks. Here we have what is termed a "missed abortion." If we interrogate these patients very carefully we will learn that, at some time or other, in the early period of pregnancy, they saw a stain or two, to which they attributed no significance. That usually marks the death of the ovum, but it is retained in the uterus, forming almost a solid mass, known as a "fleshy mole," or a sac with very thick walls, inclosing more or less fluid and a small shriveled fetus. This condition seems rarely to be recognized by the practitioner. The patients usually consults him because she finds her abdomen is not increasing in size as it should. At the first examination he usually tells her everything is all right. At a second examination, a month or two later, he may tell her she has not been pregnant at all. I see a case of this kind in my office every month or two and cannot recall an instance in which the correct diagnosis had been made by the medical attendant.

4. *The Differential Diagnosis Between an Early Abortion and Ectopic Pregnancy.*—In former years, the error of confusing an ectopic pregnancy for an early miscarriage was very common, and one frequently met with cases of ectopic pregnancy that had been subjected to one or more curettages, and the surprise was expressed that the bleeding still persisted. Now, I should say the tendency is rather in the opposite direction. But, on the whole, it is a safer tendency than the previous one. It is still a good maxim to look upon every case of supposed spontaneous early miscarriage with suspicion. The suspicion should be strengthened when the uterus is found but slightly larger than the normal, and when the cervix is found closed. Many writers make the differential diagnosis appear exceedingly easy and so it is, in some cases, as, for instance, when there are the classical symptoms of severe cramp-like pains, limited to one quadrant, fainting spells, and a distinct and appreciable enlargement of the affected tube. But we know that cases presenting this triad of symptoms are rather the exception than the rule. What renders the diagnosis so difficult at times is the circumstance that nowadays women so frequently seek relief when they are a few days over due, as has already been stated and as we all only too well know. In a given case, therefore, we may be confronted with the problem whether we are dealing with a case of attempted abortion at an early period of pregnancy, with thickening of one of the tubes as a result of infection, or with an ectopic pregnancy in which an attempt at an abortion has been made. In both instances we have slight enlargement of the uterus associated with thickening of one or the other of the tubes, and I frankly confess that I have not infrequently met with such cases in which I found it impossible to make a definite diagnosis. A differential blood count is of no aid to us in these cases, for the white blood count is considerably increased in ectopic pregnancy as it is in an infected salpingitis. When such a problem presents itself to me, in order to establish the diagnosis, I am in the habit of carefully curetting the uterus and, on finding it empty, I make an incision through the posterior vaginal vault, and if free blood escapes from the peritoneal cavity, I open the abdomen from above and excise the ectopic tube. It is better, occasionally, to make an unnecessary exploration of this kind, than to allow one case of ectopic pregnancy to escape our observation. Of course, when the symptoms are not urgent, we can afford to wait a week or two, to observe whether the uterus increases in size.

Every now and then we meet with uterine abortion associated with ectopic pregnancy. I can recall three such cases in my experience. Every one of us is likely to slip up in the presence of such a combination. In one instance I made the diagnosis of ectopic pregnancy, but the family physician felt certain of his diagnosis of uterine abortion, and insisted that I curette the patient in her home, before he would consent to her being sent to the hospital. On curetting her, I removed undoubted products of pregnancy. The family physician was

crowing over the correctness of his diagnosis, when the patient suddenly went into collapse and her entire body became blanched, as white as a sheet. I at once opened her abdomen with scissors (the only cutting instrument I had with me), and found the entire abdomen distended with fluid blood, due to rupture of an ectopic tube. By ligating the tube and removing it, filling the abdomen with saline solution and performing intravenous saline transfusion, I was enabled to save the patient.

We are now prepared to take up the treatment of abortion. First, that of spontaneous abortion without fever. If the bleeding is not excessive we can afford to wait to see what nature will do. In many instances the uterus will expell the ovum and its membranes entire, or, at most, they will remain in the dilated cervix, whence they can be readily removed with the fingers. In other cases, if the bleeding is profuse, we can either tampon the cervix with gauze and wait for the natural forces to expel the uterine contents, or dilate the cervix with a suitable dilator and remove the contents with the fingers, placental forceps, or curette. To my mind, it makes no difference which of these means is employed, so long as all the products are removed and no traumatism inflicted. Personally, I am in the habit of using the placental forceps first and then gently curetting the interior of the uterus, to make certain that all the tissues are removed.

In early abortions, say that of six or eight weeks, when the bleeding persists after the ovum and its envelopes have been apparently expelled, I find the sharp curette of great value to remove the small remnant within the uterus. It has often been a surprise to me to note how small a remnant may be the cause of profuse and protracted bleeding.

When we are dealing with infected abortions, as indicated by fever, our course must be carefully considered. First and foremost we must determine whether the prior interference (for, as I have already stated, the presence of fever, with a single exception, is an indication that a criminal abortion, or an attempt at it, has been made), has resulted in removing all the uterine contents or whether the uterus still contains the products of conception. However we may differ in treatment of the latter condition, we are all in accord as to the course to follow in the first contingency. Nothing but harm can result from subjecting an empty septic uterus to active instrumentation. I have not the least doubt that the bad reputation the sharp curette has acquired in many quarters in due in great part to its frequent employment in such conditions. We have already seen how difficult the determination, whether the uterus is empty or not, may be in a given case. Therefore, when we are in doubt we should refrain from curetting the uterus. From my own observations I should conclude that just the opposite most frequently obtains. Just because there is fever, a curettage is done, and if the fever persists a second curettage is resorted to, in the conviction that the first curettage could not have been thorough enough. The worst cases of post-abortive septic infection that we encounter in the hospital have been cases in which this line of procedure had been carried out. We have already drawn attention to the cases of virulent infection following attempts at abortion of a non-pregnant uterus.

These cases of post-abortive septic infection should, therefore, be treated on the general principles of septic infection, rest in bed, plenty of fresh air, proper nourishment, and proper action of all the emunctories.

When we come to the treatment of infected cases with the products of gestation partly or wholly within the uterus, we reach debatable ground. The discussion has arisen only since 1911, when Winter of Koenigsberg published his rather startling paper, advocating a "let-alone" policy, regarding this class of cases. To be more definite, Winter became dissatisfied with the very high mortality (13 per cent.) and large percentage of morbidity the statistics of his Klinik showed with active treatment. Consequently he instituted a different line of procedure. Every case had the uterine discharge subjected to a bacteriological examination, and if it contained virulent bacteria, such as the hemolytic streptococci, the uterus was left alone until the fever subsided and then the contents were removed.

Winter's article created a great stir in Germany and formed the basis of several publications and discussions, only a very small minority were in agreement with Winter's contention, while the vast majority were in strong opposition to it. In this country, and particularly in this vicinity, there appears to be a tendency to accept the teachings enunciated by Winter. Theoretically they seem very plausible, for example, the danger of exciting a general infection through the manipulation of the interior of the uterus and setting free the bacteria to enter into the general circulation. But practical experience, I think; has taught us the fallacy of this teaching. At least, that is the lesson I have learned from my own experience. In order to test the correctness of my conception, I had the Records of the Gynecological Service of Mt. Sinai Hospital, for the past five years, gone over very carefully. They revealed that during this period there were 287 cases of either inevitable or incomplete abortion; of these there were 60 cases which had a temperature ranging from 101° to 106°. Many of which had admitted to instrumental interference, either by themselves, midwives, or doctors, and we are safe in the assumption that all had been tampered with. All of the 60 cases had been curetted or the uterine contents removed, by other means, as promptly as it was feasible, after their admission into the hospital.

In the entire series there were but two deaths. One died 9 hours after the curettage with symptoms of pulmonary embolism. The other died of septic pneumonia on the ninth day following a curettage, performed by the then incumbent house surgeon, who perforated the uterus. The temperature ranged from 101° to 103° during the next few days, and then developed signs of pelvic peritonitis and septic pneumonia. I have not been able to collect the cases in my private practice, they were all emergency cases, calling for immediate treatment and no notes were taken of them. But I am convinced the number was quite considerable, accumulating, as they have been during several years. I can recall no mortality amongst them, the only deaths I can recall occurred in those cases seen in a moribund condition, in which intervention of any kind was out of the question.

I can see no valid reason, therefore, to change the method I have been following for very many years. There are a few lessons I learned early in my career, one of which is never to insert gauze into the uterus for the purpose of drainage. Formerly I was in the habit of irrigating the uterus, after the curettage, with 50 per cent. alcohol. Latterly I have been using a solution of tincture of iodine of the color of red wine.

There are a few points upon which I wish to lay especial emphasis. No curettage should be done without shaving off the hairs of the vulva and scrubbing the vulva afterward with soap and water gently but effectively. This procedure, one would think, is universally followed and still I cannot recall a case admitted to my service at Mt. Sinai Hospital, when a curettage had previously been done at home, in which this simple but essential procedure, had been carried out.

I am aware that there are a great many prominent and distinguished gynecologists, who object very vigorously to the use of the sharp curette. I will not deny that it is an instrument capable of great harm when not carefully employed, but it has been my experience that more serious injuries have been inflicted with the uterine steel dilator and placental forceps than with the sharp curette. It is not so much a question of the instrument as it is of the man who handles it. I have no quarrel with the man who feels he can remove all the uterine contents more safely with the fingers than with the placental forceps. But I do not expect him to quarrel with me because I find I can do it just as safely, but more thoroughly, with the sharp curette.

When I am confronted with a case of inevitable abortion, at a period of pregnancy longer than 10 weeks, I have, for years, resorted to anterior colpotomy or vaginal cesarean section. Before I adopted this method, I used to dread the task of having to empty a pregnant uterus at the third, fourth, or fifth month. It was always a tedious undertaking, attended with a great deal of bleeding, with considerable uncertainty as to whether everything had been removed, and with the constant fear that the uterus might be perforated. It was usual, also, that in removing the fetus piecemeal, the head would be severed from the trunk and the spherical object rolling about the uterus, was extremely difficult of removal, trying to both the temper and the patience of the operator. With anterior colpotomy all this is done away with. The procedure now becomes a truly surgical one, unattended with excessive bleeding and with the uncertainty of groping about in the dark. By making a longitudinal incision and exercising due care in coaptating the edges of the wound, the anatomy of the parts are left practically in a normal condition. The risk of entering the bladder can easily be avoided by drawing down the cut edges of the cervix by successive applications of the bullet forceps, and by pushing up the bladder with the gauze-covered finger.

In hydatid mole it is the procedure *par exeellence*, at all periods of pregnancy. It enables us to make use of the fingers or the hand, to scoop out the hydatidiform masses, which are not easily removed in any other way. It enables us to determine, with a certainty, that all the contents are removed and that none of the degenerated villi are left attached to the uterine wall, to form a nidus for a probable development of a chorioepithelioma, and what is not less important, it enables us, also, to palpate the entire uterine wall, to determine whether a chorioepithelioma has not already developed.

In one of my cases of hydatid mole, this maneuver led to the detection of a hard excavated nodule in the inner uterine wall, which I had no hesitation in diagnosticating as a chorioepithelioma. I then and there removed the uterus, the miscroscopic examination confirmed the diagnosis, and it is not a stretch of the fancy to assume that this early detection of the malignant growth was the means of saving the patient's life.

In conclusion, let me say that the diagnosis of complete or incomplete abortion is often surrounded with great difficulties, demanding more thought and consideration than is frequently given to it. I find that a common error is to assume too much from the patient's history and not to pay sufficient attention to a careful local examination.

Then as to the matter of instrumental interference, an entire evening might be consumed in relating the instances of fatal septic infections and injuries to the pelvic viscera of a fatal nature, that have been caused by the abuse of the curette. Every practitioner feels himself competent to perform so simple an operation as a curettage and so he should be. But, either through ignorance or carelessness, I believe the curette has done more harm than any other single instrument in the surgical armamentarium.

I have already indicated my own views as to the proper use of the curette, and I believe that every practitioner could readily learn to so use it. But my daily experience in private and public practice demonstrates to me that men commonly use it, ignoring the very rudiments of aseptic surgery. The patient frequently is merely placed across the bed and is subjected to a curettage, even without ether and practically never with having the vulva properly prepared. Is it then a matter of surprise that the curette has been condemned so strongly in many quarters? If men were in the habit of opening the abdomen with the same lack of preparation and the same lack of asepsis, the scalpel would properly receive equally strong condemnation. And yet, in my opinion, the same care in preparation and in asepsis are required in a curettage, as in a laparotomy. That, I may truly assert, has been the guiding principles in my own work, and it is my firm conviction that the absence of untoward results has been in a great measure due to the adherence to these principles.

751 Madison Avenue.

The Christian Name of the Late Professor Doyen.—Few medical men knew the full name of the late celebrated French surgeon Doyen. Like many of his countrymen with large practices, he preferred to be known solely by his surname. His full name is said to have been Louis Eugene Doyen.—*Il Policlinico.*

Hysterical Progressive Myoclonus.—Trocello reports a case of hysterical hyperkinesis which seems to belong to the myocloni. Chorea and generalized tic could be excluded. A progressive course has not often been noted in a hysterical.—*Il Policlinico.*

INFANT FEEDING.

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In the last six years that I have had charge of the Infant Feeding Station connected with the College of Physicians and Surgeons, the question which I have most frequently been asked by the many physicians who have visited our station has been: "Doctor, how can you tell what formulas to put these babies on?" To answer this very pertinent question properly one must understand the fundamental principles which underlie the art and the science of infant feeding.

Infant feeding is simple and can be made successful in the great majority of cases if one keeps in mind the underlying fundamental principles. These principles are few, clear cut, definite, of almost mathematical exactness; disobedience of these rules leads invariably to ultimate failure; one can attain a successful result in the great majority of feeding cases by simply adhering to the fundamentals of this science. Attention to the smallest details is the key to success.

It is only in about 10 per cent. of difficult feeding cases that special knowledge not within the scope of the general practitioner, is required. The idea is prevalent that infant feeding is a very difficult subject to grasp and this explains why so many physicians dread to take up the study of this relatively simple science and resort to proprietary foods; a procedure which is surely an admission of ignorance. That infant feeding can be made both simple and successful in the great majority of cases we can attest to from an experience of over 5,000 cases; in not a single case did we resort to any of the proprietary foods; we have yet to meet the infant that could not be made to thrive on fresh cows' milk properly modified, that would thrive on a proprietary food; it is only in cases where fresh milk can not be obtained that proprietary foods are permissible for short periods. The mortality at our station has been one of the lowest in the city, in spite of the fact that the general infant mortality in the district from which our material was entirely derived is the highest in the city; in not a single case did scurvy or rickets develop in a white baby.

Before we can prescribe an intelligent formula we must have a complete history of the mother and the infant from the day of conception to the present day, and we must make a complete physical examination of the infant to see that the case is a feeding case only, and that the malnutrition is not due to an underlying constitutional disease, which must be treated, before we can expect any success from the feeding formula.

A careful history in the majority of cases reveals the errors which have been committed in the past and points out the direction in which the formula must be corrected. We must know whether the mother suffers from a disease which is apt to be transmitted to the infant (tuberculosis, lues, etc.); we must also learn the state of health and nutrition of the mother during conception, the nature of the labor, and whether the infant sustained any injury during childbirth or not. The birth weight must always be noted; if not definitely known, one should ascertain the knowledge of whether the infant was a large or small baby at birth; this information is important in judging future progress. We must also know all the ailments which the infant has gone through since birth; these data are important because infants showing symptoms of exudative diathesis have a diminished tolerance for fat and to see whether the malnutrition is not due to improper feeding.

The most important part of the history is that which pertains to the feeding from birth up to date. How long was the infant breast fed? How frequently and for how many minutes was it nursed at each nursing? Was the infant nursed from one or both breasts at each feeding? How many times was the infant nursed during the night? Was the infant gaining in weight while on the breast? Was vomiting present? How soon after the nursing? After every nursing? Was it forcible or projectile (pyloric stenosis)? What was the nature of the vomitus—was it plain milk (due to overfeeding), curdled milk (due to too high fat), was it sour water (too high sugar)? How were the bowels—normal, loose, or constipated? Did the baby cry much after nursing (scanty milk), or did it fall asleep immediately after nursing (milk sufficient)? Did the infant cry much before nursing time was due and did it hang on the breast for a half hour or longer at a nursing (scanty milk)? How many of the children were successfully breast fed by the mother? The nursing history of the mother is of help in determining whether it is advisable to make further attempts to nurse the infant; however, very often with proper regime a mother may be able to nurse an infant when she could not nurse any of her previous infants. A poor nursing history is no excuse for not trying breast feeding in any case. Why was the infant weaned? What was the best weight when the baby was on the breast? From the answers obtained we can determine whether the infant was weaned for adequate reasons or not; very often infants are weaned without sufficient reasons; however, the pendulum has swung the other way, and now many infants are kept on the breast for weeks when everything points to ultimate failure. We should encourage maternal nursing in every case in which the milk agrees with the infant; when the quantity of breast milk is insufficient we should not wean entirely, but should partly nurse and partly feed the infant artificially.

After we have found out how the infant behaved on the breast and why it was weaned, we must inquire about all the artificial foods which the infant has received and how long he was kept on each, and how he reacted to each (what symptoms he presented—how much did he gain), how each food was prepared, how much was given at a feeding and the length of the intervals; we must know the total amount of food given and the number of feedings (also night feedings). To perceive the full significance of the value of each food, we must reduce each food to calories and to percentages. Attention to smallest details is important, such as method of preparation of the food, method of obtaining the desired number of ounces of milk, method of measuring the milk, the sugar and the water, how the bottles are given and the temperature of them,

the kind of bottle and nipples that are used, and the size of the hole in the nipple (are pacifiers used?) and finally we must inquire into the general cleanliness in the preparation of the food (are bottles and nipples boiled) and the general hygiene of the infant—sufficient care and attention, proper airing and bathing, proper clothing.

A consideration of the symptoms which the infant may present is important. 1. Appetite. If the food is insufficient the infant will cry immediately after the bottle has been given and long before the next feeding is due; the bowels are apt to be constipated and he is apt to vomit (due to the restlessness, crying and agitation) (constipation is due to insufficient residue). When an infant is overfed his appetite is poor; he also cries a good deal (overdistention, colic); he may vomit immediately after feeding (too great quantity) or some time after feeding (overfeeding with fat); the bowels, in cases where the vomiting is excessive are constipated; otherwise they are loose (due to excess of fatty acids—moderate amounts of fat cause constipation; excessive amounts of fats or carbohydrates cause diarrhea). Overfed babies are apt to have skin rashes (urticaria, eczema, intertrigo, furunculosis) and usually have a diminished resistance to infection, especially infants overfed with carbohydrates.

2. Vomiting. This may be due to overfeeding (the quantity at a feeding too great, the per cent. of fat, sugar or protein may be too high), to underfeeding, too short intervals, to mechanical causes (too much handling after feeding, abdominal pressure, overdistention with gas, too rapid or too slow feeding, the food too cold or too hot), to pyloric stenosis. It is also important to know how soon after the feeding the vomiting takes place, how often it recurs, and what the nature of the vomitus is? Vomiting due to overfeeding usually takes place immediately after feeding; it is a simple regurgitation, neither forcible nor projectile. In fat indigestion the vomiting takes place some time after feeding and the vomitus consists of creamy rancid-smelling curdled wilk; in sugar indigestion the vomiting usually takes place soon after feeding and the vomitus consists of sour-smelling watery fluid. The vomiting in protein indigestion usually takes place some time after feeding and the vomitus is cheesy and consists of large tough curds. When vomiting is due to overdistention with gas it is explosive in character and usually takes place after a period of crying and distress; to obviate vomiting from this cause the infant should be held in the upright position immediately after the feeding, and should be gently patted on the back or the abdomen to facilitate the expulsion of the gas; the nature of the vomitus depends on the length of time after the bottle has been taken. In pyloric stenosis the vomiting is projectile; the vomitus usually contains rancid-smelling creamy material and pathological elements; the quantity vomited is often in excess of the amount taken at the last feeding.

3. The Stools. It is important to know how many stools the infant has in the 24 hours; is the infant constipated or has it loose stools? What is the color of the stool? Are there any foreign elements such as curds, pus, mucus, blood or starch granules present? From the nature of the vomitus and the character of stool definite conclusions can in many cases be drawn as to the cause of indigestion (whether it is due to fat, sugar or protein). Is flatulence or colic present? These are usually due to overabundance of carbohydrates but may also be due to indigestion of fat or protein or to the swallowing of great quantities of air.

Constipation depends more on the fats and the salts than on the proteins; high fat feeding causes soap stools and consequent constipation; loose stools are caused by high content of sugar and salts in the food; a high protein and a high fat content favor an alkaline intestinal secretion and are conducive to the formation of solidly formed stools.

The stools in sugar indigestion are loose, green, and scald the buttocks; the odor is that of acetic or lactic acid; the abdomen is usually distended with gas; in severe cases fever, glycosuria and signs of intoxication are present; both sugar and starch may be present in the stool.

In fat indigestion the stools are gray or white and are greasy or shiny; the stools smell strongly of butyric acid; the stools usually contain soft curds. When the soaps predominate they are dry and hard and are clay colored or oily; the reaction of these stools is acid and the odor is rancid. The gray stool is usually due to an excess of neutral fat; the white or soap stool is due to an excess of fat in the form of soaps. There are three requisites for the formation of soap stools: (1) A moderate amount of fat; (2) considerable amounts of casein and calcium salts; (3) an absence of large amounts of carbohydrate in the food.

In protein indigestion the stools are loose, brownish, alkaline and of putrefactive or fecal odor; very often they contain considerable amounts of mucus and hard or protein curds.

In very loose stools there is a great loss of fat; the loss of fat runs parallel with that of water; the greater the water loss the greater the loss of fat. In very loose stools there are no soaps found at all (about 8 per cent); most of the fat is in the form of neutral fat (65 per cent.) and fatty acids (27 per cent.). The amount of protein lost is about twice as great as in normal stools but the relation of nitrogen to the total residue is normal; most of the nitrogen excreted is derived from the intestinal secretions and not from the food. The actual amount of calcium in the loose stool is nearly the same as in normal stool; but the quantity of Na and K in loose stools is very much increased. The residue (cellulose of bacterial origin) is very much increased in very loose stools.

The reaction of the artificially fed infants stool is alkaline; that of the breast fed is acid; the reaction depends on whether the nitrogen free elements (carbohydrates) or the fat and protein predominate in the mixture; if the former is found in excess the reaction is acid; if the latter it is alkaline. Thus an acid stool which scalds the buttocks may be changed into an alkaline stool by increasing the proteins and fats and by diminishing the carbohydrates; an alkaline stool may be changed into an acid stool by increasing the carbohydrates. Stools which scald the buttocks are usually acid.

Curds make their appearance in the stool both in fat and protein indigestion. The protein or casein curds are bigger, bean-shaped, hard, tough,

and are white or yellow in color; the fat curds are smaller, softer, more easily broken down, and are of yellow green color. The total loss of food in fuel value in the curds is in the great majority of cases very slight. The hard curds are derived from the casein and usually disappear when the milk is boiled; the soft curds are derived from the fat of the food.

4. The temperature should always be taken; healthy infants have a monothermia which becomes disturbed in nutritional disturbances; in dyspepsia and intoxication it is elevated, and in marasmus it is subnormal.

5. Sleep. How many hours does the infant sleep? How soon after the feeding does the infant fall asleep? Is sleep peaceful or restless and disturbed.

6. Crying. Is it excessive? Does the infant cry before feeding time or immediately after feeding?

7. Infections and Dermatitis. Healthy infants are characterized by a high degree of immunity to infections and freedom from skin affections. Has the infant had any infections such as influenza, repeated bronchitis, pyelitis, etc.? Has the infant had eczema, urticaria, intertrigo, furunculosis?

8. General Physical Development. Is the infant fat and flabby? What is the tone of the musculature? What is the hemoglobin? What is the size and shape of the head, chest and abdomen? How are the epiphyses and the spine? What is the condition of the gums? Does the infant support its head? Sit up? How many teeth? The whole physical development should be compared with that of a healthy infant of the same age.

After a thorough physical examination of the infant has been made and a complete history has been taken we are in a position to prescribe an intelligent formula. Close analysis of the answers received to our questions will enable us to ascribe the malnutrition of the infant to one or more of the following causes:

A. Formula, Proper.—(1) The presence of some constitutional disease, such as lues, tuberculosis, pyloric stenosis, cleft palate, congenital heart, exudative or neuropathic diathesis, etc. (2) Too much or too little food (total in the 24 hours). (3) Too much or too little at a feeding. (4) Fed too frequently or too infrequently (too many or too few feedings in 24 hours). (5) Food improperly prepared. (6) Food improperly administered (too hot or cold; given too fast or too slow). (7) Contaminated or poor milk. (8) Faulty hygiene; lack of fresh air, overheating, lack of proper bathing and clothing, lack of mothering, institutional life.

B. Formula, Improper.—(1) Fats too high or too low. (2) Sugars too high or too low. (3) Proteins too high or too low. (4) Salts too high or too low. (5) Water too much or too little. (6) Improper relations of the elements to one another.

In the presence of any constitutional disease a perfect milk formula will not cause proper gain in weight until the underlying constitutional disease had been properly treated. Under these circumstances it would be useless to change the formula every few days, for the infant will not thrive in spite of all changes of food; very often the disease is aggravated by improper feeding; it is therefore doubly important to be sure that the infant has a proper formula, and when convinced of its propriety not to change it too frequently until the underlying disease shows signs of improvement as a result of treatment.

One reason why infants do not gain in weight is because they receive too much or too little food; the percentages may be correct, but the total quantity of food may be too little or too great. Observations on breast fed infants have shown that a healthy breast fed infant requires about 100 calories to the kilo in the first three months, 90 in the second, 80 in the third, and 70 from the ninth to twelfth month; artificially fed infants require from 10 to 20 calories to the kilo more than breast fed infants. The smaller the infant, and the less the infant weighs for its age, the greater is the caloric requirement; thus puny and atropic infants require about 130 to 160 calories to the kilo; all things being equal a quiet infant requires less calories than an active one; the larger the infant is for its age the less is the caloric requirement.

One must always remember that it is not the number of calories introduced, but the number of calories properly oxidized that are of use to the infant; therefore the mere estimation of the number of calories in the food of an infant with disturbed digestion can serve no useful purpose. Foods yielding the same number of calories will not produce the same gain in weight; of two foods, one rich in fat and low in carbohydrates and salts, and the other low in fat and rich in carbohydrates, salts and protein, more must be given of the former than of the latter to procure the same gain in weight; from these facts we see that from the mere estimation of the calories in the food we cannot determine whether the infant receives too much or too little food; no two infants of the same age require the same number of calories to thrive on; the determining factors are the weight for its age, the size, and the degree of activity, the previous state of nutrition, and other factors.

Certain facts we have learned empirically; these are first, that few infants will gain in weight on less than 35 calories to the pound; second, that very few puny or atrophic infants require more than 75 calories to the pound; it is evident that what is too much for one infant may be too little for another and vice versa; the only proper way of determining the number of calories necessary for any particular infant is to begin with 35 calories to the pound and gradually to increase the number of calories in the food, until the infant begins to gain sufficiently. The only accurate way we have of determining whether the amount of food is too much or too little for any particular infant is therefore clinically; an infant who receives too much food does not finish the bottle, and is not hungry at the next feeding time; usually regurgitates and the bowels are loose. An infant that is underfed cries immediately after feeding, and long before the next feeding time is due; the bowels are constipated and there is no gain in weight.

The quantity to be given at a feeding depends on the age, the weight and the state of nutrition of the infant, also on the number of feedings and the length of the intervals. A healthy infant of normal weight can take: At the end of one month, 3 ounces at a feeding; 2 months, 3½ ounces; 3

months, 4 ounces; 4 months, 4½ ounces; 5 months, 5 ounces; 6 months, 6 ounces; 7 months, 7 ounces; 8 months, 7½ ounces; 9 months, 8 ounces. The amount of 8 ounces at a feeding should not be exceeded under one year of age. The quantity at a feeding to be given to a puny or an atrophic infant depends more on its age than on its weight; both factors must be considered; a good rule to follow in these cases is to give more than the weight and less than the age would indicate; the more an infant is underweight for its age the greater is the water need; thus a baby weighing 7 pounds at 2 months would get 3 ounces at a feeding; 7 pounds at 3 months, 3½ ounces; 7 to 8 pounds at 4 months, 4 ounces; 9 pounds at 5 months, 4½ ounces; 10 to 12 pounds at 6 months, 5 ounces. The longer the intervals the more can be given at a feeding and vice versa; infants can often be given more than the anatomical capacity of their stomachs would indicate, because a good portion of the feeding goes directly into the duodenum, immediately after its entrance into the stomach (this explains why puny infants can often take large quantities of fluid without vomiting). At times when too little is given at a feeding the babies cry and fret so much that they vomit the little they get; in these cases to allay the vomiting we must increase the quantity given at a feeding.

No infant should receive more than 7 feedings in the 24 hours, and should never be fed more frequently than every three hours; when they receive 2 to 3 per cent. fat in their milk mixture the intervals should be 3½ hours and the number of feedings 6; and when they receive 3 to 4 per cent. fat the intervals should be 4 hours and the number of feedings 4 to 5 in the 24 hours. The fat in the food is the last element of milk to leave the stomach; the higher the percentage of fat in the mixture the longer the intervals must be, otherwise there will be residual food in the stomach at the next feeding. Part of undigested milk leaves the stomach as soon as it enters it; then the whey (containing the salts and sugar) passes into the duodenum, then the partly digested protein and finally the fats. It is evident why infants with sugar indigestion usually vomit early, and those with fat indigestion usually some time after feeding (in the latter group of cases the intervals should be made longer).

Very often the infant does not thrive because the milk mixture is not prepared properly; the formula may be correct, but the preparation of it may be faulty; thus very often when skim milk is ordered the mothers after skimming off the fat usually pour it back into the mixture; and very often when top milk is ordered from two different bottles they use only one. It is important therefore to question the mother as to how she obtains the milk ordered and how she prepares it; also how she measures the sugar, the water, and other elements that may be ordered; all directions for feeding and formula should be written with the care and accuracy of a drug prescription.

Not infrequently an infant will not gain in weight and have symptoms because the food is given too slowly or too fast; an infant should not take less than 10, nor more than 15 minutes, in consuming a feed of 6 ounces; when the bottle is given too slowly the infant often swallows considerable amounts of air, and this causes distention, colic, and vomiting; when food is given too fast it is also apt to be vomited; the infant's stomach is very sensitive to all slight irritations from within and without; therefore all necessary handling and bouncing of infants immediately after feeding should be avoided. If the food is not of the right temperature (about 100° F., tested by pouring on wrist) it will often be rejected by the infant and if taken will cause vomiting and loose stools. Pacifiers should not be allowed; they are unsanitary, apt to cause infection and very often lead to swallowing of air with resultant colic and vomiting.

The milk used for infants should be the best obtainable; only grade A bottled milk should be used; no loose store milk should ever be used on account of the danger of bacterial contamination; when absolutely sure that the milk is clean it can be given raw; in summer time it is best to pasteurize or bring the milk to a boil; all infants fed with pasteurized or boiled milk should receive fruit juices early and in sufficient quantities to prevent the development of scurvy.

Not infrequently one finds infants who have not gained one ounce in weight for from 6 to 12 weeks, during which time they have had hardly any symptoms; there is no vomiting and the bowels are regular; the number of calories in the food supplied seems sufficient, and the technique is faultless; almost invariably these infants begin to gain in weight when the previous whole-milk formula is changed for one of skim milk with a high percentage of carbohydrates, although the total number of calories in both formulas remain the same; thus, there are infants who thrive best when the fats are low and the proteins and carbohydrates high, and *vice versa;* however, the great majority of infants do best on formulas in which the fats and the proteins are found in equal proportions; this explains what is meant by the proper relation of the elements to one another; in every case the relation of the elements must be such as to be within the power of digestion of the particular infant.

The food requirement during growth is peculiar in that the intake of certain groups of nutrients (proteins, salts) must exceed the wear and tear so that some excess will be available for new cells and the elaboration of tissues that develop in the period of growth. The diet of the infant is comparatively low in protein; for growth 7 per cent. of the total intake must be protein and for maintenance only 5 per cent. of the total energy intake (*i. e.* ¾ to 1½ ounces of milk per pound weight). Protein is an essential constituent of an infant's food; the protein of milk is composed of casein and lactalbumin; proteins are composed of amino acids (19 to 21). It has been found that growth depends on the presence of certain of these amino acids in the infant's food; normal nutrition is not possible unless lysin, tryptophan and cystin are furnished in the food; animal proteins are relatively rich in these essential amino acids; while many vegetable proteins are deficient in them. Lactalbumin is the one which contains the essential amino acids in largest proportion; casein is especially deficient in cystin, an amino acid which is essential for normal growth to take place. In breast milk lactalbumin constitutes two-thirds of the protein

in the milk, whereas in cows' milk it constitutes only one-fourth of the total protein; it is apparent that artificially fed infants, to obtain the necessary amount of essential amino acids, must take more total protein in the form of cows' milk than a breast fed infant receives.

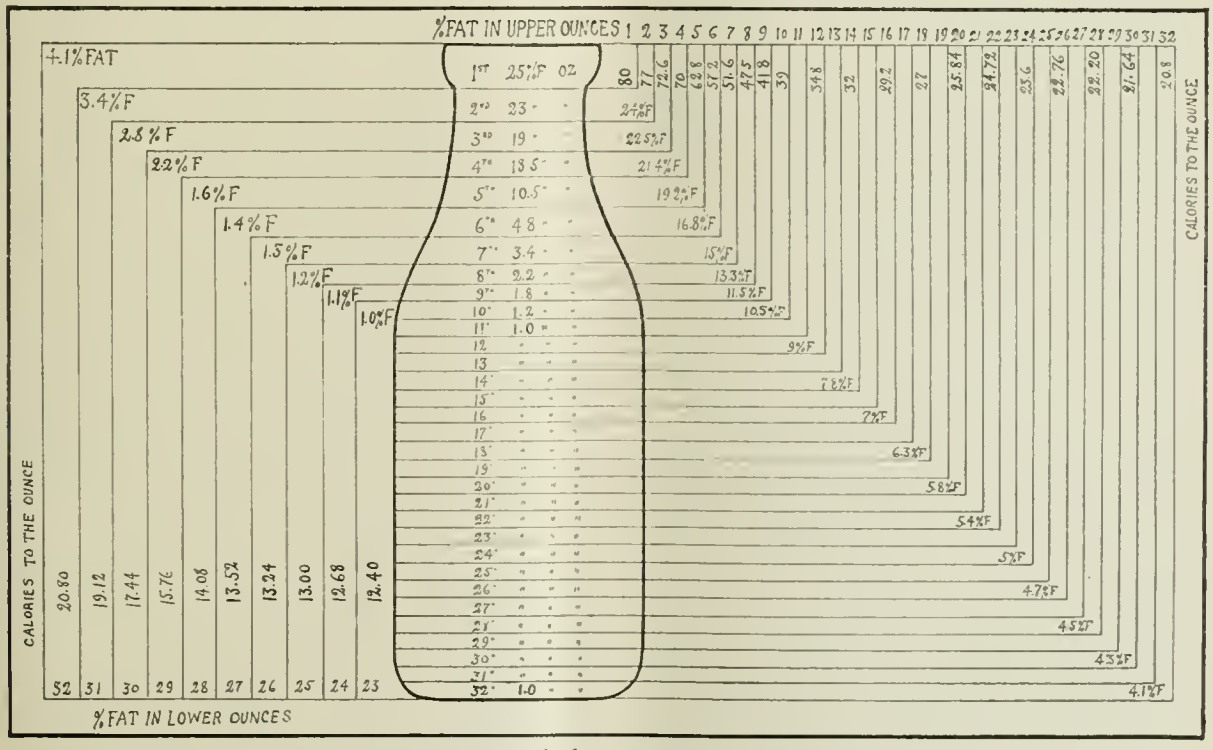
Without carbohydrates in the diet the nutritive functions of a growing individual are menaced quite as readily as during adult life; in the lack of carbohydrates the metabolism exhibits pathologic manifestations. It has been found that no infant can thrive unless it receives about one-sixth of an ounce of carbohydrate to every pound of its body weight.

Conclusive evidence as to whether true fats are an actual requirement for the maintenance of a healthy normal organism is lacking; however milk fat contains something essential for growth, and unless the required amount is supplied no growth can take place. It has been found that the young infant requires about 2½ to 3 ounces of water to every pound of its weight in the first 6 months and about 2 to 2½ ounces in the second 6 months. The smaller the infant is for its age and the less it weighs the greater is the water need. A certain definite amount of salts is necessary for growth; when the amount of salts is deficient neither gain in weight nor growth can take place.

Growth is also dependent on substances which are not identical with the ordinary nutrients and which, despite the minimal amounts thereof present in the diet are nevertheless indispensable for growth and maintenance of life; these substances have been called vitamines; while the vitamines are indispensable no amount of them will induce growth on dietaries in which the proportion and nature of inorganic salts are inappropriate, in which suitable carbohydrate is missing, or the character and the quantity of the protein is inadequate. It is the destruction of these substances through pasteurization and boiling of milk that renders such milk in predisposed infants capable of developing scurvy.

Very often the prescribing of too much of an element leads to definite dangerous symptoms; thus, too much fat in the food may cause constipation, convulsions, ammoniacal diaper, acidosis; too much sugar leads to diarrhea, intoxication, fever, edema; too much protein, to fever, leucocytosis, prostration; too much salts, to intoxication, fever and edema; too much water, to increased loss of protein and salts. The prescribing of too little of these elements has serious drawbacks also; if too little fat is given, rickets is apt to develop; if too little carbohydrates are ordered there will be no gain in weight; when the carbohydrates are entirely withdrawn the by-products of fat metabolism as acetone, diacetic acid and oxybutyric acid, which in the presence of sufficient carbohydrates are burnt to CO_2 and H_2O are excreted as such and cause acidosis; when too little protein is given, the musculature is flabby; anemia is present; the whole physical development is backward; when too little salts are given there is no gain in weight and no growth takes place; when the water supply is insufficient there is no gain in weight and the infant may have "thirst fever."

Composition of the Milk.—Milk contains the following elements: Fat, sugar, protein, salts, water, and vitamines. When milk is coagulated and allowed to stand for half an hour it separates into a thick mass and a fluid portion. The thick mass or curd consists of the fat and the casein of the milk, and a large part of the insoluble salts (Ca, Mg, P_2O_5); the whey or fluid portion contains most of the water (one quart of milk yields 22 ounces of whey), the sugar, the lactalbumin, and most of the soluble salts (Na, K, Cl).



1 level tablespoonful of cane sugar = 60 calories
1 level tablespoonful of milk sugar = 40 calories
1 level tablespoonful of dextrin maltose = 40 calories
1 level tablespoonful of flour = 35 calories

Milk in which the cream and the lower portion are admixed is called whole or mixed milk; cream is milk which contains a high percentage of fat. When cows' milk is put into bottles (immediately after it is drawn and cooled), after 4 hours standing, the upper 8 ounces will contain nearly all of the fat that will rise as cream; by varying the number of ounces which we remove from the top of the bottle of such milk, we obtain different kinds of top milk. Top milk is therefore milk which is obtained from the top of a bottle which had been bottled soon after the milk was drawn, and allowed to stand in the upright position for at least 4 hours; depending on how many ounces from the top of the bottle we remove we have different kinds of top milk (5 per cent. milk to 25 per cent. milk); the figure in each case indicates the percentage of fat in the milk. The layer of cream is not of uniform composition; the greater the number of ounces that are removed from the top the less the percentage of fat in the mixture and vice versa. Top milks which contain more than 16 per cent. of fat are usually known as creams. Cream may be obtained by the gravity process or by means of the centrifugal machine (separator); gravity cream contains from 16 to 20 per cent. fat; rich centrifugal cream contains 30 to 40 per cent. fat.

When top milk is removed the remainder is skim milk; the greater the number of ounces of top milk that are removed the less the percentage of fat in the skim milk; by varying the number of ounces removed from the top we can obtain skim milks which contain 3 per cent. fat, 2 per cent. fat or 1 per cent. fat; as all the fat that rises as cream does so in the top 8 ounces, the percentage of fat in the remainder of the milk (lower 24 ounces) is of uniform composition (1 per cent. fat); it is thus not possible to obtain a skimmed milk of less than 1 per cent. fat by the gravity method; when a fat free milk is desired the fat must be removed by a centrifuge or separator.

The proteins, sugars and salts in top milks, whole milk, and skim milk are approximately the same (proteins 3.5 per cent., sugars 4.5 per cent., salts 0.75 per cent.); slightly less in top milks, except in very rich creams where they are reduced to two-thirds of the original quantities (see chart).

From extensive studies conducted for the last ten years we have come to the conclusion that the great majority of healthy infants thrive better, develop better and undergo a lesser morbidity and mortality when dilution of whole milk are used than from the use of dilutions of top milk. Infants who suffer from fat intolerance should be put on formulas derived from skim milk; those with sugar intolerance, on top milk mixtures or eiweiss (protein) milk; infants who are very much underweight and do not present any intestinal symptoms should be put on skim milk with a high percentage of carbohydrates, because such a mixture contains a low percentage of fat, an element which is the hardest to digest and is most apt to cause indigestion and one which consumes the largest number of calories in its digestion; high percentage of protein, an element which seldom causes any indigestion; and a high percentage of carbohydrates, an element which is the most readily assimilated and with least expenditure of energy; and a high per cent. of salts, which is conducive to a retention of water, as these infants are dehydrated.

About 90 per cent. of all infants do well on whole milk dilutions; in about 7 per cent. it will be necessary to use skim milk mixtures and in about 3 per cent. top milk mixtures. Intolerance for milk as a whole or for any of its elements is the least common cause of malnutrition; for every case of malnutrition due to intolerance there are nine due to over or underfeeding, irregular feeding, improper technique or method of preparation. Of the intolerances, that for fat is most frequent (70 per cent.), for sugar less frequent (20 per cent.), and for protein least frequent (10 per cent.).

In protein indigestion the casein may be removed by the use of whey and the amount of casein in the milk formula may gradually be increased by adding more of the curd to the milk mixture; protein digestion may be facilitated by the use of alkalies (no protein digestion takes place in the stomach in an alkaline medium, we must add 25 to 50 per cent. lime water), by the use of cereal diluents (casein is precipitated in much finer flocculi), by the use of sodium citrate (1 to 1½ grain of sodium citrate to every ounce of milk used—the milk does not curdle under these conditions), by boiling, peptonizing, or homogenization of the milk. In most cases all that is necessary is to bring the milk to a boil, and all the symptoms of protein indigestion usually disappear.

In a small number of cases of fat indigestion improvement may be obtained by homogenizing the milk, by using milk derived from Holstein cows exclusively (such milk contains more olein and less of the volatile glycerides, and these fats appear more digestible and more in accordance with those of human milk) and by using skimmed milk to which washed butter fat has been added (the low volatile fatty acids are soluble in water and can thus be removed).

In severe cases of sugar intolerance it is not possible to reduce the percentage of sugar in the mixture sufficiently by the use of the ordinary mixtures and still supply the desired number of calories in the mixture; in these cases a mixture known as eiweiss or protein* milk must be used; in this mixture the sugars are low and the proteins and the fats are high (F, 3 to 3.2 per cent.; S, 1.5 to 2 per cent.; P, 3 to 3.5 per cent.) It is made by curdling a quart of milk; the whey is discarded; the curd is rubbed through a fine sieve with addition of a pint of buttermilk; a pint of water is added, and the whole mixture (under constant stirring) is brought to a boil; as soon as the symptoms subside sugar is added to the mixture (dextrinmaltose is the sugar of choice in these cases). In cases of sugar intolerance flours are often better

*To those who cannot afford eiweiss milk (30 cents a quart) we suggest the following mixture, made from one quart of milk which costs only 10 cents a quart; it can be used in all cases in which eiweiss milk is indicated: To a half quart of milk add 2 junket tablets; allow to stand for half hour; then strain and discard the whey; the curd is rubbed through a fine sieve into the other half quart of milk; enough plain boiled water is added to make one quart; the whole mixture is now brought to a boil under constant stirring, and is ready for use. The composition is nearly that of eiweiss milk, except that it lacks the acidity of the protein, which does not seem essential.

tolerated than sugars; therefore part of the carbohydrates should always, in these cases, be supplied in the form of flour. When over 7 per cent. of carbohydrates is used in a mixture, part of the carbohydrates should be supplied in the form of flour; and when over 10 per cent. is used a flour and two kinds of sugars (cane and dextrinmaltose) should be used; in this manner infants can tolerate much higher quantities of carbohydrates without being upset.

After we have decided from the history and the symptoms which kind of milk to use (whole, skim, top), the next point to determine is the quantity of food for the 24 hours; thus if an infant weighing 10 pounds at 3 months, is to be put on a formula, we must prescribe 4 ounces every 3 hours with 7 feedings a day, that is 28 ounces for the day; as it is never advisable to prescribe more than 35 calories to the pound in the first formula we must furnish 35 × 10 or 350 calories in the food for the day; if it is a case for whole milk dilutions, we must prescribe 9 ounces of whole milk and 19 ounces of boiled water as diluent (the first formula should never contain more than one-third milk; *i. e.* one part of milk and 2 parts of water);* as 9 ounces of whole milk yield only 180 calories and we must supply 350 calories in the food, we must add 170 calories in the form of additional carbohydrates; we can therefore add two level tablespoonfuls of cane sugar (120 calories) and one level tablespoonful of flour (about 40 calories) or we may add 2¾ level tablespoonfuls of cane sugar.

If from the history and symptoms we decide to use skim milk we must prescribe 1 per cent. skim milk, 14 ounces, and 14 ounces of boiled water as diluent; 14 ounces of 1 per cent. skim milk yield 180 calories; we must therefore supply 170 calories in the form of additional carbohydrates (2¾ level tablespoonfuls of cane sugar, or 4½ of dextrinmaltose or milk sugar, each of which yields about 170 calories).

If it is a case of sugar intolerance, and we wish to supply 350 calories, and we do not wish the sugar to be over 2 per cent., we must use top milk; in this case 10 per cent. milk.; thus if we prescribe 9 ounces of 10 per cent. milk, which yield 360 calories, we do not have to add any additional carbohydrates to supply the necessary number of calories; as diluent we must add 19 ounces of boiled water.

Each of these mixtures contains 360 calories, and each is made up to contain 28 ounces; the difference is in the percentages of the different elements, so prescribed as to meet the different types of indigestion. The percentages of the different mixtures are given in the table which follows.

The best diluent is boiled water; there is absolutely no necessity of adding any adjuvants, as cereal diluents or alkali as a routine, to the infant's milk mixture; it was either to influence the acidity of cows' milk or to modify its curd that they were added; as we know now that breast milk is amphoteric and that the protein of cows' milk but seldom gives rise to any digestive difficulties, there seems to be no rational basis for the routine administration of either cereal diluents or alkalies.

Kind of milk	4 per cent	1 per cent	10 per cent
Number of ounces of milk	9	14	9
Number of ounces of water	19	14	19
Cane sugar in level tablespoonfuls	3	3	0
Quantity at a feed, in ounces, number of feeds	4—7	4—7	4—7
Percentages of fat, sugar, and protein	1.3, 6.5, 1.2	0.5, 7.6, 1.75	3.3, 1.5, 1.2
Calories in the milk	180	180	360
Calories in the sugar	180	180	0
Total number of calories	360	360	360

The quantity to be given at a feeding and the length of the intervals, the number of feedings, and the quantity to be given in the 24 hours have already been considered; after the second month no infant should receive any night feedings; when the infant takes two-thirds milk the intervals should be every 3½ hours and when whole milk is prescribed the intervals should be 4 hours and the number of feedings in the 24 hours should not be more than five. Of the sugars we use a dextrinmaltose preparation in every case, unless there is some contraindication. We usually ordered one level tablespoonful of the sugar to every 10 ounces of the mixture (never exceeded 7 per cent. in healthy infants).

We have found that dextrinmaltose is not well borne by infants under 2 months of age, and that it is contraindicated in cases where there is a tendency to constipation. The more maltose a dextrinmaltose preparation contains the more laxative it is. Dry dextrinmaltose preparations, unlike the fluid preparations, are not laxative but on the contrary when used for a long time and in considerable quantities produce constipation. This sugar is also contraindicated in cases where there is vomiting. It is distinctly indicated in cases where there is a tendency to looseness of the bowels, and its greatest field of application is in babies that are underweight.

Lactose seems to be the most laxative of the sugars and we have often combined the two with great advantage. In early infancy we have mostly used cane sugar, and as the infant grew older we gradually substituted dextrinmaltose for part of the cane sugar. Regardless of which sugar is used, after a time in certain predisposed infants, it tends to constipate; in these we had good results by changing one sugar for another. In cases that could afford to buy it we recommended Loeflund's malt soup; this was substituted for part of the sugar in the formula. This soup almost invariably produced the desired effect on the bowels, although it caused no greater increase in weight than the dry dextrinmaltose preparations. One often hears that in healthy infants we get the same result, no matter which sugar is used. This has not been our experience. Dextrin-maltose causes the greatest gain in weight. cane sugar less, and lactose the least. Their effect on the gastrointestinal tract is also different; lactose has the least and maltose has the greatest tendency to produce vomiting; lactose is the most and dry dextrin-maltose preparations are the least laxative of the sugars.

In the first few days after the infant had been put on a new formula our policy must be one of watchful waiting; the formulas must not be changed

*If milk is indicated at all, it is never necessary to make any greater dilution than one part of milk and two parts of water; even the puniest infant can digest this. If one thinks such dilution may be too strong, it is better to withhold all milk for a day or two, and then begin with one-third dilution.

too frequently and never without any definite reason; our first aim must always be to abate symptoms and to improve the general condition; when this is accomplished we must aim to produce regular and sufficient gain in weight and proper physical development.

When infants are doing well the quantity should be increased an half ounce at a feeding every 2 to 3 weeks; when the quantity is increased the formula should not be strengthened and vice versa; neither too many nor too radical a change should be made at any one time, when the infant is doing well; the total of 42 ounces of fluid should never be exceeded during the first year. No more than one quart of milk should be given in the 24 hours.

The strength of the formula should be increased as the gastrointestinal symptoms and the weight indicate; if an infant has gained sufficiently during a certain period of observation (5 to 8 ounces a week), there is no indication to change the formula; however if the infant has not gained sufficiently, then we must increase the number of ounces of milk in the formula and correspondingly decrease the number of ounces of water in the mixture, one ounce at a time. When the infant receives one quart of milk a day and shows no gain in weight, then we must substitute flour (wheat, barley, or oatmeal boiled in the water of the mixture) for part of the sugar (one tablespoonful at a time); when the infant had been gradually adapted to take 2 to 3 per cent. starch in the milk, it is time to introduce thick gruels in the form of porridge (not to be strained and to be fed with a spoon) to the infant's diet. In healthy infants it is never advisable to raise the sugar above 7 per cent. in the mixture; when the food must be strengthened it is always better to increase the milk (not above 1 quart) than to raise the carbohydrates above 7 per cent. In cases of fat intolerance it is sometimes necessary to raise the sugar to from 10 to 13 per cent.; in these cases part of the carbohydrate must be given in the form of starch, and more than one kind of sugar must be used in the same mixture; in this way we can prescribe a high percentage of carbohydrates without developing an intolerance. No infant should be kept on a mixture containing over 10 per cent. of carbohydrates for any length of time, because such infants usually have a diminished resistance to infection, even though they may be above normal in weight.

When the infant shows loss of weight, it is essential to determine the cause of the loss; insufficient food is only one of the causes; the temperature of such infants should always be taken to exclude possible constitutional disease, especial inquiry should be made about the appetite, gastrointestinal symptoms, sleep, etc.; one must always be sure that the loss is not due to overfeeding, and when the cause is ascertained the infant must be treated accordingly.

Fruit juices (orange juice ½ ounce, prune juice or apple sauce 2 level tablespoonfuls) should be given early (from 2 to 3 months of age) if pasteurized or boiled milk is used. Beef juice or finely mashed yolk of hard boiled egg (hard boiled for 20 to 30 minutes and rubbed through a fine sieve and given with milk from a spoon or put into the whole milk mixture) is ordered at 6 to 7 months; earlier if the infant is anemic (may also use sweet wine of iron to be given in the milk; in very severe anemia, sodium cacodylate and arsenic can be given hypodermically). At 9 months broths (chicken, mutton; later vegetable soups), the vegetables (spinach, peas, beans, carrots) boiled for 3 hours and mashed fine and not strained) can be given. After the sixth month 2 to 3 zwiebach, milk, or arrowroot crackers should be given during the 24 hours.

In cases put on skim milk the method of procedure is as follows; as the infant's food is strengthened we skim less and less from the top of the bottle; as we increase the amount of fat in the mixture we correspondingly decrease the amount of carbohydrates, and the quantity is increased as in normal infants. All changes in infants with any intolerance must be more cautious, more gradual and less radical than in healthy infants.

When top milk is used, because of sugar intolerance, we must gradually increase the percentage of sugar and reduce the percentage of fat in the mixture; this is accomplished by using a mixture which contains less fat. Thus if we began with a 10 per cent. milk, our next change would be to prescribe a 9 per cent. milk and order more sugar and in cases of fat intolerance which had been on 1 per cent. milk our next change would be to order 1½ per cent. milk and to reduce the sugar. In this way we can increase the tolerance for the element for which there is an intolerance and gradually reduce the percentage of the element which had been given in more than normal percentage to make up the necessary number of calories.

One must remember that the food must not only be of proper percentages and calories, but that the amount given at a feeding, the method of administration, preparation, the length of the intervals and the number of feedings, and the hygiene and care of the infant must all be proper and receive careful attention if success is to be desired.

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THE SIGNIFICANCE OF ABDOMINAL PAIN.*

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PAIN the universal expression of inflammation and injuries concerns us now more especially in conditions relative to the abdomen. The character of the pain often diagnosticates the location of the lesion; burning and itching pain affects the mucous membranes; sharp and lancinating pain characterizes inflammation of the serous membranes. A throbbing pain is usually the site of confined pus. But pain that suddenly disappears portends gangrene and is a serious signal.

In order to follow a logical sequence in relation to the various organs of the abdomen we divide it into the upper, middle, and lower abdominal regions.

The structure most frequently the seat of pain in the upper abdomen is the gallbladder. This statement is made with the full knowledge that the stomach is included in this region. The character

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of the pain in acute gallstone colic is sharp, agonizing, and continuous. The pain often radiates to the back, to the middle of the spinal column, at other times to the middle of the shoulder and down the right arm. In those cases of chronic obstruction of the cystic duct with filling up of the gallbladder with fluid or stones, the pain may be of a continual boring character in the region of the gallbladder or the symptoms may be referred to the stomach and the patient calls it indigestion. It is a remarkable fact that many gallbladders filled with stones and fluid to the bursting point are painless. I have no satisfactory explanation of this phenomenon except that the signs of inflammation are absent. Again in gallbladder trouble there may be a continual burning sensation in the back unaccompanied by any other symptom. In this region may also be found pain as the result of hepatic and subhepatic collections and subdiaphragmatic abscesses secondary to appendicitis, ruptured duodenal and gastric ulcers, and pancreatitis. A few weeks ago I operated on a case of subhepatic abscess or rather a subhepatic collection. Six weeks before the operation the patient had pleurisy. On opening the abdomen several pints of fluid were evacuated. In this case the ascending colon, duodenum, and pylorus were included in the mass adherent to the sac. Two weeks later a mechanical ileus resulted when an anastromosis of the transverse colon with the ileum resulted in the cessation of all further symptoms.

Pain in this region may also be referred one from a pleurisy, a pneumonia, or an acute pneumothorax. Acute pneumothorax must be added to the long list of diseases in making a diagnosis of acute pain in upper abdominal trouble. The patient referred to went to bed perfectly well; at 2 A.M. he was suddenly seized with pain in the chest which was referred to the epigastric and hypochondriac regions. Careful examination revealed the signs of pneumothorax. An *x*-ray by Dr. Manges confirmed the diagnosis.

The next most common condition in this region is gastric or duodenal ulcer. The character of the pain varies a little as to the situation of the ulcer. In duodenal ulcer the pain comes on an hour or two after meals and may awaken the patient in the early morning hours. The pain of duodenal ulcer is relieved usually by the ingestion of food. The situation of pain as to the right or left of the epigastric region really gives little practical information as to the location of the ulcer. In gastric ulcer the pain comes on immediately after eating. The character of this pain varies in different individuals. Usually in these cases indigestion has been complained of for a long time.

One must always be on his guard for a ruptured gastric or duodenal ulcer; the pain here comes on suddenly without previous warning except that there may be a long history of indigestion which may not be elicited without close questioning of the patient. The rupture may be the first symptom for which the patient consults the physician. This actually occurred in a patient on whom I operated about nine months ago. The diagnosis was verified at operation, the opening was closed, and a gastroenterostomy performed. In these cases of rupture there is a gradually spreading peritonitis which gives rise to a spreading pain over the entire abdomen. The abdomen is rigid and the rigidity travels rapidly. There may or may not be any vomiting during the first twelve hours but after this time if the case is unoperated, the pain becomes intensified and all the other signs of a raging peritonitis become more marked. Then persistent vomiting with increasing generalized pain follows. It is a sad commentary on the profession, but too many patients with perforated gastric and duodenal ulcer die because the condition is not recognized early enough.

The pain of pylorospasm may be mistaken for that of a gastric or duodenal ulcer.

Pain that comes on in this area in persons over 40 must always be looked upon with suspicion as the precursor of cancer. This does not mean that every pain in the stomach after the age of 40 is due to cancer. At times pain is the last symptom, which is rather unfortunate from the standpoint of surgical relief. The incidental condition, however, of fair, fat and forty and gallstones must not be forgotten in relation to pain in the region of the stomach.

Recently syphilis of the stomach has received some attention. The symptoms are similar to those of cancer of the stomach.

Pain which is found in those who are neurotic has interested me greatly. I have done many gastrotomies for functional conditions because the symptoms these patients suffer are the same as those with true gastric and duodenal lesions. Upon opening the stomach nothing pathological can be demonstrated but the patients are cured. Surgeons have operated on cases of beginning locomotor ataxia on account of the pain of gastric crises stimulating an organic lesion. I must confess that I am guilty of having performed a gastroenterostomy in an early case of tabes. In this category may be included the pain resulting from Dietl's crises. Pain in Glenard's disease is of an exhausting character. It is continually nagging in character which contributes in no small measure to the inanition found in these cases.

Pain is noted, but not often, in an enlarged spleen found in the anemias. This is usually due to the weight of the organ tugging on the gastrosplenic omentum. Pain may be a constant symptom in perisplenitis and perihepatitis.

The pain of acute pancreatitis is sudden in onset usually found in drinkers and high livers. The patient is very much shocked, he may die suddenly or in the course of a few hours. In the cases that survive the acute symptoms and are not operated upon these may form a large pancreatic cyst which causes pressure pain from overdistention of the sac. In this region the extraperitoneal organs that may be the seat of pain are the kidneys. This may be the result of a stone, inflammation, or a new growth. Pain in stone is usually of a colicky character, beginning in the back but radiating to the front of the abdomen and down the scrotum or penis. There may be some difficulty at times to differentiate gallstone colic from kidney-stone colic. The *x*-ray may be of some assistance but this is not infallible.

In the midabdominal region probably the most frequent condition causing pain is an umbilical hernia, especially when it is incarcerated. Inflammatory conditions about the umbilicus due to a

patulous urachus may give rise to enough skin irritation to cause pain of an annoying character. Then one must not forget Paget's disease and the ordinary epitheliomas that may arise here. In this region pain may arise from new growths of the great omentum and small intestines. A very distressing condition is aneurysm of the abdominal aorta, causing intense and continual boring pain. In caries of the lumbar and dorsal vertebra, the pain is often referred to the ventral region of the abdomen. Two years ago a prominent neurologist treated a case of this character for neurasthenia and a prominent orthopedist diagnosed the case as one of sacroiliac disease. The patient had at the time I examined him all the signs of caries of the spine. The *x*-ray showed a definite focus of necrosis in the lumbar spine. A few weeks later a lumbar abscess was opened which relieved his pain referred to the ventral surface of the abdomen.

Petroperitoneal sarcoma, a very malignant condition, gives rise to an harassing pain which exhausts the individual in a comparatively short time.

When one studies the lower abdomen naturally the right iliac fossa is given first thought. The most common abdominal condition giving rise to pain is inflammation of the vermiform appendix. The pain in appendicitis is characteristic. It comes on suddenly in an apparently well person and it is the first symptom. It is sharp, cramp-like in character, affecting first the entire abdomen, then it centers itself around the umbilicus, and finally localizes itself in the right iliac fossa. The pain continues unless relieved by drugs, nature, or an operation for its removal. Drugs are mentioned only to be condemned. Nature may resolve the inflammation until the next attack, or she may be instrumental in precipitating the much feared condition of gangrene of the appendix. In other words when pain in appendicitis disappears look for gangrene of this organ. A word of admonition seems here in order, namely that as soon as the pain of appendicitis is present it ought to be synonymous with operation.

In the left iliac fossa pain from a diverticulitis is usually accompanied by the signs of inflammation that one would get in appendicitis. The pain and acute inflammatory signs may disappear, but the tenderness and the mass may remain. The sudden acute pain which accompanies perforation in typhoid fever is not seen often at the present time on account of the rarity of this disease in this vicinity.

Pain nauseating in character shooting into either fossa from an enlarged testicle, be it inflammatory or not, must not be confounded with an intra-abdominal condition. This is especially true on the right side where many cases have been wrongly diagnosed, strange to say, as appendicitis.

A condition found on the right side often confounded with acute and even chronic appendicitis is stone in the ureter. Naturally this mistake would not be made on the left side. I have operated on four cases for acute appendicitis when later by *x*-ray a stone in the ureter was found, the symptoms persisting after the operation for the removal of the appendix. This has been a rather common experience with other surgeons also.

A distended bladder reaching to and sometimes beyond the umbilicus gives rise to a peculiar sickening pain which may be accompanied with overflow from retention or a constant desire to urinate. These tumors so-called have been mistaken for a cyst or other abdominal tumor but the catheter easily makes the diagnosis.

The constant straining on urination in an enlarged prostate gives a characteristic pain. It is usually burning in character, very distressing and weakening on account of the loss of sleep occasioned by frequent nocturnal and diurnal urination. The pain may be the result of a mechanical obstruction or an accompanying cystitis or both.

We can dismiss the whole subject of hernia with one word—there is no pain unless strangulation or incarceration is present. Hernia in the young is best treated by operation on account of the brilliant results with practically no mortality.

The differentiation of the pain of mechanical ilieus and that of peritonitis is not always easy. The pain of mechanical ileus is paroxysmal, usually follows operations, and is not accompanied by fever. The pulse is rapid. There may be distention of the abdomen. Peristalsis may be increased.

The pain of peritonitis is persistent and is accompanied with the characteristic facies and bounding pulse. Distention is a prominent symptom and peristalsis is absent. The patient is restless and wakeful and simply cannot sleep. Morphine is powerless unless given in enormous doses. The subsidence of the pain and rigidity is a bad sign as it is indicative of the submission of the patient to the toxemia.

In conclusion pain teaches us that we must be alert, that it is nature's danger signal for prompt action, that we must read the signs correctly, that prompt surgical interference will save more lives than procrastination.

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BRONCHIAL ASTHMA.

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Bronchial asthma has been defined as "a spasmodic or paroxysmal dyspnea which is the direct result of a stenosis of bronchi"[1]; as "an affection characterized pathologically by a spasm of the bronchi and of the respiratory muscles, and by vasomotor disturbances of the bronchial mucous membrane"[2]; as "a congenital sensitiveness to certain foreign proteins."[3]

Etiology.—This disease is sometimes inherited. Males are said to be affected twice as often as females. Diseases of the respiratory mucous membrane, especially catarrhal conditions of the nasal passages, are of frequent occurrence before the development of asthma. According to J. Matthews,[5] in over 90 per cent. of 300 cases treated in the Mayo Clinic, the principle lesions which might be considered etiological were in the upper respiratory tract, chronic suppuration or the retention of mucoid secretions in the nose or accessory sinuses occurring in the majority of cases. Enlarged tonsils, nasal polypi, certain odors, change of air, gastric derangement, intestinal worms, and uterine disease have been mentioned as predisposing causes. Emotional disturbances and psychical impressions may be ex-

citing causes. By many this disease is regarded as a neurosis.

"The cause may be one protein or several proteins, the most common of which are those of pollen, horse-dust, feathers, etc. When the causative protein is injected subcutaneously, a reaction, similar to that of Schick in diphtheria, is obtained. In this manner the exact cause or causes may be ascertained. In other words, an asthmatic attack is an anaphylactic paroxysm."[3] Billings[4] reminds us that in man the phenomena of anaphylaxis may be asthma, hypoarterial tension, eosinophilia, and urticaria; and that adrenalin and atropine administered hypodermatically tend to relieve anaphylactic shock and also to relieve clinical bronchial asthma.

Into laboratory animals Oftedal[6] injected intravenously varying amounts of twenty-four-hour cultures taken from persons suffering with bronchial asthma. A few of these animlas died of an overwhelming septicemia, but the survivors presented, within 24 hours, real dyspnea, and over their chest wheezing and râles could be heard. At autopsy were found gross and microscopical emphysema and engorgement of the pulmonary blood vessels, with considerable round-cell infiltration; the bronchioles were contracted as if in spasm, and the mucosa was thrown into folds which almost obliterated the lumen. Streptococci were found in the bronchial musculature. In nearly every case the blood and other body fluids and all organs except the lungs were found to be sterile, while the lungs yielded a pure culture of the hemolyzing and green-producing streptococci, while in one case a pure culture of *Streptococcus mucosus* was obtained from the lung tissue. After a study of these results and of clinical histories, Oftedal concludes that at least a large number of persons suffering with bronchial asthma have, in their sputum, organisms (streptococci) which have an affinity for bronchial musculature, and that the invasion of the lungs of these organisms, when made possible by any factor, psychic or otherwise, which tends to lower the resistance of the individual, will bring about a tonic spasm of the bronchial muscles and cause the typical phenomena in a clinical attack of asthma.

Eustis[7] refers to work which has shown that the Charcot-Leyden crystals found in asthma are amins, similar to cadaverin and putrescin, and the result of putrefaction of proteins. Also Barger and Dale, while attempting to isolate the active principle of ergot, obtained a base, betaimidazolylethylamin, which was found to produce contraction of the musculature of the bronchioles. A similar substance was obtained by the putrefaction of histidin (an amino acid formed in the normal peptolytic digestion of proteins). This base has been used to produce experimental asthma. In other words, by the putrefaction of histidin taken in the proteins of a diet, this same base, betaimidazolylethylamin, is produced and absorbed in sufficient quantities to produce asthma. This author also refers to the connection between pus pockets and asthma, and says it is rational to assume that the absorption of some poison from the intestinal tract, alveolar abscess cavity, or ethmoid cells is followed by the rendering inert of such poison, while in other individuals who are unable to detoxicate this poison, the absorption of such substance is productive of asthma. He explains the fact that certain individuals "outgrow" their asthma by the assumption that these persons develop a tolerance of, or resistance to, this poison.

Pathology.—Although there is some diversity of opinion as to the etiology of asthma, it is generally admitted that, in some way, there is produced a narrowing of the smaller bronchi. Various theories have been advanced to account for the production of the paroxysms, to explain the cause of the bronchial narrowing.

The most widely accepted theory, first advanced by Williams, attributes the paroxysm to spasm of the circular muscular fibers of the bronchial wall. Another theory attributes the paroxysm to swelling of the mucous membrane of the bronchioles, from congestion either of vasomotor or inflammatory origin, the "fluxionary hyperaemia" (of Traube), the "swelling analogous to urticaria" (of Clark), the "vasomotor turgescence" (of Weber), the "bronchiolitis exudativa" (of Curschmann). Still another theory attributes the paroxysm to spasm of the diaphragm, the inspiratory muscles, or both.

The supposition that in asthma a neurosis permits of the reflection of peripheral irritation, usually in some part of the respiratory tract, through the vagus to the circular muscle fibers in the walls of the bronchi, and, sometimes in addition, as a result of vasomotor influences, producing hyperaemia and swelling of the mucous membrane, seems a reasonable explanation of the mechanism of a paroxysm. Depending upon the source of this irritation, pronounced dyspnea is sometimes referred to as "cardiac asthma," "renal asthma." However, the source of this reflex irritation can not always be discovered.

Morbid Anatomy.—As there is on record probably no report of an autopsy done on a patient who died during an asthmatic attack, the characteristic appearance of the respiratory apparatus during a paroxysm is not known. No constant lesion has been found, and most of the lesions are secondary in character. There are usually found the morbid states peculiar to bronchitis and emphysema. However, "autopsies made on animals dead of anaphylactic shock show the alveoli dilated as the result of spasm of the bronchioles."[1]

Prognosis.—So far as a fatal result is concerned, the prognosis is good, no death being on record. Not so long ago asthma was considered as an incurable disease; but now the outlook grows brighter and brighter all the time.

Symptoms and Signs.—Clinically, true asthma has three prominent characteristics: (1) The attacks are paroxysmal in character and are sometimes even periodical, like epilepsy or migraine; (2) the dyspnea is chiefly expiratory; and (3) during a paroxysm the respiratory mucous membranes become hypersecretory. Between attacks the typical asthmatic seems to be in good health. The paroxysm is usually sudden in onset and frequently begins soon after midnight. Trousseau's attacks commenced as the clock struck three. The attacks may last for minutes, hours, or days. There may be prodromal symptoms, such as general uneasiness, thoracic discomfort—"tightness in the chest," sneezing, coughing, a "ball of fire in the stomach," etc.—asthmatic aura.

The patient experiences a sense of suffocation and immediately assumes one of several postures—the one which he has found by experience to aid most in carrying on respiration. With the chest fixed in the position of deep inspiration, the patient uses all the auxiliary respiratory muscles. The dyspnea is mainly expiratory. Expiration is prolonged and associated with wheezing. A copious flow of nasal secretion provokes sneezing. A clammy sweat breaks out, and the extremities become cold. The face is anxious and pale, often cyanotic. The pulse is usually increased in rate and small in volume. The respiratory rate is rarely increased and is often decreased. The temperature is normal, or subnormal. The speech is gasping and trembling in quality. Some authorities (*e.g.* McPhedran) say that cough is not a prominent symptom. The author remembers a case, however, in which coughing was exceedingly severe, often producing emesis.

The sputum of a true asthmatic attack is quite characteristic. Early in the attack it is scanty and tenacious. Later it becomes abundant and mucopurulent. The sputum, which may be blood tinged, consists of grayish-white, semi-transparent, tenancious pellets or perls composed of dense mucus and usually arranged in a twisted manner—the so-called Curschmann spirals—and contain the Charcot-Leyden crystals, degenerated epithelial cells, leucocytes which are mostly eosinophiles, in a medium of thin mucus. These spirals appear early in the attack and disappear when the sputum becomes abundant. The Charcot-Leyden crystals are colorless octahedra and result from the putrefaction of proteins. The spirals are believed to be spirally wound casts of the bronchioles and are thought to be due to acute bronchiolitis,[5] whereas the crystals are thought by some to be the exciting cause of the asthmatic attack.

In the blood, during an attack, there is pronounced eosinophilia.

The oxygen in the expired air of a normal individual is, in the asthmatic, almost or entirely replaced by carbon dioxide.

On inspection, the chest is greatly distended, very little thoracic movement occurring. The abdomen is usually full. On percussion, the hyperresonant note of emphysema is obtained. The area of liver dullness is reduced, and the cardiac dullness is greatly depressed. By palpation, rhoncal fremitus is detected; vocal fremitus is decreased. On auscultation, squeaks and groans are heard over the entire chest, and often râles may be heard 20 to 30 feet away.

Treatment.—A physician should not wait until his patient is in the throes of a paroxysm before instituting treatment. A very thorough examination should be made, and, if the cause is ascertained, it should be removed if possible. Every abnormality should be remedied. Sleeping in the open air, bathing in cool water each morning and then rubbing the body briskly with alcohol, and wearing moderately light-weight clothes, with wraps of sufficient warmth to protect the individual when out of doors, are very beneficial. Tonics, such as iron, arsenic, the hypophosphites, etc., are helpful. A prescription of Dr. Rufus Dorsey of Atlanta, which the author has used with much success in warding off paroxysms is as follows: Iodi (crystals) gr. 5, Spt. chloroformi oz. i, Spt. ætheris comp. oz. 1½, Alcoholis, qs. ad oz. 3. M. Sig. Teaspoonful in glass of cold water every 4 to 6 hours. In some cases a change of climate is beneficial; in others, injurious. The diet should be of moderate amount, of high caloric value, and low in proteins. Special care should be taken to secure good elimination. There are hopes that soon we may immunize patients against the causative protein or proteins. Good results from repeated injections of serum have been reported by Widal, Lermoyez, Abrami, and others. Like results have been obtained by the use of phylacogens and autogenous vaccines by Babcock, and Koessler, and Moody. Lately, Rogers[9] of Calcutta has reported excellent results from the use of autogenous vaccine (the organisms in which were usually pneumococci and streptococci) prepared from a culture of sputum.

To relieve a paroxysm, each of the following agents is useful: (1) Nitroglycerin, gr. 1/100; (2) Adrenalin chloride (1-1000 sol.) gtts. 10-15 subcutaneously; (3) Atropine, gr. 1/100 hypodermically; (4) Morphine, gr. 1/4 by hypo; (5) Hysocine, gr. 1/200, and Atropine, gr. 1/100. In old people especially, nitroglycerin should be given with adrenalin, to control the blood pressure. Morphine is probably the most efficacious drug, but it should be given only when other remedies are not available, 1/4 gr. usually being sufficient; however, a dose of two grains was often necessary to relieve a very stubborn case under the care of the author. A mixture of morphine, nitroglycerin, and adrenalin seems to be more effective than either one used singly. Also inhalations of chloroform, ether, and amyl nitrite are very good. Oxygen is also used by inhalation. The fumes of burning Stramonium and nitre paper are good. The patient may smoke stramonium cigarettes. In papaverine, an opium alkaloid of the iso-quinoline group, an excellent drug for the treatment of asthma is at hand, because it distinctly stimulates respiration and dilates the bronchi, and has efficiently relieved asthma of the bronchial type.

REFERENCES.

1. Tyson and Fussel: Practice of Medicine; sixth edition.
2. Alexander McPhedran: Osler and McRae's Modern Medicine; second edition.
3. Richard C. Cabot: Lecture at Long Island Hospital, Boston, July, 1916.
4. Frank Billings: Practical Medicine Series, Vol. 1, 1917.
5. Medical Record, Sept. 30, 1913.
6. *Journal of the American Medical Association*, May 27, 1916.
7. *Southern Medical Journal*, May, 1916.
8. T. K. Monro: *Manual of Medicine;* second edition. Wm. Wood & Co.
9. Sir Leonard Rogers: *Practitioner* (London), June, 1916.

Joint Affections and Conjunctivitis in Dysenteric Subjects.—Rist in the course of treating numerous cases of bacillary dysentery noted as an early sequel after recovery vague joint affections of brief duration. These did not respond to the salicylates, but yielded promptly to antidysenteric serum. Somewhat more rare was a conjunctivitis following recovery from dysentery.—*Journal de médecine et de chirurgie pratiques.*

COURSE, SYMPTOMS, AND TREATMENT OF PROCTITIS.

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Proctitis is an inflammation of the rectum, which may be either acute or chronic, catarrhal or ulcerative, diffuse or circumscribed, atrophic or hypertrophic, simple or specific. The last-named is further subdivided into the amebic, tuberculous, gonorrheal, syphilitic, bacillary, diphtheritic, and erysipelatous, depending upon the causative agent. It should be borne in mind, however, that as the physiological functions of all parts of the colon are closely related, and the histological structure shows no abrupt change, the process is not to be taken as remaining strictly limited to the rectum, but may show involvement of the large, and in some instances even the small intestine. It may begin as an acute catarrhal inflammation, with congestion and slight swelling of the mucous membrane, increased production of mucus, and superficial desquamation of the epithelium, run its course in a few days, and result in complete restitution, or pass from the ordinary mild catarrhal inflammation by gradual stages into the hypertrophic form, characterized by definite changes in the gross appearance and microscopical anatomy of the gut. In gross appearance the mucous membrane is changed from a light salmon-pink to a brick-red or dusky color, becomes granular, roughened, pitted, and spongy, looks swollen and edematous, and feels thickened and relaxed. It is thrown into numerous folds, which readily fall into the lumen of the proctoscope, interfere with proper inflation, ooze an abundance of mucus, and present microscopically a great increase in the intertubular substance. In the last stages the stroma between the intestinal glands has become shrunken and atrophied, the follicles of Lieberkühn flattened and compressed, and the goblet cells destroyed; in consequence the mucous secreting surface loses its succulence, becomes dry, cracked, and fissured, bleeds easily on touch, and is smeared with pieces of dried mucus and strings of gluey material mixed with blood. The process has reached the atrophic stage, in which there are permanent anatomical changes, and complete restitution is no longer possible. If treatment is not begun, or the severity of the infection cannot be controlled, there is interference with nutrition from the toxemia and from the mechanical blocking of the blood-vessels, multiple erosions make their appearance, at first scattered, later becoming confluent, superficial ulceration takes place which becomes deeper from infection and lack of proper drainage, and there is successive involvement of the mucous, submucous, muscular, and fascial coats, and even the serosa when the inflammation is in a part of the gut covered with peritoneum. There is a purulent discharge from secondary infection, free hemorrhage from involvement of the blood-vessels, polypoid excrescences from irritation of the glandular elements, periproctitis or colitis with adhesions, abscess, fistula, and even perforation of the gut. In the end the lumen of the tube becomes irregular, with dilatation here and contraction there, stricture and more or less obstruction with the fecal current. Such is the picture of one of the most formidable diseases with which the proctologist has to deal—formidable because of its wide prevalence, the insidiousness with which it steals upon its victim, its progressive character, and its chronicity and resistance to cure.

Its wide prevalence may be measured by the record of 500 consecutive rectal patients examined in private and hospital practice. These included 273 males and 227 females, 42 per cent. of which were found to have proctitis, either alone or in conjunction with other rectal diseases.

Its vague, indefinite, and obscure manifestations may be best studied by a reference to a few typical cases taken from the records:

Case I.—C. G., confectioner, referred by Dr. R., complains of a persistent, dull, heavy, dragging sensation in the lower back since one year, a feeling of soreness and aching in the pelvis, fullness in the perineum, radiating pain in the left leg and heel, gastrointestinal unrest, occasional discharge of strings of mucus from the bowel, weakness, and inability for sustained physical and mental effort. No constipation, bleeding from the rectum, or loss of weight. Roentgenographic findings of the gastrointestinal tract are negative. Examination of the kidneys, heart, lungs, genito-urinary system, and blood gives negative results. Gonorrhea ten years ago. Proctoscopic examination shows evidence of marked chronic atrophic catarrh with local ulceration. Under treatment five months with topical application to the bowel and irrigation. Improved sufficiently to be able to resume his usual occupation, with but an occasional bad day.

Case II.—M. S., clerk, 25, referred by Dr. S., for a persistent pruritus ani lasting three years. Is constipated, neurotic, sleepless, has dysuria, and has lost some weight. Blood pressure normal, no glycosuria, no genitourinary disease. Operated upon in a general hospital one year ago for hemorrhoids in an effort to relieve his pruritus, but with only temporary improvement. Proctoscopic examination shows chronic hypertrophic proctitis, with gray, localized, atrophic patches, and pinpoint ulcerations. Under treatment for six months with irrigation of the bowel and topical application of 25 per cent argyrol through the proctoscope. Entirely relieved of his pruritus; marked improvement in general condition.

Case III.—R. B., referred by Dr. H., with a history of illness dating back ten years. All examinations negative. Venereal denied. Chief complaints: pain in the region of left kidney and ureter, constipation, nausea, flatulence, headache and backache, occasional bleeding from the rectum. Proctoscopic examination shows chronic atrophic proctitis with ulceration and fibrous stricture of the anal canal. Proctotomy followed by dilatation with Wales bougies and local medication. Generally much improved, constipation relieved, patient able to return to work.

As may be gathered from the above, symptoms which are misleading, and subjective sensations which point to other organs, or do not point definitely to any organ, are the rule rather than the exception in chronic proctitis; only a careful examination of the anus, rectum, and pelvic colon will enable us to assign them their proper place.

Enlightened medical opinion will no longer tolerate the treatment of symptoms when it is possible to locate the cause of the disease; hence those which are thought to be responsible for chronic proctitis have been carefully studied; they may be summarized in the statement that the lesions are due to infection following interference with the nutrition and function of the parts from mechanical, biochemical, or toxic causes.

Any chronic, long-continued irritation from with-

in or without, which reduces the resistance of the parts and lessens their vitality, prepares a suitable soil and invites bacterial invasion. Whether found in its simple or specific forms, the progress of the disease is always the result of infection, which can be resisted by the tissues only so long as the integrity of the mucous membrane is maintained. It further appears probable that in addition to this protective agency there is present in the intestinal mucosa or in the blood-stream some bactericidal substance which is inimical to the life and growth of the myriads of microorganisms which inhabit the intestinal tube; indeed, the fact that human excrement is composed of 33 per cent. of bacteria, and that these are *mostly dead* when the feces are discharged, seems to support this assertion. Examples of a similar protective mechanism are not lacking in the animal economy: normal gastric mucosa is unaffected by the HCl of the gastric juice, and the vesical wall either neutralizes or prevents the absorption of toxic substances from the urine.

Possibilities for infection are constantly present in the gastrointestinal tract because of its peculiar function, the condition of its contents, and its architectural construction. To this we might add ill-effects of unsuitable environment, unhealthful occupations, and vicious habits, which predispose the individual to disease, when they do not directly cause it.

In order that the maximum of nutriment may be absorbed from the food, and that prolonged contact with the absorbing surface may be assured, the fecal current is slowed in the terminal part of the gut. This is favored by anatomical conditions of the intestine, the semisolid character of the fecal matter which does not lend itself to rapid progression, the storage of the undigested residue for a greater or lesser time, and periodic evacuations rather than constant propulsion. It is needless to state that these factors have a tendency to expose the lining membrane to injury and infection. In certain situations of the distal colon there is a change in caliber due to kinking or narrowing of the tube. This is notably true of the rectocolonic junction, where a freely movable portion with a long mesentery is attached to a fixed part which has no mesentery; the former falls over the latter and results in a physiologic folding-over of the gut, whose caliber at that point is further diminished by an increase in the circular muscular fibers (O'Beirne's sphincter) which serves to stiffen the intestinal wall and keep it open. Still another point of narrowing is in the passage of the rectum through the pelvic diaphragm; here the tube makes a sharp bend posteriorly and becomes strongly contracted on account of the arrangement of the circular muscle fibers which surround it to form the internal sphincter, and narrowed by being clamped between the two halves of the levator ani. At these situations the intestine is exposed to constant trauma due to friction, and to liability of ulceration, especially in persons who suffer from chronic constipation, in whom the feces are hard and dry, and expelled only after considerable straining. Straining as a cause of chronic catarrh of the bowel is a factor in prolapse, chronic invagination of one part into another, hemorrhoids, polypi, tumors, fistula, and other rectal diseases; in the presence of intestinal parasites and other foreign bodies, and in the frequent use of drastic purgatives and enemata.

Pressure arising from without is responsible for those cases which originate from a pregnant, subinvoluted, or retroverted uterus, tumors, connected with the adnexa or pelvic wall, hypertrophy of the prostate, stone in the bladder, in short, anything which causes long-continued irritation by pressing on the parts.

Proctitis from specific poisons is found to occur in amebic and other forms of dysentery, tuberculosis, gonorrhea, and syphilis. A considerable number of cases is indirectly due to gonorrhea, in which prostatic massage is a part of the treatment, and is carried out too often, too long, or too vigorously. It may be of interest to mention in this connection that in the series quoted, six patients with severe ulcerative coloproctitis gave a history of habitual anal coitus.

Chronic proctitis is seen in greater or lesser degree in constitutional states such as are present in nephritic, hepatic, pulmonary, and cardiovascular disease, where it is presumably only a part of the general congestion; in diabetes, gout, rheumatism, and in chronic poisoning from alcohol, lead, arsenic and mercury.

A disease which has such a definite and clear-cut pathology ought to present symptoms which are unmistakable, but this is true of only the acute and ulcerative types; hence these forms must be considered separately. Acute proctitis is apt to come on suddenly, possibly after exposure to wet or cold, ingestion of some suspicious article of food, or a change in the milk and water to which one is accustomed, as when city dwellers migrate into the country. The patient complains of gastrointestinal uneasiness, colicky pain in the abdomen, the passage of several soft or watery stools in quick succession, accompanied by a large amount of flatus, tenesmus, griping, frequent and unsatisfied desire to go to stool, discharge of mucus, and perhaps a little blood. The symptoms last two or three days, and end either in restoration to normal or, if the process is a severe one, the establishment of ulceration and secondary infection, with free discharge of pus and blood, abdominal distention, tenderness, weakness, fever, and other general manifestations. Or what is more common, there is improvement for a time, followed by occasional relapses, less severe than the original infection, and the process has become chronic.

The symptoms of chronic proctitis depend upon the type of the disease and its stage. In the hypertrophic form, which is the one most often succeeding the acute, there is apt to be diarrhea or irregular stools, burning in the rectum, tenesmus, frequent desire to empty the bowel, discharge of mucus, sometimes blood, pain and tenderness along the course of the descending colon. Examination of the bowel shows congestion, swelling, and edema of the mucous membrane, which loses its smoothness, is thrown into folds and wrinkles, and appears granular, roughened, and spongy, with superficial erosions or desquamated areas. The parts are relaxed, moist, show a tendency to vegetative excrescences, condylomata, connective tissue tabs and eczematous lesions. This form is likely to follow the acute type and involve higher portions of the gut, in contradistinction to the atrophic, which fre-

quently begins as such, but does not often extend above the pelvic colon. The symptoms of the latter are slow in development, vague and indefinite in course, onset, and duration, and aside from the constipation, point only indirectly to the bowel as the seat of the disease. Both patient and physician are likely to attribute to the latter the heavy, dull, dragging sensation in the pelvis, the fullness and heat in the perineum, the headache and sacral pains, the neurasthenia, the weakness, indisposition, and general unfitness to do the day's work. When purgatives or enemata are used the patient feels worse, in fact, he is less uncomfortable when the bowels are locked up. On proctoscopic examination the parts are found to be dry, have a glistening, polished appearance, thin and parchment-like in spots, show inspissated feces and strings of dried mucus on the walls and valves, and a tendency to denudation of the mucous membrane. As the process becomes more advanced, ulceration is more marked and affects the deeper portion of the rectal wall, the muscular coat, and even the fascial investment, with the possible development of polyposis, intramural abscess, fistula, and periproctitis. There is an exhausting diarrhea, with free discharge of pus and blood, almost constant tenesmus, intestinal colic, flatulence, weakness, anemia, rapid loss of weight, and if unrelieved, a condition of extreme gravity. There is no longer any doubt of the diagnosis when the disease has reached the ulcerative stage.

It must be quite evident from what has been written above that no routine treatment will fit all types of the disease, or be successful in the various stages of it; intelligent handling of the problem must take into consideration the form of the infection, the stage of the disease, and the needs of the particular patient. Its recognition need present no difficulties if we but learn to train our senses, and examine that portion of the large intestine which is within reach of our diagnostic methods.

The acute types of proctitis are pretty generally only a part of a diffuse inflammation of the entire gastrointestinal tract, and as they are dependent on a toxic or mechanical basis, the indications are to remove the cause, get rid of the poison, neutralize its effects, and combat the symptoms. Any laxative may be used which will accomplish the purpose without any undue irritation; compound cathartic pills, senna, aloes, gamboge, and other resinous drugs exert their principal effects on the large intestine, cause congestion of the mucosa, and hence are contraindicated. To neutralize the toxins and replace loss of water and albuminous constituents we give white of egg in water, flaxseed tea, strained cereal soups, and mucilaginous drinks. Olive oil and milk in limited quantities are useful, but liable to induce intestinal unrest. To quiet peristalsis we administer opium by mouth, apply hot fomentations to the abdomen, and irrigate the rectum with warm saline solution by means of a return flow catheter. As the acute symptoms diminish, astringent injections of 1 per cent. zinc and alum, 2 per cent. nitrate of silver, or 25 per cent. argyrol will prove useful. When there is much tenesmus enemata of tincture of opium in starch water may be employed, but suppositories are interdicted, because of their liability to increase the straining.

The treatment of chronic proctitis is directed to the removal of the cause, whenever this is possible, followed by such measures as will prevent further damage, tend to restore the integrity of the bowel, increase the patient's resistance, and make his lot more comfortable. Whether it is found to have its origin in some specific infection, as syphilis or gonorrhea, or in some mechanical factor such as malposition of the uterus, tumors of the adnexa, hypertrophied prostrate, etc., these should receive appropriate attention. Habits which induce chronic constipation or fecal impaction must be overcome by suitable hygienic, dietetic, and medicinal measures. When the patient's illness is secondary to diabetes, gout, cirrhosis of the liver, rheumatism, etc., or to chronic poisoning by lead, arsenic, or mercury, his proctitis is only the local expression of his constitutional condition, and must be considered in whatever is done for him; but no measures may be expected to be successful unless they are reenforced by suitable local treatment of the bowel.

Another point may be set down as axiomatic: drugs, or their solutions, taken by mouth, have little influence on pathological processes within the rectum; they are so greatly diluted by the intestinal contents, and such minute quantities can actually reach the lesions, that it must be doubted whether they can do any good at all, given this way. Moreover, the diseased tissues may be covered with feces or mucus, and not come in contact with the medicine. To obtain the maximum effect of any agent we use, the bowel must be well flushed, and the medicine introduced from below directly to the seat of the trouble. Medicines taken by mouth are often decomposed by the gastric and intestinal juices, or split into their constituent elements by processes of metabolism, so that we cannot even be certain whether we are getting the effects of a given drug. To use medicinal substances by rectum, we have a choice of direct application, insufflation, irrigation, injection, introduction of ointments and suppositories. The two latter methods have not come into general use among proctologists, because they will reach only limited portions of the intestinal tract, and because of their liability to cause straining and irritation. Insufflation has been objected to, as the powders have a tendency to cake on the valves and give rise to griping and proctospasm. Direct application, injection, and irrigation, properly carried out, offer the greatest field of usefulness, no matter what drugs are used. In the hypertrophic form, in which, it will be remembered, the parts are bathed in a free secretion, irrigation with 1 per cent. solution of zinc and alum, 2 per cent. tannic acid, 10 per cent. fluid extract of krameria, 2 per cent. ichthyol, and application through the proctoscope of 5 per cent. silver nitrate or 20 per cent. argyrol to the patches are followed by good results.

In atrophic catarrh conditions are quite unlike what one finds in the hypertrophic form; the mucous membrane is dry, thinned, and fissured, and the stools are irregular, costive, and expelled only after much straining. Our first care should be to correct this condition by a suitable diet, and, if necessary, the administration of bland laxatives, to be followed by injection into the bowel of iodoform, bismuth and olive oil, or balsam of Peru in castor oil, 5 per cent. ichthyol in glycerin, or 10 per cent. silver nitrate applied through the proctoscope.

The trouble in handling these cases arises not from the use of the wrong medicine, but rather from the difficulty, whatever is used, in reaching every part of the diseased bowel. Our duty is not ended when we give the patient a bottle of medicine and tell him to inject it into his rectum; if the patient is to derive any benefit from it, the physician must himself carry out the treatment, or at least supervise it. Solutions injected into the lower bowel may under exceptional circumstances be carried into the colon, but this is entirely too uncertain to be depended upon as a routine measure, especially in the case of some of the drugs, of which limited quantities are available for dispensary, and for that matter for private patients. It was formerly taught that medicinal agents may readily be thrown into the upper bowel by means of a soft-rubber colon tube, but careful experiments, checked by *x*-ray findings, prove this to be erroneous, because of the coiling of the tube within the rectum, and the shutting off of the flow. A simple method, with some modifications which will form the subject of a future communication, has been used by the author during the past year; it is only necessary to state at present that the medicine is poured into the rectum through a proctoscope, with the patient in the inverted position. Gravity will do the rest. Our experience with this method has been very good; we are convinced that it will do the work, because as soon as we begin the treatment of proctitis according to this technique, most of the mild and moderately severe cases improve very quickly; and we have been doing this at the rectal clinic of the New York Hospital for a year. The only reason why the old way has not been discarded long ago, is because it is human nature to follow lines of least resistance, and it is certainly less trouble to hand the patient a prescription or a bottle of medicine; though it is but fair to say that new methods are sure to be generally adopted when physicians discover what good results may be had at the expense of but little extra effort. The pain and discomfort diminish, the burning in the rectum and the pruritus are lessened, the intestinal symptoms improve, the patients gain in weight, and are soon able to return to work.

Finally, we see a certain number of cases in which the predominating lesions are in the upper portions of the colon, properly classified as chronic ulcerative coloproctitis, which are not amenable to conservative treatment no matter how patient, skillful, or prolonged; these have extensive and deep ulcerative lesions throughout the whole of the large intestine, and require surgical treatment in the form of appendicostomy or cecostomy; this enables the surgeon to do through-and-through irrigation as many times daily as necessary, and has the effect of clearing the intestinal tract, removing mucus, pus, bacteria, and products of decomposition, stimulating circulation, reducing autointoxication, and preventing reinfection. The author had the privilege of observing ten of these patients in the rectal service of one of the hospitals, during the past year. Two of these occurred in men under thirty, former residents of the tropics, ill five years, with 10 or more movements of the bowels in 24 hours, containing blood and pus; they had ulcerations of the colon and rectum, and lost between 30 and 40 pounds in weight. No amebæ were found in their stools. Both were operated upon for appendicostomy, were irrigated from above with various solutions, regained their former weight, and made complete recoveries. One of the ten was a youth of 16, who was admitted into the hospital in a serious condition from severe intestinal hemorrhages which reduced his hemoglobin to 20 per cent., and necessitated transfusion; appendicostomy gave him no relief, and as he was fast losing ground, his surgeon performed a total colectomy, and an ileosigmoidostomy in a last effort to save his life. He recovered, gained 60 pounds in weight, and is back at his work.

In concluding, the author would like to emphasize the following points:

1. Proctitis is a very common disease, widely prevalent and often unrecognized, because of its indefinite manifestations.

2. The symptoms of the chronic forms are vague and obscure, and point to the rectum only indirectly, hence proctoscopic examination should be a routine measure whenever the diagnosis is in doubt.

3. Every case of proctitis has potential possibilities of ulceration and stricture, therefore prophylactic treatment of stricture must begin with early and vigorous treatment of proctitis.

4. The cause must be looked for, but whether discovered or not, local treatment of the rectum is the next most important indication, which should not be entrusted to the patient, but must be carried out by the medical attendant.

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Medicolegal Notes.

Physician's Compensation Under Workmen's Compensation Act.—The Indiana Appellate Court holds that an employer's direction to a physician to take an injured employee to the hospital, give him close attention, and "do the best you can for him," coupled with the serious nature of the injury, severe third degree burns over the face, hands, chest and hands, and the employer's knowledge thereof, was sufficient to warrant the inference that the physician was authorized to treat the employee beyond the thirty-day period specified in the Workmen's Compensation Act, rendering the employer liable for reasonable charges.—In re Myers, 116 N. E. 314.

Safeguarding Patient in Sanatorium.—The New York Appellate Division holds that it is the duty of the owner of a sanatorium conducted for private gain to use reasonable care and diligence, not only in treating, but in safeguarding, a patient, measured by the capacity of the patient to provide for his own safety, and to discharge such duty, physicians and nurses possessing that reasonable degree of learning and skill ordinarily possessed by persons similarly engaged must be employed, and they must act with reasonable care and diligence. In an action against a hospital and its proprietor for death of a patient, who jumped out of a window under the influence of alcoholic delusions, as it was claimed, the question whether the physician or the nurse should not, in the exercise of the requisite skill and care, have foreseen the casualty and protected the patient from the unguarded window in the bathroom was held to be for the jury.

Judgment against both the corporate and the individual defendant could not stand, because the physicians and the nurse, whose negligence was charged, were not the servants of both; the corporation operated the hospital or it did not, and if it did it was liable, but if it did not, and the individual defendant was the actual operator and master, there was no necessity for judgment against the company. Judgment for the plaintiff was therefore reversed.—Robertson v. Charles B. Towns Hospital, 165 N. Y. Supp. 17.

Military Medicine.

THE TREATMENT OF GONORRHEA IN THE FIELD.

THEORETICALLY provision for the treatment of cases of acute gonorrhea can be omitted from the preparations for field service. No soldier having an acute venereal distase is allowed to go to the front; no soldier can acquire such a disease at the front; ergo, there will be no such cases to treat at the front. This is all very well in theory, but as a matter of fact—and it is only fact that we are interested in—it will at times become necessary to treat cases of acute gonorrhea in a field ambulance and it is for the best interests of the army that these cases should be handled in the most efficient manner possible. When we consider how long a chronic gonorrhea may drag on, in spite of the most approved methods of treatment, and how this disease may either actually disable a man or give him a good excuse for "slacking," the importance of effective treatment becomes still more obvious.

Lieut. Col. E. T. Burke, of the English army, writing in the *Lancet* for May 9, calls attention to this problem. Dr. Burke was in charge of a field ambulance and on one occasion, when two days at sea with a troop-ship, five cases of acute gonorrhea presented themselves for treatment, all first infections which had presented no symptoms on embarkation. In handling these cases Burke at once discarded as unscientific, inefficient, and dangerous, treatment either by the internal use of drugs such as copaiba, sandalwood oil, methylene blue, etc., or by syringe injections of germicides. Instead he decided on the irrigation method, the solution used being, of course, permanganate.

In the five cases quoted lavage was carried out three times daily, the patients were put on a light diet, with no condiments or alcohol; no drugs were given, but water drinking was encouraged. On the third day the discharge became negligible and irrigation was made twice daily for the next seven days. On the tenth day the destination of the troop ship was reached and these men were sent ashore for microscopical examination of urethral smears. This was negative, and the cases were considered cured, although it was thought best to taper off the treatment rather than cease it abruptly.

Dr. Burke concludes from his experience with these five cases that treatment of acute gonorrhea by the lavage method, even if this must be modified considerably by circumstances, is the most successful, causes the most rapid disappearance of symptoms, and is hence the best for soldiers on active service.

It would seem that these conclusions are well justified. When a case of acute gonorrhea develops in a soldier we have two characteristic things: First, the necessity for getting him back on duty as soon as possible. Second, the fact that there need be no concealment or attempt to have the patient go on with his daily duties as is so often the case in civil life. Hence the patient can be at once withdrawn from duty and all his time devoted to the task of getting well. Thus the cure may be effected in a remarkably short space of time and the patient returned to take his place in the fighting line which the military surgeon strives so hard to keep intact.

CEREBROSPINAL MENINGITIS AND MOBILIZATION.

THE one disease which stands out most prominently in its association with the assemblage and the concentration of troops is cerebrospinal meningitis. It has been the experience in war time that in localities where previously this disease was a rarity and the physician would only very occasionally meet a case and then it would be in the frank and outspoken type, mobilization would be followed by severe epidemics both in the military and in the civilian population; and the physicians would of necessity be ill prepared to meet it. This disease has long been known to have a peculiar connection with troops, hence one of its names, troop disease. The condition of ill preparedness to meet this epidemic obtained in England in the winter of 1914-15 and the following spring. There was not even a manual on the subject to be found which could be used as a guide to the army surgeon to meet the emergency (Horder). In our own mobilization the same mistake of unpreparedness should not be made. The physician must be on the alert to catch the first sign of an epidemic, whether he is a military medical officer or a civilian, and both must be prepared to cooperate with each other. Not all attacks of cerebrospinal meningitis have the classical symptoms associated with the disease. To wait for those symptoms before making the right diagnosis is to invite disaster. The mild type of the disease most nearly simulates the symptoms attributed to influenza. For this reason, during mobilization at least, the relation between influenzal symptoms and meningitis must be as firmly established in the minds of the physician as well as the public as is now established between tonsillar symptoms and diphtheritic infection. Both influenza and cerebrospinal meningitis are most common in the winter and spring seasons. Both of them are closely associated with the nasopharynx. The diplococcus of Weichselbaum can be had in culture from this locality in the active cases, whether of mild or severe type, and in the carrier population. In the active cases, however, it begins to disappear from the nasopharynx in the later stages of the disease. The relation of the carrier to the spread as well as the keeping alive of the disease in a locality has been well established in this disease. It is the most important and the most difficult problem the profession has to meet in solving the question of the spread of the disease. Mild cases or healthy carriers may spread very severe types of the disease.

In order to prevent the spread of epidemic cerebrospinal meningitis among the soldiers or the civilian population it is necessary to examine frequently, by taking cultures from the nasopharynx, all persons suspected of having or of harboring the disease. Carriers and mild types must be immediately isolated and treated. For active treatment nothing holds forth so much hope as serum therapy. Flexner found that if serum treatment was given between the first and the third days the mortality was reduced to 18.1 per cent. If delayed till the seventh day the mortality rose to 36.5 per cent. The general mortality of cerebrospinal meningitis has been reduced through serum treatment from 80 to 30 per cent. In epidemic localities every influenzal

type or other suspicious disease should be regarded as one of meningitis until culture or course decides otherwise. The spread of the disease is by the so-called droplet method where the secretions from the nasopharynx are carried to the sensitive mucous membranes of healthy but susceptible individuals. As a general prophylactic measure, therefore, the public must be educated to the dangers of bad habits with regard to the nasopharynx, and the profession must be careful to prevent the scattering of the secretions from the nasopharynx of infected cases or of suspected ones. In the training camps it would be preferable for this and other reasons to have the troops in huts or tents, if possible, rather than in large barracks.

Rendering Drinking Water Potable.—H. D. Dakin and E. K. Dunham give a description of a new substance for the preparation of stable tablets for the sterilization of polluted water in a report to the Medical Research Committee. After experimentation with several substances they found that the most suitable one is *p*-sulphondichloraminobenzoic acid—$Cl_2N.O_2S.C_6H_4.COOH$. It is easily prepared from cheap, readily available materials, and appears to be effective and reasonably stable. The presence of the COOH group confers a slight but definite degree of solubility in water, which is increased by dispensing it with alkaline salts such as sodium carbonate or bicarbonate, borax or sodium phosphate. Since the synthetic name of the disinfectant is inconveniently long for ordinary use, the experimenters propose to apply the name "halazone" to the tablets containing it. The abbreviated name gives some indication of the character of the compound.

The technique employed for bacterial results was that in general use. Five or ten standard drops of the treated water were generally used for plating on agar for counting the surviving organisms. Suitable controls were invariably carried out. A concentration of 1:300,000 is sufficient to sterilize an ordinarily heavily contaminated water in about thirty minutes. Such a concentration could be relied upon to remove coli, typhoid or cholera organisms. The concentration of disinfectant given above is just perceptible to the taste, especially in warm water containing little organic matter, but the water is perfectly palatable. One point of advantage possessed by this disinfectant over most hypochlorite preparations is the fact that the active chlorine is less rapidly used up so that the process of disinfection continues for a long period.

The starting point in the preparation of the substance is *p*-toluenesulphonamide, a product which is readily obtained by the action of ammonia on *p*-toluenesulphonic chloride. The latter substance is a very cheap waste product in the manufacture of saccharine, and is available in relatively large quantities. The final preparation of *p*-sulphondichloraminobenzoic acid is as follows:

Twenty grams of *p*-sulphonamidobenzoic acid are dissolved in 200 c.c. approximately normal sodium hydroxide (2 mols.), warming if necessary. About 200 grams of crushed ice is then added, and the mixture saturated with a rapid current of chlorine. The reaction is most conveniently carried out in a fairly wide-mouthed flask, which may be shaken while the gas is being introduced. If the temperature should rise more ice can be added. A white, rather chalky precipitate of the dichloramino acid is at once precipitated. The acid is filtered off, using suction, well washed with cold water, and dried *in vacuo* on a porous plate. The dry substance is practically pure, and may be powdered and preserved apparently indefinitely. Prepared by this method, the yield of the dichloramino acid is practically the theoretical amount.

The substance is sparingly soluble in water and in chloroform and insoluble in petroleum. It readily dissolves in glacial acetic acid, crystallizing in stout prisms, which melt at 213° C. The substance explodes feebly when rapidly heated on platinum foil, but, compared with most members of the group, is remarkably stable. The purity of the compound may be checked by titration as follows: 0.1 gram is weighed out, dissolved in glacial acetic acid and potassium iodide added. The liberated iodine is titrated with decinormal sodium thiosulphate, of which 14.8 to 14.9 c.c. will be required.

In the preparation of the tablets Dakin and Dunham have found no very marked differences in the behavior of the sulphondichloraminobenzoic acid when made into tablet with salt and either sodium carbonate or bicarbonate, dry or crystallized borax, or sodium phosphate, although the crystallized salts are undesirable if the tablets are exposed to high temperatures. The sodium carbonate tablets seem as satisfactory as any, and a convenient formula for tablets weighing 100 to 105 mg. is to use sulphondichloraminobenzoic acid 4 per cent., sodium carbonate 4 per cent. (or dried borax 8 per cent.), sodium chloride (pure) 92 per cent. The acid should be ground up with the dry salt and the sodium carbonate added subsequently. The mixture may be passed through a 40 mesh sieve. No lubricant or other addition is necessary and should be avoided. The strength of the tablets should be tested by dissolving in acetic acid and potassium iodide solution, and titrating with sodium thiosulphate as already described (1 c.cm. of N/10 thiosulphate = 0.00675 gram of the dichloramino acid). They must not be allowed to dissolve in water and subsequently titrated, as then decomposition occurs. The tablets should be stored in small amber glass bottles. Tablets so prepared of the weight mentioned contain about 4 mg. of the disinfectant, and are suitable for the sterilization of a liter or quart of reasonably heavily contaminated water. In the case of extreme contamination a second tablet may be necessary. These tablets are more stable than other similar compounds. When kept in amber bottles under ordinary conditions no decomposition was noted in two months; but when exposed to bright sunlight in clear glass tubes decomposition was more marked. On the whole, dry borax or dry sodium carbonate appear preferable to the other salts.

The cost of the finished product is rather difficult to estimate, but the experimenters consider it safe to say that the tablets could be sold at such a price that 100 gallons of water could be sterilized at a cost of one penny (English money).—*British Medical Journal*, May 26, 1917.

Military Orthopedic Hospitals.—W. Colin Mackenzie, writing on this subject, states that orthopedic cases comprise in one form or another a large

proportion of the men invalided from abroad with severe surgical injuries. Military orthopedic cases are held by the Army Council to include the following: (*a*) Derangements and disabilities of joints, simple and grave, including ankylosis. (*b*) Deformities and disabilities of feet, such as hallux rigidus, hallux valgus, hammer toes, metatarsalgia, painful heels, flat and claw feet. (*c*) Malunited and ununited fractures. (*d*) Injuries to ligaments, muscles and tendons. (*e*) Cases requiring tendon transplantation or other treatment for irreparable destruction of nerves. (*f*) Nerve injuries complicated by fractures or stiffness of joint. (*g*) Certain complicated gunshot injuries to joints. (*h*) Cases requiring surgical appliances.

These cases naturally fall into two groups—those whose disablement is only temporary and who after treatment will be fit for military service again, and those who are so disabled that they must inevitably be discharged from the army. The wounded soldier receives immediate treatment in a general military hospital. If his case comes into the category of orthopedics, as defined above, he is then transferred to one of the orthopedic centers for special treatment. If his disablement has been only temporary, he may be sent for aftertreatment to a command depot until ultimate recovery and return to military duty.

The command depot is a convalescent camp equipped with all the necessary apparatus for treatment, but mainly organized and controlled under purely military officers, with the object of hardening men by suitable exercises and graduated for return to active service at the front in a period of about six months. The men live in huts. Beds are wooden forms with straw palliasses and military blankets. Ordinary diets only are given. The huts are heated by stoves.

The cases suitable for admission to a command depot are: Men recovering from gunshot wounds not involving joints or nerves. United nerves giving normal action to muscles. Pott's fracture, Colles's fracture, with no ankylosis of joints. Injuries to left hand not to such a degree as to prevent the use of a rifle. Simple myalgia without obvious organic symptoms.

All scars should be firmly healed and not situated at points of regular pressure of equipment, for example, shoulder, scapula, waist. Spinal injuries when there are resultant symptoms as headache or paresis; shell shock with the slightest tremor or mental impairment; paralyzed limbs, drop foot or hand, and neuritis, are not considered suitable cases for admission. The command depots are visited regularly by an orthopedic surgeon, to help the staff in their choice of cases for orthopedic treatment. The soldier who is permanently disabled and utterly unfit for further military service undergoes similar treatment in the general and orthopedic hospitals, and is finally discharged and pensioned.

In each orthopedic center, besides surgical operations, massage, electrical treatment, hydrotherapy, and gymnastic exercises, a series of curative workshops have been established with successful and valuable results. These curative industries serve a twofold purpose. First—and this is most important—they are directly curative by giving exercise, under medical supervision, to the affected part. They are also indirectly curative through their profound psychological influence upon the patient. Mental and bodily activity are thus encouraged. In the second place, these industries enable a certain number of the men to acquire a trade or craft, and are thus made more valuable to their community by the increase in their wage-earning power after discharge. A certain monetary value of the work done is beneficial to the institution. The curative workshops are an important evolution of the war.

The permanently disabled soldier is not lost sight of after discharge from the hospital and army. He then comes under the care of the Statutory (Pensions) Committee. If possible he goes back to his old trade or employment, or he may find work in a new craft or trade, probably learned in the curative workshop.

The present urgent question is how best to treat the soldier or sailor who through disablement has to be reeducated and thus be restored to social and professional efficiency in varying degrees. The problem, however, is being strenuously attacked and worked out.—*British Medical Journal*, May 26, 1917.

The Leucocytes in Cases of Irritable Heart.—Grace Briscoe, in a report to the Medical Research Committee states that this investigation was undertaken with the object of determining what changes, if any, are present in the white blood cells in cases of "irritable heart." All the patients investigated were admitted to the Mount Vernon Military Hospital suffering from the symptoms associated with the above condition—breathlessness or palpitation on slight exertion, faintness, giddiness, precordial pain, and general lassitude. Preliminary counts had shown that in some cases the number of nongranular cells in the capillary blood was considerably greater than normal, both absolutely and relatively, to the granular cells. Further investigations were undertaken to decide if this change was constant, and if it could be regarded as of value in diagnosis and prognosis.

A list of these patients drawn up by the clinicians in accordance with the severity of the symptoms was compared with a similar list based on the blood findings. The correspondence between the two methods of classification was very close. An analysis of these cases demonstrates that the men who have a history of symptoms dating back many years show a higher lymphocyte count than the men who date their symptoms as subsequent to service abroad.

The cases were divided into two classes: In Class A, in which the onset of symptoms dates back to civilian life, the highest leucocyte counts range between 37 and 57 per cent., the average being 47.5 per cent. In Class B, in which the onset of symptoms is dated from the strain of actual service in the trenches, the lymphocyte counts range between 32.2 to 41.5 per cent., with the average at 38.2 per cent. In the controls the average of the highest lymphocyte counts is 38.2 per cent. This classification seems to indicate that men who have shown signs of "unfitness" in civilian life are very liable to break down while still in training, and are not likely to improve much under treatment, while the men who have passed through their training successfully and then break down under the strain of foreign service are likely to obtain considerable benefit from treatment.

It cannot be said definitely that a normal blood count in these patients excludes a diagnosis of "irritable heart." On the other hand, a blood count which shows a marked deviation from the normal is a positive sign entirely outside the control of the patient, and may be regarded as a definite objective point in diagnosis. The blood count does not give much help in prognosis, as the condition of the blood appears to vary with the general condition, and this can be judged by the usual clinical methods.

The following conclusions apply to patients who show the signs and symptoms referred to at present under the term "irritable heart." At absolute rest there is a slight leucocytosis or no leucocytosis. While up and about there is a decided leucocytosis. In many, and especially in cases of long standing, there may be a relative and absolute lymphocytosis. The variability of the different kinds of leucocytes is greater (more than double) than in normal individuals. The response to muscular exercise is similar to that found in healthy subjects, but is exaggerated in its degree. This exaggerated response can be used as an objective sign in diagnosis. The degree of leucocytosis and of variability in percentages after exercise is proportionate to the severity of the symptoms.—*British Medical Journal*, June 2, 1917.

Treatment of Wounds in the Casualty Clearing Station.—It is the object of every casualty clearing station to treat and retain all patients until they can be safely sent down by ambulance train. According to Cuthbert Wallace, in times of comparative peace and quiet there is no difficulty in carrying this out, and consequently whatever standard of treatment is required from the surgical standpoint can ordinarily be obtained. However, in times of heavy fighting, especially when there is the certainty that many more wounded will arrive during periods extending over days and weeks, the provision of empty beds necessitates sending patients away who might, with advantage, be retained a little longer. This pressure does not prevent the performance of all really necessary operations, and these are now always performed. If the requirements of the English army did not place a limit on the number of nurses, surgeons, orderlies, and patients who can be retained in close proximity to the fighting line, there would be no reason why all patients should not be kept near the front. There is this limit, however, in every war, and casualty stations are maintained everywhere in as great numbers as the military authorities can permit. For more than two years it has been the policy of the British Army Medical Service to make the casualty station the chief place for the treatment by operation of the dangerously wounded man who requires prompt treatment, rather than the field ambulances. The latter is too mobile and too frequently moved a unit to be thoroughly equipped surgically and it is better to move a patient before operation than directly after he has been operated on.—*British Medical Journal.*

Disprove the German Scare Propaganda.—The Equitable Life Assurance Society for the Pittsburgh district has been able to discredit some silly tales, inspired and financed by Germany, to discourage American physicians and nurses who may think of enlisting for war service. It has been said that the average life of a physician or a Red Cross nurse at the front is only a certain number of days. Persistent reports of maimed and outraged women at the hospitals have been sent out by the same pernicious German propaganda, which further asserts, parenthetically, that Germany has 850,000 youths coming to military age each year. All of these statements have been disproved. The above named insurance company—and insurance companies do not guess at figures—states that Germany has less than 400,000 youths coming to military age annually. Instead of 65,000 physicians dead in France, 150 is nearer the mark on all the battle fronts. Our nurses, they assert, are as safe as in our own hospitals.

To Combat Venereal Disease.—The Department of the Army has organized a section which will devote its attention exclusively to the venereal disease problem, in cooperation with the United States Public Health Service and the sanitary and training camp divisions of the Army Medical Department. Maj. F. F. Russell, M. C., U. S. A., will have charge of the laboratory investigations. Maj. William Allen Pusey, M. R. C., of Chicago, will devote himself to the scientific side of the problem. Educational and sociological studies into environmental conditions will be made by Maj. William F. Snow, M. R. C.

Psychiatrists and Neurologists Needed to Examine Troops.—The recent decision of the War Department to examine the National Guard troops in their armories before sending them to camp, makes it necessary to secure at once a large number of examining physicians. To meet the situation the Surgeon General of the Army has arranged to accept the work of qualified physicians on contract. Psychiatrists and neurologists may contract for specified duty, at a specified place, for a specified time, or for part time. This latter provision makes it possible for many physicians who cannot enlist, or who cannot give all of their time to the work, to give part time. Further information can be obtained from Dr. Frank E. Williams, 50 Union Square, New York.

Auxiliary Medical Corps for Emergencies.—Three hundred surgeons of New York have been enrolled in the Police Surgeon Auxiliary Medical Corps, which includes the surgeons of the Police and Fire Departments. The members of this corps will be organized into units to handle surgical cases in any emergency that may arise within the city. The Women's War Auxiliary of the New York Hospital raised $1,500, and it was through their efforts that this body was organized. Dr. Edward T. Higgins, as chief police surgeon, is the commanding officer. The borough chiefs are Dr. Harold Barclay, Manhattan; Dr. Alvin E. Munson, the Bronx; Dr. Walter A. Sherwood, Brooklyn; Dr. William A. Scoville, Queens; and Dr. Alfred H. Thomas, Richmond.

Camp to Become Hospital.—Madison Barracks at Sacket Harbor, which is to be closed as a reserve camp on August 15, will be converted into a military hospital, according to advices from the Government.

The X-Ray Examination of Guardsmen.—The *x*-ray is now being used in the examination of the National Guardsmen. It is stated that of the first 95 men subjected to this test 12, or 12.6 per cent.,

showed existence of thoracic disease. All of these men had done service on the Mexican border. The State Department of Health says the *x*-ray enables the examiners to pick out the men who would be in danger by acceptance for foreign service.

Trachoma in Recruits.—The Public Health Service has issued a warning against the acceptance of victims of trachoma for the Army. An applicant who is suffering from well-marked trachoma should not be immediately rejected, but should be given treatment and his trachoma cured. He can then be reexamined to determine whether he has resulting visual defects sufficient to cause his rejection.

Hospitals at the Army Cantonments.—Plans for hospitals at all of the sixteen Army cantonments have been completed by the office of the Surgeon General, and work on them will be commenced and rushed to completion before the troops are assembled under the selective service law. The hospitals will have, with few variations, 34 wards, including two isolation wards. Separate barracks are to be provided for hospital internes and other employees, and special buildings for other hospital needs.

Elks to Build War Hospitals.—The War Relief Commission of the Benevolent and Protective Order of Elks has plans for the collection of a million-dollar fund for the erection of base hospitals in France, for aiding the families of soldiers, and for the reeducation of disabled men to fit them to fill some useful station in life. The hospitals will be under the supervision of the Red Cross, but will be named, numbered, and designated as hospitals provided by the Elks.

Two More Red Cross Missions.—It is announced that a third Red Cross Commission is to be sent to Europe to study conditions and distribute relief in Roumania. A Red Cross unit of twelve doctors and twelve nurses accompanies the commission, which is composed as follows: Dr. Francis W. Peabody of Boston, Dr. Gideon H. Wells of Chicago, Dr. Roger Griswold Perkins of Cleveland, Dr. Robert J. Bryan of Richmond, and Bernhard Flexner, a lawyer of Chicago, and Arthur Graham Glasgow, an engineer of Washington, D. C. The following physicians will be members of the Red Cross unit: Dr. W. D. Kirkpatrick, Bellingham, Wash.; Dr. Richard Penn Smith, Fort Loudon, Pa.; Dr. D. J. McCarthy, Davenport, Iowa; Dr. George Y. Massenberg, Macon, Ga.; Dr. R. H. Rulison, Syracuse, N. Y.; Dr. B. C. Hamilton, Syracuse, N. Y.; Dr. Benjamin Earl LeMaster, Macomb, Ill.; Dr. Louis H. Limauro, Lynn, Mass.; Dr. E. F. Hird, Bound Brook, N. J.; Dr. W. T. Lowe, Pine Bluff, Ark.; Dr. Joseph P. H. Gruener, Chicago; Dr. Geo. Duro Guca, Chicago; Dr. William J. Kucera, New Prague.

A fourth commission, headed by George F. Baker, Jr., vice-president of the First National Bank of New York, is to be sent to Italy. The purpose of this commission is to advise how American Red Cross activity can best be exerted to meet the needs of the soldiers and the civilian population of Italy. The commission includes John R. Morron, president of the Atlas Portland Cement Company; Dr. T. W. Huntington of California, president of the American Surgical Association; Dr. Victor G. Heiser of the U. S. Public Health Service, and Nicholas F. Brady of the Central Trust Company, New York. Chandler R. Post, professor of Greek and fine arts at Harvard, and a noted authority on Italy, accompanies the commission.

Furloughs for Drafted Medical Students.—In order to forestall any serious effects to home hospitals because of the unusual call for physicians in the army and navy, the Government has provided a furlough for drafted medical students which will continue so long as they keep seriously at work. The United States Army will not accept a man for its Medical Corps until he has had a year in a hospital as interne. As the internes are considered students until they have completed their year, it is likely that the furlough will be extended to them. With the cooperation of the Medical Department of the Army a balance will be struck between home and overseas service. Not all of the more experienced men will be called for the Army. A few of the older men of the profession will go, and with them those who have completed their first year as internes.

Two More Base Hospitals in France.—The Johns Hopkins and Roosevelt Hospital units, organized under the direction of the Red Cross, have arrived in the American Army zone in France and are established some twenty miles apart. Each of these organizations is capable of caring for from 1,000 to 1,500 patients.

A Fleet of Hospital and Ambulance Ships Projected.—The Ward liner *Havana*, a 6,391-ton vessel, is to be transformed into a navy hospital ship, and will be the first of a fleet of three similar vessels and a number of smaller ambulance ships to be added to the expanded naval establishment. When the new vessels are available, the *Solace*, now the Navy's only hospital ship, will be transferred to the group of ambulance ships.

Minor Defects in Drafted Men.—The medical examiners of drafted men in this city announce that arrangements have been made with Bellevue Hospital by which men who want to enter the draft army, but are barred by physical disability that may be removed by operation, are to be treated free. It is hoped that other hospitals will make similar offers.

Personals.—Dr. Alanson Weeks of San Francisco has been appointed chief surgeon of Army Base Hospital No. 30.

Dr. Michael J. Thornton of New York City has been appointed Captain and Assistant Surgeon in the Medical Corps of the United States Army. He is to report to Governor's Island at once.

Dr. William Edward Fitch, First Lieutenant M. R. C., stationed at Plum Island, has been promoted to a captaincy.

Capt. Le Compte du Nouy and Major Lowey, the French field surgeons who have been working with Dr. Alexis Carrel, have arrived in this country to assist Dr. Carrel in teaching American surgeons the newest method of treating trench wounds.

New Army Number Plan.—A modification of the plan for designating regiments of the war armies by number and branch of service only is to be modified so that it will be possible to determine from the number itself whether the regiment is a part of the regular army, the National Guard, or the national army. Any regimental number under 100 will indicate regulars, any number between 100 and 300 National Guard, and any number over 300 national army.

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SAVE THE MOTHERS!

IN the United States, and particularly in the rural districts, there has arisen an acute knowledge of the vital need of improvement in prenatal and aftercare of the women who assume the responsibility of childbirth. How are the mothers of the nation to be encouraged in their God-given specialty when in some sections of the country more attention is paid to the swine when they deliver their young, and when in so many instances a woman is expected to fulfill the most sacred function of her life without adequate assistance? Is this neglect because it is taken for granted that the Biblical anathema, "In sorrow thou shalt bring forth children," must of necessity be fulfilled? Or is it because this important function is not computed in money value, not bringing in financial returns?

According to a circular issued by the Children's Bureau of the U. S. Department of Labor, there are annually about 15,000 deaths from maternal causes in the United States, and available statistics show no decrease in maternal mortality since 1900. These 15,000 deaths are but a rough indication of preventable illness and suffering among mothers. The statement is made that more women from fifteen to forty-five years of age die from conditions associated with childbirth than from any other disease except tuberculosis. Little has yet been done to show women of child-bearing age that much of this waste of life and health is unnecessary. Even less has been undertaken by communities to provide protection for them, and while many communities have instituted costly measures for the reduction of their typhoid and tuberculosis death rates, practically nothing has been accomplished to lower the death rate among mothers. Since 1900 the typhoid death rate for the country as a whole has been cut in half, and the rate from tuberculosis has been markedly reduced. On the other hand, the death rate from maternal causes has shown no demonstrable decrease.

This suggests that a more general use of existing provisions for scientific maternity care and the extension of provision for such care in all communities, should serve to reduce the number of maternal deaths. Just how the importance of maternity care is to be made plain to a community, and just how skilled care and instruction are to be available for all mothers, are questions to be studied and practically worked out by every community. Even in cities where prenatal clinics and prenatal nursing have been established and good hospitals are numerous, the number of mothers reached is small in comparison with the number who bear their children without proper care. Thousands of mothers all over the country do not have the essentials of safety, chiefly because women have not been taught that the dangers of childbirth are largely avoidable. Under present conditions, many women, even when aware of the danger, are unable to obtain the necessary care; but when all women and all men understand its importance, and demand this care for every mother, physicians will be found to furnish it, medical colleges will provide more thorough obstetrical training, and communities will see to it that mothers are properly protected.

A feature emphasized by Dr. Grace L. Meigs of the Children's Bureau, in an article on "Rural Obstetrics," read before the American Association for Study and Prevention of Infant Mortality, October 16, 1916, is the condition prevalent in rural districts where the inaccessibility of a physician is often added to the other elements of the problem. The bureau has made an attempt, by correspondence with women in various sections of the country, to find out the attitude of the women themselves toward this question of preventable death in childbed. The answers received contain suggestions regarding the great need of more rural nurses and better roads for allowing quicker transportation both of the mother for prenatal examinations by her doctor and of the physician at the time of labor. The whole subject is made perplexing because of the two apparently contradictory facts—that childbirth, to a normal and sturdy multipara, is really a simple performance, and that a complicated case of labor is a grave surgical condition requiring immediate aid. It is difficult to convince a husband or wife whose experience has never included a severely complicated case that all women really need skilled care and rest through this period.

Dr. Meigs offers a partial solution for the situation by the provision, first, of means for the recognition and hospital care of complicated cases of pregnancy and confinement; and second, of a feasible plan whereby normal cases may receive adequate care in their homes. In general, the unit in any plan could be made the county, where centers of maternal and infant welfare could be established. Here mothers could obtain information as to the proper care of themselves and their babies. This would include a county nursing service, a cottage maternity hospital or beds in a general hospital for complicated cases, or for women who would or could be confined away from home; provision for skilled attendance in all types of maternity cases in the home, and provision for obtaining help for mothers, whether confined at home or in hospital.

THE DEVELOPMENT OF SARCOMA AT THE SITE OF OLD FRACTURES.

It has long been taught that when sarcoma affects certain bones, especially the long bones and the lower jaw, spontaneous fracture through the affected portion of the bone is not infrequent; but that sarcoma very rarely develops at the site of an antecedent fracture through healthy bone. This has always seemed somewhat remarkable since many cases have been reported where sarcoma has followed moderate degrees of traumatism, such as simple contusions of the arm or leg; yet the rarity of sarcoma occurring at the site of ordinary fractures is still emphasized in the latest textbooks.

A few quotations from recent standard textbooks will serve to illustrate this point. In the last edition of Rose and Carless' "Surgery," the matter is dismissed in these few words: "In conclusion, one must allude to the fact that a sarcoma sometimes develops at the site of fracture within a comparatively short time of the accident." In Kellogg Speed's new textbook on fractures and dislocations we find the following: "Whether sarcoma follows the trauma of fracture or not is a disputed point. I have removed the mandible for sarcoma of the jaw in a case which gave a history of fracture a year before at the same site, and the size of the tumor and lack of metastases did not seem to indicate that the tumor had been in existence before the fracture. Coley has reported a case, and Griffin reported sarcoma following the plating of a femur for fracture."

In the latest revision of his textbook on "Fractures and Dislocations," Stimson says: "The development of a tumor, sarcoma, at the site of a healed fracture within a few weeks, or after an interval of several years, has been occasionally observed, and apparently belongs in the same etiological group as that of sarcomata following other injuries of bone or soft tissues." Murphy took a still more radical view; for in the "Clinics," June, 1914, he said: "One practically never sees a sarcoma develop at the site of a fracture. One often sees fractures occur at the site of sarcoma, but never the reverse."

In view of these statements, the experience of Bissell (*International Journal of Surgery*, June, 1917), who, in a period of approximately one year, saw six cases in which sarcoma developed at the site of fracture, seems most remarkable. The ages of the six patients were respectively 19, 20, 20, 26, 27, and 50; and the respective antecedent fractures in these patients were: Incomplete fracture of the shaft of the left femur, fracture of the shaft of the left femur, transverse fracture at the head of the right humerus, fracture of lower jaw, fracture of the bases of the coracoid and acromion processes of the left scapula, and intratrochanteric fracture of the right femur.

Although it is quite true that these six cases occurred in the course of service at two large hospitals (Bellevue and St. Vincent's), at which the number of traumatic cases seen in the course of a year is exceptionally large, still one must wonder whether or not the development of sarcoma at the site of fracture is as rare as has been believed. Possibly its supposed rarity is at least partially due to neglect on the part of surgeons and general practitioners to report such cases. If this latter hypothesis be true, it is to be hoped that brief reports of all such cases will be published hereafter, in order that we may obtain more accurate information as to the incidence of this condition.

PUBLIC HEALTH OF ENGLAND DURING THE WAR.

The effect which our participation in the war will have upon the health of the country at large is a matter of the utmost importance to all Americans, especially to members of our profession. It is interesting not only from an academic standpoint, but also from a pragmatic one. When we consider that many thousands of physicians will be withdrawn from practice for military purposes, and that those remaining will have their duties vastly increased, perhaps even doubled, it can readily be understood that the general health of the nation becomes a matter of the utmost concern to the profession. History offers us no precedent by which to theorize, but fortunately, in this regard at least, we have the experience of our Allies to guide us. Naturally we turn to England as being the nation most like us in ethnological factors, customs, climate, etc. There has just appeared the report of the Registrar-General of England, Sir Bernard Mallet, for 1915. To be sure, this covers a period a year and a half distant, but it was a period when the war was already well under way, and in any event its figures are the most recent official ones available.

Coming to study them, we find many interesting facts. The marriage rate was the highest on record, 19.5 per 1,000, and the birth rate the lowest, 22 per 1,000. This birth rate, however, compares favorably with those of the other belligerent countries. The civilian death rate was 15.7 per 1,000, 1.2 above the average in recent years for the whole population, but below the rate for any year preceding 1903. In evaluating these figures, however, we must remember that the war has meant the withdrawal of an immense number of men in good health; naturally, we would expect the death rate to be somewhat higher in those left.

A number of statistics are given bearing on child welfare. About 16 per cent. of all deaths were of infants under one year, corresponding to a mortality of 110 per 1,000 births. The immediate chances of survival differ but little at birth in the town, as compared with the country, but the pernicious influences of town life speedily appear and make themselves felt increasingly during the first year of life and to a still greater extent in the second and

third years, when the city mortality is about twice that of the country. The mortality of illegitimate infants was about twice as high as that of legitimate ones; particularly the deaths attributed to syphilis were given as eight times as numerous, perhaps on account of the greater frankness in stating this cause in dealing with the nameless babies.

Taking up a few of the most prevalent diseases causing death, it is found that the death rate from typhoid fever was the lowest on record, but influenza was more fatal than any year since 1900; measles also showed a high destructive power. Diphtheria gave the same figures as for 1914, that is unusually heavy ones, owing to many epidemics. Scarlet fever showed a decrease. Pulmonary tuberculosis showed a marked increase; here again the withdrawal of the sound males must be considered. Cancer showed an increase. Taking all in all, the Registrar General's report is about what would be expected. Practically all diseases showed an increase in the death rate, probably for the reason given above. The decrease in typhoid mortality can doubtless be accounted for by the increase in the frequency of vaccination for this disease, this in turn being partly due to public education and partly to military vaccination being emulated by the civilian population.

RATIONAL ORGANOTHERAPY.

Owing to the concatenation and mutual interdependence of the glands of internal secretion it becomes increasingly difficult to prescribe rationally for disease depending on diseases or disorders of these bodies and a sort of polypharmacy is for many the only index to treatment in the hope that the organism will appropriate just what it chiefly needs. This plan might answer if organotherapy was limited to deficiency diseases, but several of its products have an independent physiological action and must therefore be left out of any mere feeding proposition. Again the status of the sexual glands is dubious, for we hastily assume that one sex cannot possibly benefit from the genital products of the other, although it is physiological for the female to absorb the testicular secretion of the male and the male fetus and the male nursling must partake of the internal secretions of the mother.

Houssay in the *Revista de la Asociación Médica Argentina* for April makes a praiseworthy attempt at a rational organotherapy in seeking to isolate certain groups of activities and indications. Simplest of all is the substitutive or supplementary theory. Whenever as a result of disease, injury, or operative removal of an organ deficiency symptoms develop, the subject should receive the product of the corresponding organ of some animal. Ovarian substance is the chief representative of this class. The conditions differ when thyroid substance is used in congenital myxedema, acquired myxedema, operative thyreopriva, etc. Thyroid substance is more than a mere food, for it has a pronounced independent physiological action on these subjects which is either of no benefit or harmful for other subjects. The author terms this action homostimulant and homoregulating; but has to admit that in certain affections in women ovarian extract shares in this property with thyroid substance (even if devoid of a true physiological action). For example, the action of ovarian extract on the menses is something more than substitution. When thyroid substance shows its ability to influence favorably the function of the hypophysis or ovary such activity is termed by the author heterostimulant. Conversely the product of one gland may inhibit the overaction of another gland, a doubtful example being the power of mammary gland substance to check overaction in the ovaries when such overaction is held responsible for the development of uterine fibroids. This the author terms the inhibitory action. He does not go very far into the province of these two activities (heterostimulant and inhibitory) because they lead into deep water, and it is unprofitable to speculate on the interrelations of more than two glands at a time. Last of all is symptomatic organotherapy, which deals with physiological action of adrenalin and pituitrin. These substances are nothing more or less than drugs, although under certain conditions they can doubtless fill any of the rôles of organ extracts already mentioned. Their substitutive and homostimulant action, however, seems somewhat vague and inconstant. Adrenalin is of very limited value in Addison's disease, and this is true of pituitrin in destruction of the hypophysis, although in mere hypofunction these substances must necessarily be useful.

FRUITARIANISM.

In the equatorial region fruits may form the chief source of nourishment, the most extensively used as staples including the banana, fig, date, etc. In the subtropical regions fruits abound side by side with other food classes, and here the hygienist must discriminate as to the amount of fruit advisable in a mixed diet. In the temperate zones excessive consumption of fruits, when fresh, as a staple of diet is impracticable for several reasons, but they are used extensively in desiccated form, in preserves, etc.

The late Dr. Luis M. Cowley of Havana wrote an article on fruitarianism (*Revista Medica Cubana*, June) not long before his death. "Fruit cures"—for example, the grape cure—go back to antiquity. This use of fruit, however, is not dietetic in the ordinary sense. Whosoever eats fruit as a preponderant article of diet soon learns that it has manifold disadvantages, especially in childhood. Because of the exquisite flavor and refreshing quality of fruit the child is naturally attracted to it and will eat it in excess. The bowel disorders which are apt to follow its use can of course be explained in part by infected dirt and dust (food intoxication from unripe fruit, cherries, etc., has apparently

been traced in some cases to the *B. prodigiousus* on the surface). Much must depend on the evolution of the fruit—whether extremes of heat, cold, humidity, etc., have interfered with normal maturity. Certain kinds of fruit, as oranges, grapes, and ripe bananas, are so bland that they can be eaten freely. Others are laxative, some are astringent, while a few, like the strawberry, have for many persons some specially irritating, if not toxic property.

With some dietetic authorities nuts are classed as fruits, but the fat content of the former should make of them a radically different food class. Fresh fruits are not necessarily eaten raw, for some are improved by cooking. Where fruit is a staple it is usually eaten both raw and cooked, which helps to vary the monotony of the diet.

Only a brief study of fruitarianism is needed to convince one that fruits as a dietetic article may be greatly abused. In hot countries fruit after lying on the ground readily distributes animal parasites, and in our Southern States such fruit has aided in spreading hookworm disease. Insects also deposit their ova upon fruit so that the latter may become a source of peril. In such cases it is the sugar in the ripe fruit which first attracts the insects. This problem differs from that in the Northern regions when certain insects attack green fruit and interfere with its development (windfall apples, cherries, etc.). In the latter case myiasis never results, but various kinds of parasitism can follow the ingestion of fruit which is covered with larvæ. The scolices of the echinococcus have often been found on pears, while the creeping fruits have been plausibly accused of transmitting typhoid fever, dysentery and cholera, as a result of exposure to human dejections. The problem of the danger of dirty fruit in city stalls has been dealt with to some extent by legislation, and screening from flies is obligatory in some cities. In refined households fruit is not only washed well, but often peeled before being eaten.

Fruit is recommended especially for the rheumatic, gouty, arteriosclerotic (preliminary period), and numerous other classes of invalids, for its content of organic acids. Curiously enough, it appears to have value in chronic diarrhea and even irritable stomach, although it would seem to be contraindicated. The apparent value of fruit in constipation is known to the public. Where there is danger of deficiency disease, as in the case of bottle fed infants, sailors, etc., the value of fruit juices is also well known. Hence certain classes of subjects profit by being fruitarians to a considerable extent, but exclusive fruitarianism is a chimera for many reasons. Exotic fruits are always expensive—even the banana delivered in the Northern States is not always cheap when reckoned by calory cost.

Beriberi in Brazil.

The Brazilian literature on this subject is extensive, especially productions of medical men in Bahia. From 1877 to 1885 many graduation theses were devoted to this affection, although since that period but few have appeared. Some of these theses are really valuable productions. In 1916 Dr. de Almeida wrote a monograph on the subject, reviewed in the *Brazil-Medico* for April 21, in which all the Portuguese literature of Brazil is digested. While very prevalent in North Brazil, in the lower Amazon Valley, the disease also occurs in Rio and Sao Paulo. In the first named region it occurs in epidemic incidence, the term epidemic being used advisedly and not as equivalent to endemic. The great falling off in the literature of the disease in Northeastern Brazil, already signified, has no bearing on the frequency or infrequency of the malady, as there are material factors which militate against the publication of medical periodicals and transactions. The States in this portion of Brazil are making very slow progress, the climate is notoriously unhealthy, and general business is much below normal. The amount of beriberi in the army and navy should give some idea of the actual prevalence of the disease. Here, however, it is often confused with paludism, ancylostomiasis, ordinary worm disease, etc., to such an extent that doubt has been expressed as to the existence of beriberi in the service. As is known, however, we have in quinine and thymol, two drugs which should be able to disclose the existence of beriberi by curing the other maladies. Surely it is not seriously claimed that the plasmodium, hookworm, etc., can set up true beriberi; although the quasi epidemic diffusion of the latter might suggest a parasitic cause. It is an open question whether these ailments predispose to the disease. Not much is said of diet, but if beriberi can be due to a regimen of polished rice it should readily appear under similar unbalanced and defective elimination. Clinically the affection is a polyneuritis of a characteristic type. In the apparent absence of a definite food causation Brazilian beriberi appears to be beyond the domain of a simple direct treatment.

The Food Value of Milk.

Although views with regard to the food value of milk are fairly definite, that is, the majority of medical men are agreed as to its great importance, there still are those who believe that the use of milk has not been an unmixed blessing. Dr. Harry Campbell, writing in the *Lancet* of April 1, 1916, offers the opinion that the child, as distinguished from the babe, does not need milk and would not suffer greatly if wholly deprived of it. He points out that milk, affording as it does a peculiarly favorable soil for the growth of germs, has carried disease and death to thousands of children. He argues that it is only since man first domesticated the cow and goat, and this from the point of view of his evolution was but as yesterday, he has been supplied with any milk other than human, and it is absurd to suppose that before that time his health suffered from the lack of cow's or goat's milk. Even to this day many peoples are without any. Campbell does not make the point that dairy milk is a useless food for man, but merely that it is not essential to him after the nursing period. Its chief value to the human race, he says, is as a source of butter and cheese, two highly concentrated and agreeable foods, admit-

ting of prolonged storage. He, therefore, thinks that it would be wise during the period of war, at least, to reduce the consumption of milk to a minimum, and to make as much butter and cheese as possible, especially the latter, on account of the large amount of protein it contains.

Remarkable Unanimity of Expression by Reviewers.

The book on cancer by Dr. Bulkley, which appeared a few months ago, has received considerable notice from reviewers, not always, as may be readily understood, favorable. Surgeons and pathologists do not as a rule regard with approval the medical theory of cancer which looks upon the condition as a general disease of metabolism with local neoplastic expression. But there is a paragraph in the book, in which the action of the New York City Commissioner of Health in urging the detestable practice of biopsy is condemned, that has received the enthusiastic and unanimous approval of the reviewers. In the latest notice brought to our attention, published in *Medicine and Surgery* for July, the reviewer, after some rather unfavorable general comments, says: "However, there is one statement in the book with which the reviewer can agree —namely, that the New York Board of Health is doing a very dangerous thing in offering to diagnose biopsy material from a suspected malignant." Some day perhaps, after Congress has passed the prohibition amendment to the constitution, after strap-hangers in the street-cars are given seats, and after all the restaurant cooks have had a bath, whoever is responsible for this fearful blunder may find time to question those who know something of the subject and learn that by his ignorant obstinacy, if he has persuaded others equally ignorant to follow his urging, many innocent women have been condemned to the horror and misery of death from cancer.

News of the Week.

Quarantine Station in the Philippine Islands.—President Wilson has signed an executive order setting aside and reserving the Island of Cauit, Province of Cebu, Philippine Islands, for the use of the Quarantine and the Marine Hospital Services. This island is now being used by the United States as a quarantine station.

Medical Care of Injured Federal Employees.—A Public Health Report of July 20 calls attention to an Act of Congress which provides for the medical care of injured Federal employees. This act is known as the "United States Employees' Compensation Commission" and creates a commission to see that the provisions of the act are carried out. In accordance with these provisions, civil employees of the United States who are injured while in the performance of their duties shall be furnished, upon application and without personal charge, reasonable medical and surgical treatment by all medical officers at first, second, and third class relief stations of the service, in accordance with certain prescribed rules set forth in the act.

Drink As a Cause of Homicide.—According to the State Department of Health, 24 per cent. of all the homicides in the State of New York, outside of the City of New York, were owing to the use of alcohol. This statement is based on information furnished by the coroners throughout the State. During the year 1916 there were 128 cases of homicide in the State, outside of the City of New York; in 36 of these liquor was said to be the cause of the crime. The Secretary of State also informed the department that 96 per cent. of all the revocations of automobile licenses were on account of intoxication.

Impure Food Condemned.—According to reports filed with the Department of Health of New York City, 219,963 pounds of foodstuffs have been condemned within the last week by the Bureau of Pure Foods and Drugs. It is said that the retail value of this food was $30,000.

Dr. George D. Stewart of New York City is at the Mayo Brothers' Sanatorium, Rochester, Minn., where he was operated on for goiter on May 24. The operation is reported as having been successful.

Dr. Saxton Pope of San Francisco has been appointed surgeon in chief of the San Francisco Emergency Hospital service to succeed Dr. Alanson Weeks, resigned.

Dr. Raimundo Menocal, a noted surgeon of Havana and Secretary of Sanitation in the Cuban Government, died on Tuesday of this week of disease of the heart.

Site for Country Tubereulosis Hospital.—Monmouth County, N. J., has purchased a farm of 138 acres near Freeport for $7,500, which is to be used as a site for a tuberculosis hospital.

Submission to the Health Department Required.—At a recent meeting of the Board of Health of New York City the following new section of the Sanitary Code was adopted, to take effect immediately: "No public dispensary where communicable diseases are treated or diagnosed shall be conducted or maintained otherwise than in accordance with the regulations of the Board of Health." Under this section the Department of Health expects to compel dispensaries either to give up their departments for the treatment of venereal diseases or to submit to control by the Department of Health.

Annual Report of Mount Sinai Hospital.—This report, which has just been issued, shows that the expenses of this institution last year were $533,057, or $47,489 in excess of receipts. There were 8,832 patients admitted to the hospital, 6,120 of whom received free treatment. The report contains the detailed account of the expedition to Mexico for the study of typhus fever under Drs. Peter K. Olitsky, Bernard S. Denzer, and Carlos E. Husk.

Labor Sanitation Conference of Greater New York.—This is the name of a new organization which has its headquarters at 32 Union Square East. It comprises many labor unions and is to maintain an intimate relationship with the Department of Health. Its purpose is to provide ways and means for labor to express its sanitary needs, and to establish direct official communication with official sanitary agencies.

Obituary Notes.—Dr. Edward George Rave, a graduate of New York University, in 1876, died at his home near Hicksville, L. I., July 23, aged 74 years. He was for thirty-five years chief physician of the Long Island Railroad, and at one time

vice-president of the College of Pharmacy of Brooklyn.

Dr. SARAH A. FRENCH BATTEY, who retired from active practice seven years ago, died at her home in New York City, at the age of 56 years. She was a graduate of the Women's Medical College of New York City, in 1889, and formerly a member of the New York Academy of Medicine and the Medical Society of the County of New York.

Dr. EDWARD BARNWELL BANGASSER and Dr. SIGMUND INDA, both graduates of the Buffalo Medical College, in 1913, and both of Buffalo, were accidentally killed in an automobile accident near Buffalo, on July 18.

Dr. GEORGE E. BUSHNELL died after a lingering illness at his home in Rochelle, Ill., on July 10, at the age of 62 years. He was a graduate of the Hahnemann Medical College and Hospital, Chicago, in 1885.

Dr. JOHN C. MURPHY, who practised medicine in Hinesburgh and later in Richmond, Vt., died in the hospital at Fort Ethan Allen on July 19, of purpura hemorrhagica. Dr. Murphy was born in 1882, was graduated from the University of Vermont Medical College, in 1905, and was recently called to the United States service, receiving an appointment in the 18th Cavalry.

Correspondence.

OUR LETTER FROM PARIS.

(From Our Regular Correspondent.)

FOURTH OF JULY IN PARIS—CONSOLIDATION OF ARMY AND RELIEF WORK—PAUCHET'S ANESTHESIA—A TRIO OF NICKNAMES.

PARIS, July 10, 1917.

I PRESUME this is the first time in history that Paris has celebrated the American Independence Day. But the occasion was an unusual one and might well have been made a day of rejoicing, even had it been any other than the Fourth of July; because for the first time, American soldiers fully equipped for warfare, paraded her streets to fight by her side in the cause that has become that of the whole world against the German pretentions.

Never were there such crowds as filled the streets from the barracks where our soldiers were housed to Picpus Cemetery, where by the side of the tomb of Lafayette were spoken the words that pledged "our fortunes, our lives, our sacred honor" to that great day of victory, when the Hun shall be compelled to accept the terms of peace proffered him by his conquerors.

Our boys, four abreast, hundreds strong, with swinging stride marched between two solid masses of seething, shouting humanity, the whole length of the route of about three miles. Their hats, belts, guns, pockets sprouting with the flowers showered upon them at every step, with laughing girls and women clinging to the arms of those forming the outer row. The whole city is decked with the Stars and Stripes, and great was the flow of oratory in many places, including the Sorbonne.

The Government had printed leaflets giving a résumé of American history, and statistical information, and her reasons for joining in this war, which were read and distributed in all the schools of France.

The boys left their barracks last evening for the rendezvous at the front, where our forces are to concentrate.

Colonel Bradley, head of the Army Medical Corps, with all his force of aids, is busy at headquarters, examining applicants for medical service; Colonel Murphy is consolidating the different units of relief established in and about Paris into his new Red Cross organization, and a host of men are trying to get out from under and into the army medical service.

There was a great deal of duplication and expenditure of unproductive effort in the American organizations in Paris; and the work being accomplished by Colonel Murphy in their consolidation will not only save an enormous sum of money, but will result in more good being accomplished.

I learn from those in authority that definite plans have been adopted to educate the men on the aspects of the social evil in France, and certain rigid regulations are in force to control the men and protect them as far as possible by prophylaxis. In case one is taken by venereal disease and cannct show by his card that he has appeared for preventive treatment, his first punishment is loss of a month's pay, and this may be followed by court martial. The blow struck at their pocketbooks, I imagine, is the one that will be universally effective.

I recently had the pleasure of meeting Sir Arbuthnot Lane of London, and Sir Berkeley Moynihan of Leeds, two of England's most celebrated surgeons, who came in Paris to study the system of regional anesthesia, practised by Professor Pauchet, who sent for me to meet them at his clinic, to make certain of some one who could speak English.

The visitors were much impressed by the effectiveness of the anesthesia, as well as by the dexterity and ease with which Pauchet operated in five stomach cases in less than two hours, controlled wholly by this form of anesthesia, and expressed the opinion that its employment ought to be brought into general use.

It is a fact that this improved form of anesthesia has gained many adherents and is coming very generally into use among the army surgeons. There are none of the major or most delicate of the minor operations which may not be performed under it, and it possesses many advantages over general narcosis, especially in cases where it is important to conserve all the vital forces of the patient.

The French soldiers are called "poilus"; the English are "Tommies"; and upon the arrival of the American troops quite a competition grew up between the names of "Teddies" and "Sammies" by which to designate them; and the Teddies were rapidly gaining the ascendancy when General Pershing settled the matter by stating to the newspaper correspondents, who regularly call upon him, that, as the wards of Uncle Sam, the appropriate name for our soldiers would be "Sammies."

146, AVENUE DES CHAMPS ELYSÉES.

Sporotrichosis in a Tuberculous Subject.—Bizard and Blum relate the case of a subject with visceral and articular tuberculosis who developed what was to all intent a tuberculous lesion over the wrist—a socalled verrucous tuberculide. Special study of the latter proved it to be a sporotrichosis.—*La Presse Médicale.*

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 19, 1917.

1. The Use of the Precipitin Test for the Detection of Human Blood in Criminal Trials. Wm. Royal Stokes and H. W. Stoner.
2. Syphilis in Internal Medicine. William P. Boardman.
3. A Comparison of Several Methods of Specific Early Treatment of Acute Anterior Poliomyelitis. Helmuth Ulrich.
4. Technique and Interpretation of Dental Roentgenograms. Herbert McIntosh.
5. Preparation of Animal Food Proteins for Anaphylactic Tests. R. P. Wodehouse and J. M. D. Olmsted.
6. Body Types in Epileptics. Morgan B. Hodskins.

5. Preparation of Animal Food Proteins for Anaphylactic Tests.—R. P. Wodehouse and J. M. D. Olmsted state that the method used for making these preparations is the same as that used in the preparation of the vegetable food proteins but modified so as to be adaptable to meat and fish, since it yields the proteins in a highly concentrated form, and the preparations made by it are anaphylactogenically representative of the foods in the form in which they are usually eaten. In general the method is as follows: The material is ground very fine in a meat chopper and heated with approximately two volumes of water to 90° C. for one-half hour. The liquid is then strained off through cheesecloth and allowed to stand for a few days (using toluol as preservative); at the end of this time fats, if any, collect at the surface and are removed, the liquid is decanted from the sediment which usually settles out, and is filtered. Filtration is often slow and difficult on account of the gummy nature of the extracts. However, it is always possible to obtain eventually a clear or slightly opalescent filtrate. This filtrate is then exposed in large evaporating dishes upon the warm water bath before an electric fan until nearly dry (with chloroform as preservative). The result is usually a more or less hygroscopic gummy substance. This is then dissolved in as small an amount of water as possible and added to three or four volumes of 95 per cent. alcohol. This always causes the formation of a gummy or even syrupy precipitate which, probably on account of the hygroscopic nature of the peptones contained in it, shows a great avidity for water. Dehydration, however, can be completed by boiling and triturating in absolute alcohol, acetone and ether. The thorough washing given in these reagents also serves to remove all fats, oils and waxes. In removing the proteins from the baths of alcohol, acetone and ether, centrifugation is used in preference to filtration, since the process can thus be completed in much less time and with much less exposure to the atmosphere. This is important on account of the extremely hygroscopic nature of most of these preparations which in the presence of alcohol or acetone take up water so freely that an exposure of a few minutes is sufficient to render them liquid again; in this regard the animal food proteins show strong contrast to the vegetable food proteins. After the last ether bath the protein is removed to a sulphuric acid desiccator and drying is completed *in vacuo*. The result is always a friable powder which is readily soluble in water or dilute alkali.

The animal foods which we have so far prepared by this method are the following:

Pork, beef, lamb, chicken, haddock, cod, salmon, halibut, mackerel, lobster, oyster, clam (long necked). In making the preparation from oysters alone the general method was deviated from in that heat was not applied. The oysters were simply ground and macerated in cold water for several days (with toluol as preservative). This was deemed advisable because oysters are eaten raw as often as cooked.

New York Medical Journal.

July 21, 1917.

1. The Medical Service in the British Army. T. H. Goodwin.
2. The Psychopathology of Prostitutes. Morris J. Karpas.
3. The Value of Sputum Cultures in the Diagnosis of Pulmonary Tuberculosis. John A. Roddy and David R. Brewer.
4. Human Anthrax. Joseph B. Bissell.
5. The Clinical Significance of a Fecal Analysis. Louis Winfield Kohn.
6. The Intravenous Use of Calcium Solutions as an Aid in the Treatment of Tuberculosis. Thomas J. Beasley.
7. Acute Appendicitis. Alexander Nicoll.
8. The Treatment of Locomotor Ataxia by the Maloney Method. Heinrich F. Wolf.

5. The Clinical Significance of a Fecal Analysis.—Louis Winfield Kohn states that test diets must be used for this purpose. An essential knowledge of a normal stool is necessary before it is possible to distinguish abnormal stools. He employs the Schmidt-Strasburger diet with some modifications:

Breakfast—Milk, tea, or cocoa (two cups), one soft boiled egg, two slices of bread and butter, and cereal—a small plate of strained oatmeal.

Dinner—A quarter of a pound of rare beef or chop well cut up, a large helping of mashed potatoes, and bread and butter.

Supper—One plate of soup, two soft boiled eggs, bread and butter. Cereal if desired.

This diet should as a rule be administered for one or two days in succession and sometimes longer, so as to obtain, if possible, a stool originating entirely therefrom. The second or third stool following the ingestion of the test diet will as a rule constitute the material desired for test purposes, particularly in those instances where a laxative has been given at least ten hours before the test diet was taken. In those cases where a laxative is contraindicated because of untoward symptoms as in intestinal catarrh or diarrhea of functional or organic nature or for other reasons, if not certain that the poper specimen of stool is obtained in the earlier evacuations, either extend the duration of the test dietary for a day or more, so as to give more time wherein additional specimens may be passed, or there can be administered at the beginning with the test diet certain coloring agents, harmless in action, which will serve as a marker in differentiating the preceding food waste from that of the test diet waste. After considering the color, reaction, consistence, quantity of residue, possible constituents, and odor of a normal stool, Kohn proceeds to the constituent inspection. Detailed macroscopical inspection by means of the use of a walnut-sized piece of excrement ground up in a small glass or porcelain mortar with a few c.c. of distilled water gradually added, and spread on a flat plat in a thin layer, with a dark background will give the correct method of procedure. There will be pin-head-sized debris, and cereal will appear as red brown pointlike remains, as will cocoa nibs. Vegetable or fruit will be small seeds, but in a normal stool no other signs will be found. In pathological specimens, on the other hand, many other ingredients may be noted. Numerous connective tissue and tendon remains from the chopped meat will appear as whitish yellow threadlike substances of solid consistence, and will speak for gastric disturbance as achylia gastrica, cancer extensive enough to have despoiled proper HCl and peptic secretion, or functional derangement involving secretion of motility either separately or jointly. An ill-acting nervous system may be back of this and be the underlying cause. Acetic acid may be employed on these shreds in order to determine their character. If mistaken for mucus, the acid will dissolve connective tissue, but applied to mucus causes it to coagulate. Muscle fibers resemble colored splinters of wood, and point to a disturbance in intestinal digestion, most probably a defect in tryptic activity, due to inefficient trypsin secretion or to a lack of bile secretion. Acute or chronic pancreatitis, cholecystitis, or cholelithiasis, or other diseases of the gallbladder or adjacent ducts, may be responsible for the nondigestion of muscle fibers. Potato remains in the stool as glassy, transparent granules and may be mistaken easily for mucus. This potato remains signify a disturbance in amylotic intestinal digestion, and the underlying condition may be functional or organic in nature. Fat remains may often show in the color of the stool, which will then be light or claylike and of putty consistency. The less fat there is in the stool the darker is its color apt to be, and *vice versa*. A deficiency of lipase or fat ferment in the pancreatic secretion or a lack of proper lipolytic action may account for this condition. Absence of bile will also produce nonfat digestion. Thin mucilaginous mucus is always present in normal stool, but when in any quantity, it has pathological significance. It may appear as flakes, indicating catarrhal intestinal disturbance. The smaller the flakes the greater the probability of catarrhal disturbance in

the upper portions of the large bowel, as the cecum, ascending colon, and transverse colon, but should the stool at the same time be liquid, then a hypermotility of the small and large bowel may exist and the flakes might come from the small intestine. The larger the mucus flakes, the nearer their origin in the lower portion of the large intestine. Flakes of pus indicate some ulcerative process. Blood, of course, means hemorrhage.

Journal of the American Medical Association.

July 21, 1917.

1. Problem of Unnecessary Operations and of Incompetent Surgeons. Arthur Dean Bevan.
2. The Age and Seasonal Incidence and Communicability of Acute Poliomyelitis, as Shown in the Epidemic in New York City in 1916. Charles Herrman.
3. Results of the Recent Epidemic of Poliomyelitis in New York State. Henry L. K. Shaw.
4. Fatigue and Exercise in the Treatment of Infantile Paralysis: A Study of One Thousand Eight Hundred and Thirty-Six Cases. Robert W. Lovett.
5. Treatment of Impetigo Contagiosa. Howard Morrow.
6. An Analysis of Forty-Three Cases of Skin Cancer. Samuel E. Sweitzer.
7. Sanitation in the Trenches (Concluded). Champe Carter McCulloch.
8. The Abortive Treatment of Wound Infection: Carrel's Method—Dakin's Solution. William O'Neil Sherman.
9. Perleche. J. E. Lane.
10. Investigations as to Frequency of Metastatic Eye Infections from Primary Dental Foci: Preliminary Report. Joseph M. Levy, Assisted by F. C. Steinbugler and Marshall Carleton Pease.
11. The Crucial Test of Therapeutic Evidence. Torald Sollmann.

2. The Age and Seasonal Incidence and Communicability of Acute Poliomyelitis, as Shown in the Epidemic in New York City in 1916.—Charles Herrman. (See MEDICAL RECORD, June 16, 1917, p. 1068.)

3. Results of the Recent Epidemic of Poliomyelitis in New York State.—Henry L. K. Shaw. (See MEDICAL RECORD, June 16, 1917, p. 1069.)

4. Fatigue and Exercise in the Treatment of Infantile Paralysis: A Study of One Thousand Eight Hundred and Thirty-six Cases.—Robert W. Lovett. (See MEDICAL RECORD, June 16, 1917, p. 1069.)

9. Perleche.—J. E. Lane announces that he does not know whether this condition is a rare one here, whether it is rarely seen because it causes little inconvenience and physicians are not consulted for it, or whether no one has thought it worth while to describe it because it is of so little consequence. In New Haven, Conn., it appears to be quite common, as he has seen from forty to fifty cases in a year and a half. Although occasionally found in adults, this condition is pre-eminently one of infancy and childhood. It is an affection of the labial commissures, almost always bilateral, and usually rather closely limited to the commissures. As it progresses, the process extends for a varying distance toward the center of the lips, and usually extends a little on to the skin surface and on to the true mucous membrane of the inner side of the lips. At the beginning of the disease the epithelium is smooth and whitish, with a mother of pearl tinge. As it progresses the epithelium becomes macerated, a little thickened, and loses most of the mother of pearl color. Small transverse fissures appear, which show a red base, if the lips are stretched, but which do not reach the lower layers of the epidermis, and which do not bleed readily even if rubbed. In some cases there is slight erosion, but the surface is ordinarily not denuded. According to Lane this condition is not an ulceration, and there is no swelling of the lips connected with it, and little or no inflammatory area around the lesions. If treated the disease is usually cured in two or three weeks, while if left to itself there is usually spontaneous cure in a month or so, unless there is reinfection, but in some cases it is of indefinite duration. In the mild cases of perleche there are no symptoms at all. In the fully developed cases there is a slight feeling of irritation which causes the child to continually run the tongue over the lesions. It is from this sign that the disease derives its name. There is never enough discomfort to cause the child to rub or pick the lesions. According to investigators, perleche is caused by the *Streptococcus plicatilis*. It is a highly contagious disease, and common drinking vessels are the most frequent vehicles of transmission. Kissing, the use of common pencils, handkerchiefs, and towels, are also other means of contagion. While this condition may be confused with other common skin lesions, syphilis is the chief condition for differential diagnosis. The lesion of perleche and the mucous patch strongly resemble each the other. A dark field or the Wassermann clears up this difficulty. Treatment consists in prophylactic measures. Prompt cure is effected by painting the lesions daily or every other day with a 10 per cent. solution of silver nitrate, a diluted tincture of iodine, and the copper sulphate of the alum pencil. Sabouraud recommends in addition an antiseptic mouth wash, but this is hardly needed in most cases. Auché found a 5 per cent. solution of chromic acid efficient in the few cases that resisted the milder treatments mentioned.

The Lancet.

June 30, 1917.

1. The Cavendish Lecture on a Day's Work. Andrew McPhail.
2. Reflections on the Limitations of Vaccine Treatment. Robert J. Rowlette.
3. A Variety of War Heart Which Calls for Treatment by Complete Rest. Archibald E. Garrod.
4. An Analysis of Cases of Tetanus Treated in Home Military Hospitals During August, September, and Part of October, 1916. David Bruce.
5. The Detection of *Entameba Histolytica* and Its Cyst: Notes on the Technique for Conducting Examinations of Human Feces. A. C. Inman.
6. The Treatment of "Trench Rheumatism" and Allied Conditions by Colloidal Sulphur. John D. Comrie.
7. The Effect of Vaccinia on the Well-being of Children as Judged by Their Reaction to Subsequent Infections. J. Parlane Kinloch.
8. On the Sole Use of Reverdin's Needle. Victor Bonney.
9. Ultra-Violet Radiation: A Spectroscopic Investigation of Some Sources of Ultra-Violet Radiation in Relation to Treatment by Ultra-Violet Rays. Charles A. Schunck.
10. Zinc Waters—Their Potability and Germicidal Effect. H. H. Scott and W. W. Jameson.

2. Reflections on the Limitations of Vaccine Treatment.—Robert J. Rowlette states that the experience of the present war puts beyond all question the value of preventive vaccine inoculation against the enteric diseases. In ordinary home medicine, too, experience has shown the efficacy of this method, particularly in the results of inoculation against recurrent catarrhs of the respiratory organs. A vaccine is not a new ally in the fight between the parasite and the host, assisting the latter to destroy the former; it is only a stimulus to the body to exert to the full its natural powers of resistance and protection. Of itself it can do nothing. The specific action of vaccines is different from the same action of drugs, as vaccines are only active against bacteria mediately in that they stimulate the production of bodies which possess special destructive powers toward particular organisms. Vaccines are, therefore, in a sense, only specific at second hand. In extreme bodily exhaustion this stimulation cannot be produced and the vaccine fails; moreover, in cases where it does not fail, its success is proportional to the power of the tissues to respond to its call. To expect uniform success from vaccine is, according to Rowlette, as unreasonable as to suppose that the body can never fail in its defense against attack. It follows that the cases in which the best results may be expected from vaccine treatment are those in which (1) the body has not yet lost its natural power of resisting infection, and (2) in which there has not been great tissue change. With reference to the scope of vaccine treatment, Rowlette states that bearing in mind the limitations here given, vaccines may be employed in every infective disease due to bacterial origin in which the bacterial cause can be discovered. The acuteness or chronicity of the condition is beside the point, though it may have much to do with the method of administration. Since vaccines are specific, a correct bacteriological diagnosis is necessary. As a result, many times a mixed vaccine has to be employed. No greater misconception can exist than the notion that vaccine treatment is incompatible with the use of other methods of treatment. On the contrary, the best results from this method of treatment are rarely obtained unless full use is made of whatever concomitant measures experience may offer. Few drugs are inimical to the action of vaccines, except those depressing the natural resistive powers of the body, which are therefore contraindicated when vac-

cines are to be employed. Of these the only drug in common use is alcohol, the employment of which in septic diseases should by now be obsolete except under rare conditions. In surgical conditions, operative measures, or anything else that surgical knowledge suggests should, of course, be practised when required. The only precaution to be observed is to withhold inoculations in immediate proximity to any manipulative proceeding which may give rise to autoinoculation. Otherwise vaccines, of course, act in their normal manner of increasing the protective power of the body. Rowlette states further that much misjudgment of vaccine treatment by the profession has been due to the treatment being so largely committed to men unaccustomed to clinical work. It cannot, however, remain in the hands of a special class. As an important branch of therapeutics it must become familiar to every practitioner. No student can be considered to have gained a sufficient knowledge of therapeutics who has not become familiar with both the doctrine of immunity and the practice of immunization. In this way vaccine treatment will come to take its proper place—not as something peculiar and special, but as an essential part of the treatment of infective disorders of bacterial origin.

British Medical Journal.

June 30, 1917.

1. The Technique of Nerve Suture. S. Alwyn Smith.
2. Observations on Chloramines as Nasal Antiseptics. E. K. Dunham and H. D. Dakin.
3. Clinical Notes on a Case of Fibroid Disease of Bursæ. Manfred Morris.
4. Bronchoscopy in the Treatment of Asthma. W. S. Syme.
5. A New Culture Medium for the Gonococcus. D. Thomson.
6. A Note on the Value of Brilliant Green as an Antiseptic. C. H. S. Webb.
7. Flies and Bacillary Enteritis. William Nicoll.
8. The Croonian Lectures on Adaptation and Disease. J. G. Adami.

5. A New Culture Medium for the Gonococcus.—D. Thomson states that there has been recently a great need for a satisfactory culture medium for the gonococcus, not only for diagnostic purposes, but also for the manufacture of gonococcal vaccines. He points out the defects in the media now employed, which he gives as follows: The growth is by no means profuse; the medium is not clear, and the gonococcus growth is not seen clearly; for vaccine purposes blood agar is very unsatisfactory because the water of condensation at the bottom of the tube contains a dark brown débris of broken-down red cells, and the gonococcus emulsion mixed with the above is colored and full of débris which renders it difficult to standardize; also, the emulsion obtained from the trypsinized pea extract cultures, though yellow in color, is quite unsatisfactory for the same reason, and does not appeal to the writer as a natural one, because by subculture the germ may lose its antigenic properties and become less potent for vaccine purposes. Thomson first removed the red corpuscles from the human blood and used the plasma. It was found that the gonococci grew as well on plasma agar in the proportion of one of plasma to four of agar as they did when the corpuscles were present. The growth, however, was not profuse, but experimentation corrected this by the use of the following medium: (1) Prepare nutrient agar (2.5 per cent.) in the ordinary way with bouillon and Witte's peptone (1 per cent.), and render it + 6 acid. (2) Instead of adding to this 0.5 per cent. sodium chloride, as is usual, add all the salts natural to the human blood (as in Ringer's solution)—namely: Sodium chloride 9 grams, calcium chloride 0.25 gram, and potassium chloride 0.42 gram per liter. (3) Add glucose 2.5 per cent. This addition in some manner renders the growth much more profuse. (4) The nutrient agar with salts and glucose is then tubed, about 4 c.c. being added to each test tube. (5) The sterile tubed agar is melted in boiling water, and after allowing it to cool to about 50° C., add 1 c.c. of human plasma to each tube and mix thoroughly by rolling the tube between the palms. Allow the medium to solidify in a sloping position. For plating, the contents of three tubes may be added to a Petri dish. To obtain human plasma the following method was employed: In all venereal hospitals blood is frequently drawn off from the veins of syphilitic patients into test tubes for the Wassermann test. In consequence, the source of human plasma is always available. When a supply of plasma is required, draw off three-quarters of a test-tube-full of blood with all sterile precautions. Have a sterile centrifugal tube ready, containing 2 c.c. of a 2 per cent. solution of sodium citrate. Fill up this centrifugal tube with the freshly drawn blood. Plug it with a sterile cork (keep the corks in alcohol and burn off the alcohol before plugging) and centrifugalize. When the corpuscles are driven down, pipette off the supernatant plasma with a sterile 10 c.c. pipette and add 1 c.c. to each tube of agar as indicated above. If the test tube of blood is three-quarters full there is sufficient left for the Wassermann test after filling the centrifugal tube. It is immaterial, according to Thomson, whether the patient is being treated or not with arsenic or mercury. This medium is beautifully clear and transparent, and it is as natural as possible. The growth is very profuse, even after eighteen hours, and the emulsion obtained is white. When counting a vaccine, a culture not more than one day old should be used, since after this time many of the gonococci begin to autolyze, and the count would be too low. After making up standard emulsions of, say, 1,000 and 500 million gonococci per c.c., Thomson states that the strength of other emulsions can be estimated directly by diluting and matching them with the standard.

7. Flies and Bacillary Enteritis.—William Nicoll, after thorough experimentation, states that it has been fairly conclusively proved: That under experimental conditions flies can readily carry and disseminate certain pathogenic organisms. That these organisms are not infrequently met with in flies under natural conditions, particularly in association with outbreaks of infectious diseases. That organisms producing bacillary enteritis are to be met with not infrequently in flies under natural conditions. That a considerable number of organisms resembling enteritis bacilli occur frequently in flies in the natural state, and that the utmost care is necessary in discriminating between these and the true enteritis producing organisms.

La Presse Médicale.

June 7, 1917.

Variations in Cholesterinemia During the Menstrual Cycle.—Chauffard states the prevalent opinion that the corpus luteum is a temporary organ of great importance, having very complex functions and a histological structure which suggests that of the glands of internal secretion (this was remarked as long ago as 1898). In 1911-12 the author and two others discovered in this body, in addition to lecithins, nonphosporated lipoids, especially cholesterin ethers. In other words, the corpus luteum is a structure for the manufacture of cholesterin. But fluctuations in cholesterinemia have been studied chiefly in gravidæ, while from other angles the corpus luteum of menstruation has been the object of study. Recently, however, cholesterinemia during the menstrual cycle has been studied by Gonalons of Buenos Aires. Curves plotted by him show elevation during menstruation, but in the majority of cases the maximum is about six days before menstruation, when there is a sudden rise with immediate fall; and a second rise, held during menstruation. Less common is a moderate elevation with equilibrium several days before menstruation, and a sudden rise when the latter appears. The crux of the matter lies in the ability of organs other than the corpus luteum to produce cholesterin. Gonalons believes that the latter body is formed in the adrenals, thyroid, etc., as well as the ovary. The author has never denied the existence of this possibility. The subject of interaction between several endocrine glands and fluctuations in cholesterinemia is highly complicated. The author sees dimly a partial explanation of the fact that gallstones occur by preference in women, *i.e.* their formation is favored by the hypercholesterinemia of menstruation and gestation, or in other words, by ovarian activity.

Sulphur and Eucalyptol in Skin Diseases.—Bory has for many years been interested in the systematic use of these two substances in a variety of dermatoses. Both have notable value as local applications, their action being attributable largely to antiseptic and germicidal properties. In 1907 the author conceived

the idea of injecting these substances beneath the skin. At that time colloidal sulphur had come into use as a remedy. The author's experience with it was not satisfactory, and he substituted a mixture of precipitated sulphur and oil of sesame (the latter having proved superior to liquid petroleum). In view of Gaucher's theory that psoriasis is often a paratuberculous affection, the author was the more encouraged to test sulphur and incidentally eucalyptol addition. In a small number of cases the oleaginous suspension of sulphur and eucalyptol, injected into the patients' gluteal muscles, produced an astonishing result. In some instances no local treatment was applied; while in others eucalyptol in collodion, sulphur, and calomel seemed to be useful additions. Whatever the intimate nature of psoriasis there are many data to show that it has a parasitic causal factor, which perhaps explains why it benefits under eucalyptol and sulphur.

La Presse Médicale.

June 18, 1917.

Discrete Costodiaphragmatitis in the Army.—Mouriquand describes a largely radiographic affection of such common incidence among the troops that over 150 cases were recognized in six months in two medical services. Most of them were recognized before radiography, but in a certain number the screen furnished the sole evidence. In civil practice this lesion might not cause the subject much discomfort, but it is otherwise with soldiers in a campaign, with their arduous physical duties. That this condition is readily overlooked depends largely on the unfamiliarity of the profession with the bases of the thorax. The socalled costodiaphragmatic sinus has some anatomical but no pathological status. After many efforts the author and his colleagues have developed a symptomatology for affections of the "extreme base," which in turn takes its start from a mean or average norm. A so-called basilar line extends between two costomuscular points, which are seated from 8 to 9 cm. on either side of the spine. Here the last rib is felt in contact with the sacrolumbar mass of muscles. Using this as a datum line, the author, by means of the stethoscope, locates the point at which the vesicular murmur becomes audible, and also the area of dullness on percussion. This dead space measures about 3.6 cm. in height. When it is inflamed the patient has costodiaphragmatitis, which in at least 50 per cent. of all cases is a sequel of tuberculous pleurisy. In other cases the affection is a sequel to purulent pleurisy, hemothorax, simple trauma, pneumonia, etc. The condition often coexists with advanced pulmonary tuberculosis, but naturally such cases have no place here. In the majority of the author's cases the lesion was uncomplicated. It sometimes occurs in the emphysematous, and is then very difficult to discover. In making the diagnosis the screen is of great value, but auscultation and percussion are often sufficient, because the area of normal dullness is increased upwards and the vesicular murmur correspondingly diminished. Inflammation of the costodiaphragmatic sinus is followed by adhesions, and these are largely responsible for the alterations found on physical diagnosis. These lesions tend with time to undergo spontaneous involution, but the subject is disqualified for the time being. The rational treatment comprises respiratory gymnastics and heliotherapy.

The Sensitive Achillean Sign in Sciatica, Etc.—Revault D'Allonnes states that the war has made the sciatic nerve a much-discussed structure, aside from its injuries. Simple sciatica from exposure in the trenches, sciatica as a phenomenon of malarial origin in the Balkans, psychogenic sciatica all loom up among purely medical affections. The number and variety of traumatisms involving the nerve is without limit. Our symptomatology of the nerve is being enriched day by day. The classic symptoms no longer suffice for diagnosis, because of their inconstancy. Valleix's tender points are often absent, or only doubtfully present. The same may be said truthfully of the signs of Lasègue and Bonnet. Some of the other classic signs have greater diagnostic value. Among these is the sign of Bondet (not to be confounded with Bonnet). Charcot's sign, and some of the minor criteria, possess value. Space does not permit the recapitulation of all of these phenomena. Really valuable evidence, depending on the trophic changes in the muscles and skin supplied by the nerve, appear too late to be of service in treatment. The author now gives a new sign which he holds to be pathognomonic. He pinches the tendon Achilles in order to determine the conductivity of the nerve to sensory impulses, as well as the degree of sensitiveness of the tendon itself. He has examined 110 cases, divided almost equally between medical and surgical. To begin with, if the nerve has been completely severed, pinching is followed by no results of any kind. Bilateral anesthesia occurs in various types of neuritis (polyneuritis), not only during the status, but even after slight improvement. When the latter has become considerable hyperalgesia is substituted. The same sensation appears in a nerve partly severed, and when total separation has been repaired by suture. In ordinary neuralgia (sciatica) hyperalgesia is also present in the majority of cases. In traumatic paralysis it is very rare. The rationale of the various results obtained by pinching the tendon, require coordination.

Correspondenzblatt für Schweizer Aerzte.

June 16, 1917.

Acquired Tolerance of the Heat Center to Pyretogenous Substances.—Cloetta raises the following question: Suppose that the organism is exposed daily to noxæ which excite fever, does the febrile reaction produced tend to increase, diminish, or remain the same? When we see the same temperature develop daily are we justified in the inference that the same quantity or quality of fever producing substance enters the blood daily? Is a rise or fall presumption that this amount has been increased or diminished? May there not be an acquired hypersensitiveness or tolerance which could be responsible for elevations and depressions? These questions have a marked practical bearing, but cannot be answered from either the clinic or laboratory without leaving the field of ordinary research on immunity and anaphylaxis. In other words, the conception of antibodies cannot aid in the solution of the problem. A substance must be tested which does not give rise to such. In beta-tetrahydronaphthylamin (and some of its derivatives) we have a substance which acts on the heat center and causes temperature rise. We therefore may inject daily a fixed quantity and record the readings of the thermometer. The substance must be injected into a vein and very deliberately, in order to avoid severe collateral results, as it has the property of stimulating the motor nerve centers. The temperature begins to go up in 15 minutes, reaches a maximum in one and one-half hours, and then slowly falls. Next day the animal's temperature is normal. In other words, we have brought about a single febrile movement. When a rabbit was selected for a continuous test it was found that injections made daily caused the following temperature elevations: Thus on June 14 the maximum was 0.8° C.; on the 17th it was 1.3°; 27th, 1.4°; July 5, 1.2°; 12th, 1.0 ; 24th, 1.2°. These slight variations are not significant, for the normal temperature itself is subject to fluctuations. For all practical purposes the fever was constant for the two months' experiment period as carried out on two rabbits. Hence, the heat center cannot be made more or less sensitive to this substance.

Emetine and Hepatic Abscess.—Paravicini states that not long ago emetine was used only as an emetic and expectorant. Today it is one of our most many-sided and efficient remedies. Used extensively in the United States for pyorrhea alveolaris, it has been found incidentally to be of value in psoriasis. Ipecac itself is an old remedy for amebic dysentery and the hemoptysis of tuberculosis, and emetine hydrochloride injected into the muscles for the same conditions represents an advance. In the treatment of cholera emetine has been used with 73 per cent. recoveries. The action of emetine in amebic dysentery, hepatitis, and hepatic abscess, may be nothing short of wonderful. The author reports a case of amebic infection with hepatic abscess and an intermittent type of fever cured by emetine.

Book Reviews.

THE METHOD OF ENZYME ACTION. By JAMES BEATTY, M.A., M.D., D.P.H., with introduction by Professor E. H. STARLING, M.D., Sc.D., F.R.S. Price, $1.75 net. Philadelphia: P. Blakiston's Son & Co., 1917.

THIS small monograph contains an excellent review of the general nature of catalysis and enzyme action and a new hypothesis of the processes underlying the action of enzymes upon the substrates. No attempt has been made to adduce any experimental proof of the hypothesis thus brought forward, but the whole book is suggestive and interesting to the biological chemist.

PHYSICAL CHEMISTRY OF VITAL PHENOMENA. For students and investigators in the biological and medical sciences. By J. F. MCCLENDON, Assistant Professor of Physiology in the University of Minnesota. Price, $2.00 net. Princeton: Princeton University Press, 1917.

THE application of physical methods to the quantitative study of chemical reactions is of fairly recent date, most of the work having been accomplished within the past twenty years. Despite the shortness of this period, however, the amount of valuable material which has been placed at the disposal of the physician is enormous, and our understanding of the chemical processes underlying some of the most important clinical manifestations of disease has been greatly clarified by these studies. It is necessary to mention only the question of acidosis, which was originally thought to be connected chiefly with the terminal stages of diabetes, but is now known to be a phenomenon connected with many other diseases, notably cardiac lesions and some of the nutritional disorders of childhood. The simplified chemical methods which have been devised for determining the degree of acidosis are even now finding clinical application. Our understanding, also, of the fundamental principles of dyspnea and apnea have been much helped by quantitative chemical analyses.

The whole question of the colloidal condition has been much clarified of late and many otherwise extremely obscure phenomena in medicine have been explained. The study of the relation of the degree of ionization to the rate of disinfecting action of certain well known chemicals has shown that many of these are ineffective and has led to the devising of new synthetic compounds of much greater efficiency. Even the factors underlying the artificial production of cell division, first observed by Hertwig and Morgan, and later expanded by Loeb, have received physicochemical explanations. Anesthetics, also, have been studied by these methods and useful information has been obtained. These are a few of the subjects touched upon in this admirable series of lectures by one who has made many personal contributions to chemistry. The mathematical treatment has been expurgated sufficiently to meet the capacity of the average college graduate, whose mathematical quanta usually carry a negative sign. If the physician of this generation cannot understand the simplest principles of the underlying science of his trade, it might be well for those who are educating the physician of the future to see that his mathematical knowledge extends beyond the ability to add and subtract. The information contained in this book should be made a part of the education of every medical student.

THE INTERNAL SECRETIONS. Their Physiology and Application to Pathology. By E. GLEY, M.D., Professor of Physiology in the College of France. Translated from the French and Edited by MAURICE FISHBERG, M.D., Clinical Professor of Medicine, New York University and Bellevue Hospital Medical College. Price, $2.00 net. New York: Paul B. Hoeber, 1917.

ONE of the predominating fads of the present day is endocrine gland therapy, which during the past three or four years has suffered an enthusiastic but often rather thoughtless revival. Of course, the chief trouble is that we know so little about the physiology and pathology of these organs that any rational therapy is difficult. It is true that advances are being made continually in this field, and we are gradually coming to apply and to make our preparations of the glands of internal secretion with much more judgment and reason. Gley's work on the history and physiology of these organs is well known and justly valued in its native language, so that an adequate and sympathetic translation is very welcome. It is "a concise history of the subject as well as a critical examination of the main facts on which the doctrine of internal secretions is based." Conservative, scientific, and illuminating, it points out clearly what we know in this field and, what is still more valuable, it lays down broad physiological tenets on which all our knowledge must necessarily be based. It is very gratifying that this excellent translation is now available and it should prove a popular work.

CITY MILK SUPPLY. By HOWARD NEWTON PARKER, formerly Health Officer of Montclair, N. J., lately Instructor in Municipal and Sanitary Dairying at the University of Illinois; Member of the International Association of Dairy and Milk Inspectors. Price, $5.00. New York: McGraw Hill Book Publishing Co., Inc.; London: Hill Publishing Co., 1917.

"THE milk business is not the farmer's business, nor the contractor's, nor yet the consumer's; it is the community's business, and unless the members of the community work together for good milk they will never get it." Mr. Parker carries his account of the city milk supply from its beginning to its end and in great detail. The book is extremely interesting and well written. Methods of causing dirty milk and of making clean milk are carefully gone into, the care of cattle, the construction of barns, the handling of the milk from the milking to its ultimate disposal. The cost of various details in the work is given, and finally a discussion of methods of control of public milk supply.

THE MEDICAL CLINICS OF CHICAGO. May, 1917. Volume II, Number 6. Published bi-monthly. Price per year, $8.00. Philadelphia and London: W. B. Saunders Company.

THIS number of the Medical Clinics finishes the second volume of this publication. A brief glance over the numbers which have appeared shows that there has been a gradual change in the form in which the presentations have been made. The number of contributors to each number has been somewhat increased, so that we have thirteen in this issue, while at the same time the number of cases presented at each clinic has been diminished until we have here but one case shown by each man. A comparison of the first number with the latest one shows a very marked improvement in this respect. The cases receive much more adequate consideration and the value of the publication is thereby considerably increased. It is for this reason that a somewhat grudging approval which was apparent at the outset has become a general commendation of the Medical Clinics, so much so that it is even, at times, enthusiastic. It is probably more true of this than of any other similar publication with which we are familiar, that the latest number is the best.

THE PRACTICAL MEDICINE SERIES. Under the general editorial charge of CHARLES L. MIX, A.M., M.D., Professor of Physical Diagnosis in the Northwestern Medical School. Volume II, GENERAL SURGERY, edited by ALBERT J. OCHSNER, M.D., F.R.M.S., LL.D., F.A.C.S., Surgeon-in-Chief Augustana and St. Mary's of Nazareth Hospitals; Professor of Surgery in the Medical Department of the State University of Illinois. Series 1917. Price, $2.00. Chicago: The Year Book Publishers.

THIS volume follows the same general plan as its predecessors and gives an epitome of surgical literature appearing during the year 1916. In the introduction Ochsner eulogizes at great length the previous editor, the late John B. Murphy, who had edited the volume on general surgery for many years. The surgery of the various organs and regions of the body receives adequate attention. In addition, considerable space is given to articles concerned with the treatment of infected wounds, wound healing, gas gangrene, tetanus, and other subjects bearing on war surgery—a fact which should make this volume of especial interest to those soon to become army surgeons. The general practitioner who occasionally cares for surgical cases as well as the specialist should find this volume well worth reading.

Society Reports.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held April 20, 1917.

THE PRESIDENT, DR. J. BENTLEY SQUIER, IN THE CHAIR.

Resolutions for Defeat of Chiropractic Bill.—Resolutions were adopted by the Society providing that immediate steps be taken to defeat a bill providing for the license of chiropractors which had been reported out of the rules committee and would come up for vote in the Assembly on April 23.

Resolution for Protection of Practice of Medical Men at the Front.—The Society adopted a set of resolutions providing for the appointment of a committee who should find physicians to care for the practice of those going into military service and providing that physicians assuming the care of the practice of absentees should turn over to such persons as the absentees should designate 50 per cent. of all collections from the practices of such absentees; that accounts be submitted monthly, and that the practice of an absentee be returned to him intact on his return.

Obstructive Jaundice.—Dr. CHARLES GORDON HEYD read this paper, in which he gave a résumé of the pathological affections of which jaundice was a symptom. He stated that according to McCarty, the gallbladder, liver, pancreas, and stomach were embryologically, physiologically, and pathologically closely related and should be considered as one physiological system. Jaundice was such a protean and variable symptom and was associated with so many conditions that individually it offered little in the way of diagnostic value, but by means of its correlation with the history, physical examination, the chemical examination of the urine, stool, and blood, and variations in the functions of the organs of the right upper quadrant, it was possible to make a surgical diagnosis. In its ultimate analysis jaundice was an interference with the delivery of bile from the liver to the intestinal tract. Jaundice was essentially an obstructive phenomenon. In regard to the production of jaundice we spoke of (1) intrinsic internal or luminal occlusion which, except for parasites and hydatid cysts, meant calculous disease of the common duct; (2) mural occlusion, either inflammation of the duct wall or stricture or neoplasms and (3) extrinsic or external occlusion, either by invasion or compression from lesions of tissues adjacent to the biliary apparatus from the portal fissure to its duodenal termination. Statistical inquiry and analysis of a large series of cases exhibiting jaundice demonstrated that according to its frequency jaundice might be classified in the following order: (1) gallstones, (2) catarrhal jaundice, (3) cancer of the liver, (4) cirrhosis, (5) cancer of the bile ducts and gallbladder and (6) cancer of the pancreas. Of all cases of obstructive jaundice, 97 per cent. would be included in these six divisions. In conclusion Dr. Heyd said that the diagnostic value of obstructive jaundice depended upon its association with one or the other of two main symptom groups: A jaundice with colic, with chills, fever and sweat, with leucocytosis, with intermittency, with a previous history of right upper quadrant inflammation, with a nonpalpable gallbladder, with stercobilin and intermittent acholic stools represented luminal obstructive jaundice and, barring the rare accident of worms, parasites, and hydatic cysts, was a calculus disease of the common bile duct. A jaundice without colic, without chills, fever and sweat, without leucocytosis, which never intermitted, which was persistent and continuous, increasing and deepening in severity, with a palpable gallbladder, without stercobilin in the feces and with chronic acholic stools represented an extrinsic obstructive jaundice and was a neoplastic condition outside of the common duct.

Dr. WILLY MEYER emphasized the points that enabled one to make a differential diagnosis between calculous disease of the common bile duct and a neoplastic condition outside of the common duct, and reviewed the symptoms that pointed to tumor of the pancreas. In operation on these cases the thing to be feared was secondary hemorrhage. He had learned that in cases of chronic jaundice it was advisable to investigate the coagulation time of the blood. Several theories had been advanced to explain the change in the coagulation time of the blood in some cases of chronic jaundice. One of these attributed it to the increase of bile salts in the blood, but an increase of bile salts sufficient to effect such a change was simply impossible. Personally, he believed the ductless glands were responsible for the change, just as he believed they were involved in the etiology of hemophilia and thromboangitis which he preferred to call thrombophilia. When a patient had a lengthened coagulation time and there was reason to fear secondary hemorrhage it was the duty of the surgeon to prepare against this emergency by giving an injection of blood serum before the operation. Human blood serum was preferable to horse serum for this purpose. A large preliminary dose would prevent parenchymatous hemorrhage.

Dr. CHARLES A. ELSBERG said that Dr. Heyd and Dr. Meyer had so thoroughly covered the subject that there was little left for him to say. He had intended to speak of hemorrhage, as he had investigated this subject a number of years ago. He could not agree that it was due to a ductless gland condition because of a number of clinical facts. That hemorrhage was apt to occur in the patients with jaundice who had both an obstruction of the common duct and of the pancreatic duct was shown by both clinical and experimental observations. Usually there was no parenchymatous oozing within twenty-four hours after the operation; the worst hemorrhages were likely to occur six, seven or eight days after the operation. Such hemorrhage was likely to occur at a time when the patient was apparently doing exceedingly well; absolutely nothing would control the oozing; from the time a patient began to ooze that patient was lost. When there was an obstruction of the common and pancreatic ducts one should begin the serum treatment at once after the operation, in order to prevent dangerous and almost regularly fatal bleeding. Since working on this principle Dr. Elsberg stated that he had seen less of this postoperative hemorrhage than before. Mayo Robson had made the distinction between the green color of the skin in obstructive jaundice due to malignant disease and dark yellow color due to obstructive jaundice from calculi, but there were some patients whose skin was of a light canary color. A light canary colored skin was quite characteristic of common duct and pancreatic duct obstrution; this they had repeatedly confirmed at operation. This was a point to which from the diagnostic standpoint sufficient attention had not been paid.

Dr. DUDLEY ROBERTS said that while he had seen a great deal of diverticulitis of the colon, he had seen very little acute diverticulitis; he had seen only a few cases that had gone on to acute rupture. Dr. Erdmann's statistics were quite different from his in that Dr. Erdmann had found this condition most frequently in individuals between the ages of 40 and 45 years, while in his experience nearly all these cases were 60 years of age or over. When the condition was found in younger persons, it was probably congenital and this was the reason why it was so liable to rupture. He felt convinced that diverticula were of quite frequent occurrence, and had about come to the conclusion that very many "pot-bellied" individuals had diverticula. While he thought the condition might exist without causing a great deal of harm it was nevertheless important in as much as it might furnish a basis for the development of cancer or benign obstruction. Mayo in a series of cases reported that in only four instances could it be definitely shown that cancer had developed as the result of multiple diverticula, while only last week the speaker had seen two cases in which malignancy had apparently resulted from this condition.

Patients suffering from diverticula usually complained of pain on the left side and sometimes attacks of abdominal colic. He had seen only two patients who had complained of rectal tenesmus and the passage of mucous. He did not therefore consider these symptoms as of frequent occurrence in this class of patients. When the lumen of the gut was narrowed and there were a number of diverticula and a peridiverticulitis proven, the speaker did not feel that the case was necessarily one for operation. One could do much by the medical treatment of these cases. The first thing to do in all

cases was to stop laxatives and purgatives and to try to keep the pockets filled with bismuth in the expectation that they would thus be kept free from accumulations of material that was likely to undergo putrefactive changes.

Dr. Roberts gave a lantern slide demonstration of diverticula.

Dr. CHARLES N. DOWD said he had studied the records of cases of diverticulitis and had found that there were 17 such cases treated either by his associates or by himself, and he believed that these cases gave a fair indication of the way in which the disease was likely to be seen at the present time. Most of the cases had gone on to definite abscess formation before surgical aid had been called for, and those cases which had reached a stage of local abscess formation were the ones which gave the best results. Of the 17 cases, 11 were cured, two improved, and four had died. Two of the cured cases had been treated by intestinal resection; the remaining nine were treated by the opening of localized abscesses. These patients, as a rule, did not stand extensive abdominal operations well. The large intestine was not well adapted to extensive one-stage resections. When resection was necessary, it was usually much better to do a two-stage operation having the two legs of intestine come to the surface like a double-barrelled gun, as advocated by Mikulicz. He reduced his mortality nearly one half by employing this method of operation. It was somewhat remarkable that so many of the local abscess cases had recovered under simple incision and drainage. There had been several interesting experiences in this series. In one instance what had seemed to be a diverticulitis proved to be an appendicitis with the appendix on the left side; another instance, two patients who were in the ward at the same time showed severe definite symptoms of diverticulitis, but the inflammatory mass subsided and recovery resulted in both instances. In considering statistics, one must judge results by learning the time at which operation was done. Early operations were naturally much more favorable than operations for people who were already suffering from general peritonitis.

A Simplified Technique in Tuberculin Administration.—Dr. ELLIS BONIME presented this communication. He said he had obtained his experience with tuberculin largely in ambulatory cases and was convinced of its far reaching effects if it could be administered with safety by the intelligent general practitioner. So he had endeavored to devise a simple method of tuberculin administration which retained the principal elements necessary for its therapeutic effect. He had finally succeeded in elaborating the method which he would explain. Before going into details as to the technique he wished to say a word or two about the choice of tuberculin and the method of making the dilutions. The greatest value could be derived from long practice in the use of one tuberculin and making it applicable to exceptional cases, rather than endeavoring to find a tuberculin to fit each particular case. In making dilutions, simplicity was the aim. Directions for making dilutions had been unnecessarily complicated. Using as diluent 0.5 per cent. phenol in normal saline, with the same tuberculin syringe that they used in treatment, they made five dilutions of the original tuberculin. By drawing 0.9 c.c. of the diluent into the syringe followed by 0.1 c.c. of tuberculin, the first dilution was made and placed in the container marked I. By drawing 0.9 c.c. of the diluent into the syringe followed by 0.1 c.c. of dilution I, the second dilution was made and placed in the container marked II. By drawing 0.9 c.c. of the diluent into the syringe followed by 0.1 of dilution II, the third dilution was made and placed in the container marked III. By drawing 0.9 c.c. of the diluent into the syringe followed by 0.1 c.c. of dilution III, the fourth dilution was made and placed in the container marked IV. By drawing 0.9 c.c. of the diluent into the syringe followed by 0.1 c.c. of dilution IV, the fifth dilution was made and placed in container marked V. The dosage began with an amount of tuberculin less than would produce a reaction. This dose was subsequently increased by a definite but very small amount, and the amount of increase also increased by a very small amount and at regular intervals. The amount of dose increase was only sufficient to control the amount of tolerance gained by the preceding doses. And the amount of the increase would control the difference between the amount of tuberculin administered and the maximum amount the individual could tolerate. The progressively larger increase in the dose thus brought about would eventually produce a constitutional reaction. This reaction would necessarily be mild, as it was produced by the smallest amount of tuberculin required to produce such a reaction in that individual. By increasing the intervals after such reactions, and decreasing the dose by a small amount, they were certain that they were using a quantity of tuberculin coinciding with the maximum of tolerance of the individual, or that dosage which alone would produce the ideal therapeutic effect. Tuberculin injections should be given twice weekly. In concluding treatment it was advisable in a great many cases, especially in bone and joint disease, to produce a bacillary immunity before they discharged the patient. Those who finally succumbed to the disease were those who had acquired the idiosyncrasy to the protean poison, or the hypersusceptibility after an initial infection. By the use of tuberculin they could both detect that hypersusceptibility and overcome it before a recurrence of the disease could take place.

Dr. JOSEPH MUIR said one read on the program a "Simplified Method for the Administration of Tuberculin." That looked well on the program but he was not impressed with the simplicity of the method as described. He had been employing tuberculin but not in ambulatory cases. He thought it was impossible to know when one obtained a reaction unless the patient was kept under close observation. He had been using tuberculin since 1895 when they did not know how to use it and felt satisfied of the great danger that, under its use, a consolidation might become a cavity and a local infection a miliary tuberculosis. As employed by Trudeau and Hamburger it was much safer than formerly but he could not agree that the method presented had simplified the administration of tuberculin to such an extent that it was safe for the treatment of ambulatory cases. If one examined patients who had received the tuberculin treatment, and who did not show a reaction in the form of an elevation of temperature and malaise, with the stethoscope it might be found that an increased exudate or a slight inflammatory reaction had occurred. There might not be so great danger of a reaction in gland and bone tuberculosis, but he felt sure that the pulmonary cases required very careful watching when under tuberculin treatment.

Dr. THOMPSON T. SWEENEY asked for an expression of opinion as to the value of Von Ruck's vaccines.

Dr. FRITZ NEUMANN said he had been using a similar simplified method, not using the old tuberculin but the bacillary emulsion, for eight years, on ambulatory cases. He had given thousands of injections but had never obtained a general reaction, though occasionally he had observed a local reaction. Sometimes there would be a slight rise in temperature of one or two-tenths of a degree the day after the injection was given. In order to get accurate records of the temperature he had every patient for a week before beginning the injections take his own temperature four times a day and put it down on a chart, and he had noticed that it was very rarely that there was a reaction after using the bacillary emulsion. He had had just as good results in moderately advanced cases as in the earlier cases and he had observed no change from a consolidation to a cavity. He believed the bacillary emulsion could be used in all moderately advanced and incipient cases.

Dr. BONIME, in closing the discussion, said the first speaker mentioned the impossibility of noting the reaction after the administration of tuberculin as a change occurred that could only be noted by the stethoscope. Such a change was a focal reaction, and was the basis for any good result as it was a focal hyperemia that starts the healing process. The patient got a focal reaction after every sufficient dose of tuberculin, and there should be no fear of this reaction. Dr. Bonime said he had no experience with von Ruck's vaccine, but that if a physician obtained good results with this preparation he should continue with its use. The more experience one had with a particular preparation, the better the results. The doctor who gave his experience with bacillary emulsion said that it did not give the char-

acteristic reaction that old tuberculin did. Dr. Bonime's experience was quite the contrary. The reason old tuberculin was chosen for the beginning of treatment was because old tuberculin was not as likely to produce a severe reaction as bacillary emulsion. After old tuberculin has been administered until the hypersusceptibility was over, no reaction could occur. Treatment was concluded with bacillary emulsion, which was used in as large doses and in the same way as vaccine was used. No patient could be treated with tuberculin without the regular temperature records, as they were the only guide as to whether a reaction had occurred or not. As no two patients reacted to the same amount of tuberculin, no two treatment charts ever looked alike. By following the indications and the method described, the dosage adjusted itself to each individual case.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON SURGERY.

Stated Meeting, Held March 2, 1917.

Dr. JOHN DOUGLAS IN THE CHAIR.

Mycosis Fungoides; Case of a Tumor Stage after Treatment.—Dr. ARTHUR F. HOLDING presented this patient and gave a lantern demonstration of the case before and after treatment, and also a photomicrograph. This patient had been ill for nine years, had been seen in the pre-tumor stages of the disease by dermatologists of international repute and variously diagnosed as eczema, psoriasis, syphilis, and treated accordingly without result. The case then progressed to the tumor stage, and was referred by Dr. George Crary to the Cornell Cancer Research workers at the Memorial Hospital in January, 1914. The tumor formation was very extensive over the forehead, eyelids, cheeks, and back of the neck. Being so extensive various methods of treatment were applied over areas of the lesion, as follows: (1) Right forehead (most extensive tumor). excision and skin grafting; (2) left forehead, *x*-rays; (3) eyelids, desiccation, and (4) cheeks, radium. The results of the treatments showed (1) area excised and skin grafted, good results at first, later flap broke down in center and sloughed, exposing the skull; (2-4) in areas treated by the *x*-rays and radium the results were best and the cosmetic result was much better than where the surgical removal was attempted; (3) in the areas desiccated, the disease recurred; all of the lesions, however, disappeared within three months after the treatment was instituted. Two months later the patient returned with a generalized erythematous eruption all over his body. Inasmuch as their previous experience with this case had demonstrated the superiority of radium and *x*-ray treatment over all other methods, it was decided to treat the recurrent areas with radium and *x*-rays, using various filters in order to determine the best technique to employ in such cases. It was found that the *x*-ray technique was better; there were no subsequent irregularities of pigmentation in the skin treated; it was quicker; the larger areas of skin could be treated; the areas treated through a filter of 1 mm. of aluminum responded quicker and better than areas treated without filters or with thick filters. The patient's eruption entirely disappeared; there had been occasional relapses of the erythematous dermatoses since which always yielded to *x*-ray treatment.

Mycosis Fungoides; Case in the Pre-Tumor Stage.—Dr. J. FRANK FRASER (by invitation) presented this case. The patient was 70 years of age and came from a family of long-lived parents. He enjoyed good health until attacked by this disease. The first signs appeared six years ago, when he observed what he described as rough and scaling patches on the chest and back. About four months after these patches became red and itchy, but the itching did not become very annoying until about a year later. The patient presented himself at Dr. Trimble's Clinic at the University and Bellevue Medical College in August, 1913. The whole skin surface, with the exception of the hands, forearms, and face, was covered with variously sized erythemato-squamous patches. The color of the skin over the chest and abdomen was bright red, giving the patient the characteristic "Homme rouge" appearance. At the present time the lesions were of the type which the text books describe as belonging to the intermediary, secondary, or infiltrated stage. The diagnosis on clinical grounds was not difficult.

Dr. ISAAC LEVIN said that the results of the *x*-ray treatment of these tumors were quite striking. He said he would like to take exception to the remark that had been made that a patient was going ultimately to die of this disease; he had a patient with this condition whom he had been carrying along with *x*-ray treatment for five years.

Dr. GEORGE SEMKEN reported a case of mycosis fungoides that came under his observation five months ago, and the disease was rather advanced. This patient had been treated by the *x*-ray at the Skin and Cancer Hospital. For a time there was an initial improvement, but this had been followed by a recurrence that was worse than the original disease.

Dr. ARTHUR F. HOLDING said that these two cases illustrated well the pre-tumor and post-tumor stages of a very rare disease; in the pre-tumor stage usually seen by dermatologists and rarely correctly diagnosed until the post-tumor stage, when it was generally seen by surgeons, who should not operate on these tumors.

Septic Kidney Infarct from Infected Finger; Nephrectomy.—Dr. CLARENCE A. MCWILLIAMS presented this patient. He stated that she was 38 years of age and had been admitted to the Presbyterian Hospital Dispensary on June 3, 1916, with an abscess on the bolar surface of the left index finger occupying almost the whole of the anterior closed space. This was opened and made into a single cavity. Five days later freer drainage of the finger was afforded by lateral incisions. Sixteen days after this the terminal phalanx was found to be bare and necrosed. She was admited to the hospital one month after the beginning of the primary finger abscess, giving the history that for twelve days she had been feeling very ill, and had been having pain in the right side of the abdomen, which was sharp, situated in the right costal vertebral angle, and radiated down the course of the ureter. The pain was made worse by walking. The patient had chills, fever, and increased frequency of urination. Examination on admission showed a tender mass on the right side of the abdomen extending from the costal margin to the crest of the ilium, very tender in the costal vertebral angle. The *x*-ray showed no calculi in the kidney or ureter. Ureteral catheterization the following day showed clear urine coming from each kidney. Examination of the secretion from each kidney showed that the right kidney, probably from irritation, was doing a greater amount of work than the left. The urine from the right ureter showed 6.84 gm. of urea per litre and microscopically few pus cells and no casts. The secretion from the left ureter showed 6.396 grams of urea per liter, and microscopically few pus cells and no casts. The phthalein test showed 61 per cent. excreted in two hours the day before operation. There were no red cells in the bladder urine and no tubercle bacilli. At the time of admission the patient's white blood cells numbered 14,800, and polymorphonuclears 86 per cent. The temperature was 103° F., and pulse 102. The temperature remained remittent, the highest being 103° F. and the lowest 101° F. before operation. A diagnosis of perinephritic abscess was made because of the tenderness and the lack of evidence on catheterization of the ureters of any pus focus in the kidney. Four days after admission, July 7, 1916, the patient was operated upon. The kidney fatty capsule was very adherent, and on dissecting it three abscesses were opened. These were supposed to be in the kidney substance. Nephrectomy was done and drainage was provided. Culture of the pus showed the *Staphylococcus aureus*, the same organism which had caused the finger infection. A thick layer of fat adherent to the kidney was removed with the kidney. Two of the three abscesses were in this fatty capsule, while the third communicated with an embolic abscess in the kidney cortex. Two rubber drainage tubes containing gauze wicks were placed down the pedicle. For one month after the operation the patient ran a very puzzling and unexplained temperature. Physical examination and *x*-ray examination of the chest showed no complications there. It was six weeks before the sinus closed. Two months after the nephrectomy the whole necrosed

terminal phalanx of the index finger was removed, under local anesthesia, 2 per cent. novocaine. The patient had been well since leaving the hospital and had gained in weight. Micturition was normal and without discomfort. Examination of the urine showed it to be normal. The pathological examination showed a left kidney 14¼ x 8 x 5 cm. The cross section showed the capsule enormously thickened, including both the real and the fatty capsule. In places the two capsules measured 2 cm. in width. In the lateral aspect of the capsule was a good-sized abscess, the walls being very shaggy and containing broken down pus and blood. The cortex of the kidney showed a well-defined suppurative process about 2 cm. in diameter. In one case the cortex had been broken down and communicated with the perinephritic abscess. The kidney showed a thickened cortex and the capsule proper stripped off with difficulty; in the gross only one abscess was apparent. The mucosa of the calices and the pelvis of the kidney were markedly edematous and contained pus. The microscopical examination showed a suppurative nephritis. The glomeruli had been secondarily infected, as had the tubules themselves. There was marked edema and acute inflammation of the capsule and perinephritic fat.

Resection (Polya Operation) of Stomach for Cancer; Well after One and One-half Years.—Dr. CLARENCE A. MCWILLIAMS presented this patient. The patient was a man, 48 years of age, and had been admitted to the hospital August 18, 1915, eighteen months ago, complaining of cramps in the stomach for four months. The patient stated that sixteen years prior to this he began to have stomach trouble, vomiting about once a week, with no hematemesis, but with pain coming on from one-half to one hour after meals. The attacks were intermittent, there being an interval of several weeks between them. The attack previous to his present attack had occurred two and one-half years ago. Loss of appetite and weight were very pronounced, thirty pounds having been lost during the past four months. Examination showed a definite hard mass, moderately tender, and movable in all directions, in the left epigastrium. Inflation of the stomach caused the mass to disappear. A test meal gave 85 c.c. of moderately thick gray fluid with much mucus. The total acidity was 44 c.c., free hydrochloric acid 22 c.c. There was no lactic acid and no blood. The Wassermann reaction was negative. Blood examination showed 3,888,000 red cells, with hemoglobin 75 per cent. The *x*-ray examination was inconclusive. Operation was performed on August 20, 1915. An indurated mass was found occupying the middle of the lesser curvature in a saddle fashion, extending on both surfaces for an inch. The outer aspect looked like scar tissue. There were no adhesions along the lesser curvature. Extending over to the middle of the stomach were a small number of soft enlarged glands. Corresponding to the indurated area on the lesser curvature were a few small easily palpable glands. In view of the fact that it was impossible to tell whether the mass was an ulcer or a cancer, as well as the fact that the mass was situated in the middle of the stomach, in which position a gastroenterostomy would be of no use, and also the age of the patient—48 years—it was decided to do an excision. The gastrocolic omentum was ligated close to the transverse colon beyond all the enlarged glands, the two vessels at either end of the greater curvature being ligated separately. The lesser omentum was ligated off distal to all enlarged glands, the two vessels at the extremities being separately ligated. The duodenum was divided with the cautery between two clamps close to the pancreas, leaving just stump sufficient to invaginate. An over and over catgut stitch was put in beyond the clamp, and a purse string of Pagenstecher sutures buried the stump, whose end was then covered by suturing it to the pancreas. Two clamps were placed on the cardiac end as far proximally as possible; this enabled him to remove two-thirds of the stomach, the division being made with the cautery. The jejunum was then drawn up through an opening made in the transverse mesocolon and the side of the jejunum was sutured to the whole length of the opening in the stomach by a posterior serous continuous Cushing suture with Pagenstecher silk. There was no attempt made to narrow the opening in the stomach. The mucus surfaces were sutured with through and through continuous chromic sutures reinforced by several plain gut sutures. The opening in the mesocolon was sutured with plain catgut to the stomach and the intestine. The patient was in good condition after the operation, which lasted one hour and fifteen minutes. Convalescence was uninterrupted. Since the operation the patient had gained 25 pounds and had very little digestive disturbance, his only complaint being that he could not eat a square meal in amount; frequent small meals agreed with him better. The *x*-ray photograph taken a week ago showed an enormous dilatation of the remaining portion of the stomach. The pathological specimen consisted of the distal two-thirds of the stomach, measuring 14 x 6½ x 2½ cm. There was found on the lesser curvature the remains of an ulcer. There was marked indurated thickening of the lesser curvature, with some ulceration of its inner surface. On cross section, the mucosa and submucosa appeared considerably thickened. The pylorus was apparently normal. There were a few definitely palpable glands on the lesser curvature from which sections were taken. The microscopical examination showed a diffusely infiltrating carcinoma of the stomach. Section of the lymph glands removed showed in one corner the involvement of the lymph glands with the same type of tumor cells.

Dr. ISAAC LEVIN said that the case in which the regional lymph glands were affected was no longer an early case of cancer; Dr. McWilliams' case was not an early case, but already an advanced case. He had had an exactly similar case in every particular, and in which the operation was practically the same as in Dr. McWilliams' case. This patient was entirely well after two and one-half years. He then developed an acute cachexia, and showed a recurrence in the pancreas and liver. It might be possible that this patient would have a recurrence in the same area. They were not giving these patients a fair chance unless they gave them post-operative *x*-ray treatment. In order to make the *x*-ray treatment after operation more effective it was well to try as much as possible to bring the stump of the stomach as near the skin as possible, where the penetration by the *x*-ray was better. He had one patient who was still well after three and one-half years, who had been receiving the *x*-ray treatment. The patient might have remained well without the *x*-ray treatment, still he thought it was better to give the patient this additional chance.

Dr. HARRY E. ISAACS said it might be of interest in reference to the question as to whether an obstruction in the duodenum might have caused the dilatation of the stomach, to mention that he had a patient in whom a resection of two-thirds of the stomach was done for a sarcoma. The stomach was anastomosed from the cardiac end to the pyloric, and there was no point of obstruction, yet an *x*-ray recently taken showed a very large stomach.

Dislocation of the Carpal Semilunar.—Dr. CHARLES E. FARR presented two patients and gave a lantern slide demonstration showing various forms of dislocations of the carpal semilunar, alone and in combination with fractures of the scaphoid and of other structures in the vicinity. The first patient, a negro, had fallen a distance of 25 feet and received a number of injuries, among them this dislocation of the semilunar, which was not discovered at the time. After some months the man came under the speaker's care. The nature of the injury was then suspected by him, and confirmed by *x*-ray examination. As the dislocation could no longer be reduced, the semilunar was excised. Function had been almost completely restored, though the patient still complained that his wrist was somewhat weak. The second case was that of a man who had fallen in July, 1916, at which time attempts at reduction were unsuccessful. A few days later the patient came under Dr. Farr's care, and in this instance he had succeeded in effecting a partial closed reduction, which had been followed by nearly complete restoration of function. Dr. Farr said he had series of ten dislocations of the semilunar in nine individuals, nearly all of which had been overlooked until carefully studied by the *x*-ray. The points to be brought out were, first, that these injuries could not be very scarce since he had found this number in a comparatively short period of time. While they

were not common, they were certainly not uncommon. A second point brought out by the results in this series of cases was that the results of closed reduction were better than those of excision as regarded subsequent function. This fact made early diagnosis of importance since reduction could be more easily accomplished shortly after the injury than at a later period.

Treatment of Certain Fractures of the Tibia and Fibula.—Dr. FARR gave a lantern slide demonstration showing the character of the fractures and the results of treatment. One case was a compound fracture in which he could not reduce the fragments into position by any of the usual methods. The patient had a severe infection so that all that could be done for a time was to keep the wound as clean as possible. He later did a simple operation on the fibula, putting the two ends of the fracture into apposition, where they had remained. In the second instance the fracture of the tibia was of the compound, oblique, comminuted variety, and it was impracticable to operate upon the tibia. He therefore endeavored to see what could be accomplished by operating on the fibula. The ends of the fibula were drawn together, freshened, and simply approximated without internal fixation. The tension of the muscles helped to hold the ends in apposition. Though there was one-half inch shortening before the operation the shortening today was negligible in quantity.

Dr. WILLIAM DARRACH said he wished to emphasize two points in the diagnosis of anterior dislocation of the semilunar. First, that in these cases there was a marked increase in the antero-posterior diameter of the wrist, and secondly, that there were frequently associated symptoms due to the pressure of the displaced bone on the median, sometimes on ulnar nerve, as well as flexor tendons as they lay in the carpal canal. The nerve pain and immobility of the fingers, together with the increase in diameter, should make one suspect this condition. This lesion was considered by some French surgeons as a dorsal displacement of the os magnum, as in the milder displacements the semilunar maintained its normal relation to the radius. With the more marked rotation of the semilunar on the transverse axis, hinging on the intact anterior ligament, the os magnum resumed its position in the axis of the forearm, and under this condition the term "anterior dislocation of the semilunar" seemed more proper. The semilunar was not completely reduced unless its concave under surface could be seen in a lateral *x*-ray to have engaged over the head of the os magnum. Incomplete reduction would interfere with flexion and extension at the wrist as well as with the movements of the flexor tendons. When seen early many of these cases could be reduced by extreme hyperextension, traction, pressure over the displaced bone, followed by flexion. When the condition was not recognized until some time had elapsed, closed reduction might be impossible. Open reduction should then be attempted, and if a curved elevator could be made to engage proximal to the head of the os magnum, the semilunar could frequently be pried back into place. If reduction was impossible, the bone should be removed. As regards *x*-ray interpretation, the most significant factor of antero-posterior views was the loss of the clear space normally seen between the semilunar and the scaphoid, rather than the overlapping of the head of the os magnum by the lip of the semilunar.

Cicatricial Deformity of the Hand; Flap Transplantation.—Dr. GEORGE H. SEMKEN presented a patient, 24 years old, who had sustained a severe burn of the palm of the right hand during his infancy. As a consequence there was a considerable loss of tissue in the palm and along the palmar surface of the 2nd, 3rd, 4th and 5th fingers. Subsequently, contraction of the palmar fascia developed. When he came under observation his hand presented a well marked flexion deformity involving all the fingers. There was dense cicatricial tissue in the middle of the palm, extending thence across the bases of the fingers and upon their palmar surfaces. The 5th finger was fixed along its entire length. The thumb was drawn inward by firm fascial bands; the skin of the palm and wrist was hard and wrinkled like parchment. Function was fairly good in spite of the deformity, and there was evidently no tendon fixation in the scar. After describing the technique he followed in this instance Dr. Semken said that in the treatment of such defects it was not sufficient to cover the raw surfaces with Thiersch grafts because secondary contraction always occurred and reproduced the deformity. It was necessary, therefore, to replace the lost tissues with a flap of skin and subcutaneous fat tissue from some other part of the body, leaving it in vascular contact with its site by means of a pedicle until it had become firmly united to its new site in the hand. The flap in this instance was obtained from the lower part of the left axilla and the back, where the layer of subcutaneous fat was thin, and where the flap could contain the complete vascular system of the subcutaneous fat layer, as well as the skin. This flap, suitably shaped, was outlined with its apex posterior and its base or pedicle in front; it was then raised, turned back upon the anterior chest and provisionally wrapped in gauze moistened with saline solution. The defect in the chest wall was wholly closed by suture. The hand was brought over across the chest, and the flap was carefully sutured into place, with the apex of the flap at the wrist and the pedicle of the flap under the fingers. Healing was uneventful. The fingers had good function and extension was now nearly complete. The blood supply of the flap was excellent. Sensation had also returned and now seemed nearly normal.

Dr. JOHN DOUGLAS said he had performed an operation very similar to that of Dr. Semken, with the exception that he made the flap from the abdominal wall. The result in his case was a rather broad, flat palm, but at the same time it was a very good result and there was a return of sensation.

Dr. SEMKEN, in closing the discussion, said that in preparing these flaps, it was desirable to include the whole subcutaneous fat layer, so as to preserve the anastomosing vascular system uninjured. As thin flaps were needed for the hand, one must select a site on the surface of the body, where the subcutaneous fat layer was thin, so that it could be used *in toto*. That was why the lower axilla was chosen. Respiratory movements must be controlled as much as possible.

Fascia Transplantation into Lateral Defects of the Major Arteries.—Dr. HAROLD NEUHOF made this presentation, which he liberally illustrated with lantern slides. He stated that for the replacement of an arterial defect the implantation of a section of an artery had been, up to the present time, the best procedure. Implantation of a vein was less desirable because thrombosis and occlusion not infrequently supervened. Carrell had described an arterial patch as the best method for repairing lateral (sub-total) defects of arteries and more recently he had investigated the possibilities in the use of a patch consisting of peritoneum and adjacent musculature. He had demonstrated that a small lateral defect of an artery could be satisfactorily replaced by a transplant other than a vessel wall, but approximating arterial structure in the smooth peritoneal lining on one side and the attached muscle on the other. The author in the present communication demonstrated that fascia was as serviceable as vessel wall or peritoneum muscle for the replacement of even large lateral defects of the major arteries and at the same time offered greater possibilities for clinical application in the appropriate problems offered by human surgery. Except in the hands of a master of blood vessel surgery technique, the simple end to end suture of a divided vessel resulted in failure in almost 50 per cent of the experimental attempts. In patching an arterial defect with a section of artery or vein or peritoneum muscle, the same painstaking technique was required as that for an end to end suture of an artery, and the operation, being more complicated, an even higher percentage of failures could be expected. Theoretically, the writer believed that it was not necessary to employ morphologically similar tissues to adequately replace lateral arterial defects; he believed theoretically that a simple strong connective tissue (fascia) would offer several advantages, for it could be used without fear of damaging a delicate intima, without the necessity for accurate apposition of layers and without all the refinements of technique essential to the success of other transplants. It was evident that autotransplants of pieces of artery were not obtainable in human surgery and were therefore not to be considered. Vein grafts were more feasible, but to obtain them a separate wound exposure might be required and valuable time sacrificed for the careful dissection and proper preparation of the trans-

plant, and the necessary ligation of a large venous trunk was never desirable and by no means always harmless. The abdomen would not be opened merely to obtain peritoneum muscle transplants; their applicability would therefore be sharply limited to lateral defects of intra-abdominal vessels. Autotransplants of fascia (aponeurosis) were accessible in the neighborhood of almost every operation wound. Fascia lata was, however, because of its strength, smoothness, and even consistency, best suited for grafting. It was readily obtainable and its removal was harmless. The replacement of large defects in order to be feasible must be clinically applicable in the presence of incomplete hemostasis of the artery receiving it, for large defects of the smaller arteries, for the thoracic aorta where pressure was highest and prolonged obstruction of the arterial current was not possible, and the technique and armamentarium involved must be simple to the universally applicable. The results of the experiments which the writer reported showed that all these requirements were fulfilled by the use of fascia transplants. Seven experiments were performed, in four of which a sufficiently long period of time had elapsed (six to nine months) to report the more permanent results. In only one instance, fascia replacement of a large defect of the abdominal aorta, involving almost the entire circumference, did hemorrhage follow. The outcome was good practically but poor histologically in one femoral artery, thrombosis and cannulization having supervened. The results of all the other experiments were entirely satisfactory, anatomically, functionally and histologically. The technique of the operation was simple. Except for the addition of sterile vaseline, fine ordinary sewing silk and small calibered straight needles, no changes were made in the usual operating room asepsis and armamentarium of their animal laboratory. Ether by insufflation was used for the operation on the thoracic aorta, by the rebreathing method for the other experiments. The artery was exposed, the portion from which the piece was to be taken was isolated, its hemostasis was established by a rubber protected clamp at each end, and the ligation or temporary clamping of branches of the artery between them was effected. The desired section of the wall of the artery was then excised and the defect measured with a sterilized steel tape. Blood in the interior of the vessel was washed away and a gauze sponge freely spread with vaseline was placed over the exposed lumen. The fascia lata was then laid bare near the knee joint, a section of the desired shape and of slightly larger size was measured off, removed, dipped in vaseline and immediately placed over the arterial defect with its smoother surface facing the lumen. It was fixed in place by four sutures, and a continuous suture, approximating the edge of the fascia to the cut edges of the artery, was made between them. Compressing the patch lightly with a piece of vaselined gauze, the lower and then the upper clamp of the artery were removed. If there was oozing from gaps between individual stitches, reinforcing ones were passed.

Dr. Farr asked Dr. Neuhoff whether he had overlapped the fascia over the openings and what he thought the chances of success were in the presence of infection.

Dr. Douglas asked how long one could safely cut off the circulation and how long it took to perform the operation.

Dr. Neuhoff, in closing the discussion, said that if the defect of the artery were overlapped with fascia a certain proportion of the results would be satisfactory, but some would not. He believed the edge to edge suture throughout gave a much more inviting opportunity for overgrowth of mesothelium and most solid and resistant unions. Concerning infection, that was a question that must be faced in many attempts at surgery of the vessels in question. He had had no experience with surgery of the vessels in the presence of infection, but it might be interesting to call attention to the fact that he had had very satisfactory results in transplanting fascia into defects of the urinary bladder, the gastric wall, etc. He thought, therefore, that fascia transplantation into arterial defects might be attempted even in the presence of infection. As to the time that a vessel might be clamped off, experimentally the abdominal aorta might be occluded for an hour or an hour and a half. There was one clinical report of a resection of the aorta with end to end suture in which the vessels were obstructed for possibly a half-hour without deleterious effect. Concerning the question of thrombosis at blood vessel operations, this depended directly upon gross errors of technique and not upon the length of time that the arterial stream was shut off.

Bone Grafts in Ununited Fractures of the Long Bones.—Dr. John Moorhead presented this contribution. After reviewing the main sources of non-union, he stated that between one-half and one per cent of all fractures of the long bones failed to unite. Statistics usually credited the humerus as the most prone to non-union. His experience, however, gave the lower one-third of the tibia first place, the radius and ulna next, and then the femur. Clinically, a state of non-union might be stated to exist if the fragments were yet ununited after a period of 50 per cent. beyond the time usually allotted for union in that particular bone. The long bones knit in from four to eight weeks, and if union was unprogressive in a given bone after six to twelve weeks, the term non-union was justified. Delayed union did not always mean non-union, as in time some sort of union inevitably occurred. Operative procedures varied according to the individual, the type of the fracture and the findings on exposure of the parts. The bone graft was of great value, notably in that group of cases in which local reparative processes were at a discount. The graft should include the periosteum, the cortex, and some of the medulla. He had found that the width of the graft should be about one-third, and the length twice or thrice the diameter of the fracture site, and the thickness one-third the diameter. It should be anchored in place by kangaroo or chromic gut passed through holes bored at the edge of the channel that held it. The technique should be of the "hands off" variety, and the grade of asepsis should be superlative; a tourniquet should not be used. Active hemostasis was to be attained. Dr. Moorhead stated that experience had taught him to immobilize the grafted part 50 per cent. longer than the average period for splint wearing in an ungrafted fracture. Resumption of function was very guardedly permitted, and particular caution was taken to delay rotation in the forearm, and weight bearing in the lower extremities. During 1916 the writer had performed a bone grafting operation in 11 cases of non-union. Of these five were, for non-union of the tibia, three of the radius, and one each of the ulna, the neck of the femur, and a trephine defect of the frontal bone. Of these grafts, 77 per cent. were successful at the first operation. The elements contributing to success were: 1. The type of patient. The systemic condition of the patient should be as nearly up to par as possible. The local condition demanded a clean operative field; failure was invited if incision had to be made into an area of scarring, and notably if infection of the soft parts had previously occurred. 2. The type of fracture. The inlay two-piece graft taken from the fracture site was satisfactory if the selected bone was not too dense or too friable, and if on sectioning cut and looked like healthy bone. If, however, the contrary obtained, the unbroken tibia was the site of choice, and the incision over the skin should be so placed that the subsequent scar did not overlie the place from which the bone had been resected. It was important for the subsequent strength and contour of the leg that no portion of the crest be exsected. Dr. Moorhead reviewed the status of bone grafting in general and stated that at present it was the standard method of cure for non-union; but that the prevention of non-union would only come from the general recognition of the clinical fact that mal-union and non-union were invited, and certain bones inevitable if proper attention was not given to the dictum that adequate coaptation of separated edges was necessary to primary and perfect union in bones as in soft parts. It seemed probable that the time was at hand when the profession would realize that fracture surgery was major surgery, and that the place for a patient with a broken bone was in the hospital until the stage of convalescence was reached. Of all measures this would probably have the greatest effect in limiting non-union and other preventable complications.

Dr. William Darrach said that Dr. Moorhead had said much in a short space of time; his paper was one of the most concise that he had heard for some time.

As to the use of the term non-union, fifty per cent. additional time did not mean non-union but delayed union. Many cases would get union, but at a greatly delayed time; one sometimes had to wait six to nine months before getting solid union which would make operation unnecessary. A very simple procedure had been suggested to take the place of bone grafting, and that was Bier's method of injection of blood into the site of the fracture. This had been followed by solid union in so many cases that he had tried it two or three times in cases in which every other method had been tried before. It was surprising how much added strength was effected by this method; however, he had wondered whether it was the actual injection of the blood that produced the result, since so little of it really reached the site of the fracture, or whether it was the hemorrhage caused by the needle penetrating the tissues that was responsible for the favorable results. This was a method that should be employed before any radical operation was resorted to. Another element that might influence non-union was the slowing up in the reparative processes associated with prolonged immobilization. This was analogous to atrophy of bone as evidenced by the *x*-ray, seen in any case that had been immobilized for a long period of time. Massage and general active and passive motion tended to avoid or lessen this factor.

Dr. HENRY H. M. LYLE said that Dr. Moorhead had brought out the point that a very large percentage of delayed unions were the direct result of poor reductions or of poor immobilizations; close to 85 per cent. of non-unions were attributable to these causes. The most that he had seen were due to bad reductions in compound fractures. Practically all of these were treated without open operation. The Steinman pin or the stirrup or some form of traction must be used in these cases. Dr. Lyle stated that he had seen hundreds of these cases, and that if one was able to apply traction they could be cured. As to the stirrup, he had seen some bad results from the use of the stirrup in infected cases. In one instance it had cut into the tendo-Achilles and the muscle, and practically ruined the leg. The Steinman pin placed through the oscalcis could not do much harm even if there was some infection. As to the Beir method of injecting blood, he had been using that constantly, and he held off before doing a bone grafting operation longer than the ordinary worker did. The point of the whole matter was that about 85 per cent. of non-unions were the fault of the surgeon or of the medical profession, and not of the patient. An interesting thing about the Lane plate was that the statement had been made that it would soon be considered malpractice to put in a Lane plate.

Dr. JOHN GERSTER called attention to Lexer's studies of the local blood supply during the healing of fractures. These were published in the *Deutsche Zeitschrift für Chirurgie*. Lexer's findings had a direct bearing upon the technique of open operations. In a series of recently fractured limbs, at different periods the animals were killed and the main artery was injected with an emulsion of mercury and turpentine. The subsequent *x*-ray picture showed a congestion of the blood vessels of the soft parts adjacent to the fracture. This local engorgement reached its maximum at the end of three weeks, and then subsided in another week or so, as consolidation became established. The vessels in the bone close to the fracture line showed no such degree of congestion as that seen in the adjacent soft parts. In experiments where the periosteum was removed, the blood supply to the bony tissue was greatly reduced. Lexer stated that the main blood supply reached the bone through the periosteum, and therefore the greatest care should be taken to leave the relationship between soft parts and periosteum undisturbed. For this reason he made a long ample incision down to and through the periosteum, using a large knife so that all soft part layers were practically undisturbed. The periosteum (in undisturbed contact with the soft parts) was stripped from the bone for several inches above and below the site of fracture. According to Lexer, as long as this periosteum-soft part contact was intact, one need have no fear of non-union because of such extensive subperiosteal denudation of bone. As additional proof of this theory, Lexer cited the well-known fact that *x*-ray pictures taken after plating operations for fracture often showed much more callus on the side opposite to the plate; he interpreted this as follows: In the usual operation, the soft parts were first separated from the periosteum-covered bone (thus depriving the periosteum of its main blood supply); after this, the periosteum was divided, pushed aside, and the bone exposed. On the side of the bone opposite to the wound the operator could not reach the tissues except with much difficulty, hence the periosteum-soft part relationship was not disturbed, and the subsequent nutrition and repair were much less hindered, Lexer was a staunch advocate of bone grafting for malunions and was opposed to plating operations. He cut down the cast at the end of three weeks and began passive motion, leaving a posterior splint for support.

Dr. WILLIAM LUCKETT said that Dr. Moorhead had spoken of syphilis as having been given as a cause of non-union, but that he had not found it a factor in non-union. He agreed with Dr. Moorhead on this point. In his experience he had found that the bones of syphilitics healed as promptly as those of other individuals. He had had two cases of locomotor ataxia in whom broken bones healed promptly; in one of these the man fell four times within three years, and union took place each time. He had another man, a prize fighter with syphilis, who fractured his radius, and it healed up quickly. He felt quite sure that syphilis had nothing to do with the non-union of bone.

Dr. L. M. KAHN emphasized what Dr. Lyle had said with reference to the use of the Steinman pin, that by drawing it through the os calcis and applying traction, remarkably good results could be obtained, especially in cases of compound and comminuted fracture. He would like to recommend it to his hearers.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

MEDICAL COUNCIL OF CANADA.

Montreal, October 10, 11 *and* 12, 1916.

(*Continued from page* 134.)

HYGIENE AND PUBLIC HEALTH.

1. Define (*a*) Terminal disinfection; concurrent disinfection; (*b*) Which is the more important, and why? (*c*) Describe in outline one good method for each; (*d*) In what diseases have (i) terminal disinfection, (ii) concurrent disinfection, been proved of value in reducing their spread?

2. (*a*) Describe clearly the different methods through which insects transmit disease, with a specific example of each method; (*b*) Suggest the best method to get rid of (i) flies, and (ii) malaria mosquitoes.

3. (*a*) Define the term "carrier"; (*b*) Mention those diseases which are spread by carriers; (*c*) Describe proper measures for control of carriers.

4. In case of impure water not corrected by municipal authorities describe different household measures which may be taken to successfully purify the water for consumption.

5. State what you know of the cause, mode of transmission, and means of prevention of the following diseases: whooping cough, diphtheria, typhoid, typhus fever, tetanus, acute anterior poliomyelitis, ophthalmia neonatorum, smallpox.

6. (*a*) What ill effects may be produced by (i) cold, (ii) heat? (*b*) What preventive measures may be used against them? (*c*) What ill effects may be produced by dampness in a house? (*d*) What measures may be used to prevent such dampness?

OBSTETRICS AND GYNECOLOGY.

1. Abortion: (*a*) Define the terms "threatened," "inevitable" "complete" and "incomplete" abortion; (*b*) Describe briefly how you would deal with each of these conditions.

2. What symptoms would lead you to suspect ectopic gestation? How would you diagnose the condition?

3. Forceps in occipotoposterior position of the head: Describe application and extraction.

4. What are the indications and the means of inducing labor and immediate delivery?

5. Fibroids of the uterus: Classify as to localization and give the symptoms of each class.

6. Discuss the causes and treatment of dysmenorrhea in the virgin.

ANSWERS.

HYGIENE AND PUBLIC HEALTH.

1. By *terminal* disinfection is meant the disinfection of a sick room and its contents at the termination of a disease. By *concurrent* disinfection is meant the disinfection of discharges, and all infective matter all through the course of a disease. Concurrent disinfection is by far the more important of the two, and the more thoroughly this method is carried out the less need there is for terminal disinfection. In diseases like typhoid, scarlet fever, and tuberculosis, concurrent disinfection should be insisted upon, and also a terminal disinfection. The latter may not always be necessary in a disease like measles. Both methods have reduced the spread of communicable diseases. Formaldehyde, in the presence of heat and moisture, is a good general terminal disinfectant. The *formalin-permanganate* method is in common use. 500 c.c. of formalin and 250 grams of potassium permanganate are required for each 1,000 cubic feet of air space. The permanganate is placed in a pail with a wide top, the formalin is poured on to the permanganate, and effervescence results with production of heat. The pail should be placed on a brick or other object to protect the floor from the heat evolved. In *concurrent disinfection*, different materials require different disinfectants; but in a general way chlorinated lime is a good disinfectant for stools; carbolic acid for sputum; superheated steam for linen.

2. *Insects* may carry disease by contact and by infecting food; typhoid and tuberculosis may thus be conveyed. Suctorial insects may also transfer infective material from the sick to the well; thus typhus fever may be spread by lice, and bubonic plague by fleas from the rat. Certain mosquitos may also act as intermediary hosts for pathogenic protozoa; malaria and yellow fever may be conveyed in this way.

To get rid of flies. Accumulations of dirt and filth must be removed or rendered distasteful to flies or larvæ by the use of lime, kerosene or cresol. Screens are used to keep flies out of houses; garbage must be disposed of in a proper manner; fly poisons such as arsenic or corrosive sublimate may be employed; fly traps are also useful; so, too, are fly papers.

To get rid of malarial mosquitos. All pools, stagnant water, or places where the anopheles may breed should be removed. Mosquitos and larvæ must be destroyed as far as possible. Fumigation by means of sulphur or pyrethrum will kill or stupefy the mosquitos, and in the latter case they can be swept up and burnt.

3. A *carrier* is a person who harbors a pathogenic microorganism but who shows no sign or symptom of the disease. The *following diseases may be spread by carriers:* Diphtheria, infantile paralysis, malaria, meningitis, tetanus, typhoid, cholera, pneumonia, influenza, cholera.

The *control of carriers* is extremely difficult. Sanitary isolation may be enforced, and the carrier must be made to exercise scrupulous and intelligent cleanliness, and must not be allowed to handle food intended for others. A "carrier" may be safely employed as a carpenter, seamstress, or in some similar occupation without danger to his fellows. In certain diseases, where it is possible, autogenous vaccines may be of service. In cases where treatment is unsuccessful or impossible the carriers should be under the supervision of the health authorities.

4. "Domestic water supply may be purified by sedimentation, boiling, distillation, chemicals, or by filtration. By *sedimentation* it is possible to free the water from its mechanical impurities, sand, dirt, etc., without, however, much affecting matters held in solution. By *boiling*, all organic matter and germs are destroyed; the taste of the water is, however, changed, owing to expulsion of gases. By *distillation*, a chemically pure water is gained, which may be made palatable by the addition of carbonic acid. By the *addition of chemicals* to suspicious water—small doses of borax, boracic acid, potassium permanganate, copper sulphate, etc.—the organic matter may be rendered harmless; but as those chemicals are not a desirable addition to water, this method of purification is objectionable. In ordinary households the boiling of waters is a good precaution whenever the water supply is suspicious. Distillation, provided the proper apparatus is at hand, is the ideal method. Water may be purified of all, or nearly all, of its impurities by filtration, the value of the process depending upon the medium of filtering, the efficiency of the filter, and the thoroughness of the process. The materials used for filters are wool, asbestos, sand, stone, porcelain, infusorial earth, carbide of iron, charcoal, etc. Infusorial earth pressed in the form of hollow tubes is used in the Berkefeld filters, which are efficient, although needing frequent cleansing."—(Price's *Epitome of Hygiene.*)

5. *Whooping cough* is caused by the bacillus of Bordet and Gengou. It is transmitted by the secretions of the nose and mouth, droplet infection, by the use of handkerchiefs, cups, toys, etc., also by domestic animals. Prevention is effected by fourteen days isolation of those who have been exposed to infection; the patient must avoid contact with others; isolation and avoidance of infection are necessary. Vaccines have been used.

Diphtheria is caused by the *Bacillus diphtheriæ.* It enters the body by the mouth or nose (occasionally elsewhere), and is conveyed by contact, coughing, speaking, fingers, toys, food, droplet infection, and by carriers. It may be prevented by isolation of cases and carriers, by the injection of diphtheria antitoxin, disinfection of mouth and nose discharges and of toys, cups, spoons, etc., used by the patient.

Typhoid is caused by the *Bacillus typhosus.* It enters the body by the mouth, and is conveyed by food, fingers, flies, carriers, and fomites. It may be prevented by inoculations; early diagnosis and isolation, with proper disinfection of secretions are necessary; proper water supply, and suppression of flies are important factors in the prevention of this disease.

Typhus is caused by an anerobic bacillus, described by Plotz. It is transmitted by the body louse. It may be prevented by cleanliness of person and clothing, destruction of lice and nits; the patient's hair must be clipped, and his clothing baked or steamed.

Tetanus is caused by the tetanus bacillus. It is spread by soil, dust, flies, and is a wound complication. Prevention consists of cleanliness, avoidance of wounds, free opening of punctured and lacerated wounds with removal of foreign matter. Excision of the wound may be advisable; tetanus antitoxin is a specific.

Acute anterior poliomyelitis is caused by a filterable, "ultramicroscopic" virus. It is transmitted by contact, the virus leaving by the discharges of the nose and mouth of one person and entering by the same route in another; insects are also believed to transmit the disease. Prevention is uncertain; isolation, cleanliness, and destruction of insects may all be tried.

Ophthalmia neonatorum. It is caused by the gonococcus or some other pyogenic microorganism; the secretions of the mother contain the infecting agent, and transmission may occur directly during parturition, or indirectly by the fingers of physician or nurse, cloths, instruments, etc. Prevention: Whenever there is the possibility of infection, or in every case, wash the eyelids of the newborn child with clean warm water, and drop on the cornea of each eye one drop of a 1 per cent. solution of nitrate of silver, immediately after birth.

Smallpox. The cause is unknown; so, too, is the mode of transmission. Prevention consists in vaccination, and prompt isolation of patient.

6. *Cold may produce the following ill effects*: Sense of chilliness, paleness of the skin, shivering, numbness, livid spots on skin, syncope, lassitude, languor, confusion of senses, dulness of mind, slow or interrupted respiration, small pulse, feeble and quick or irregular heart-beat, coma, and death. Tissue metamorphosis is rapid; more food (especially carbonaceous food) is required; oxygenation of blood and elimination of carbon dioxide are increased; skin functions are reduced to a minimum, and excretion of urine is increased.

Heat may produce the following ill effects: Respira-

tions are lessened, elimination of water and CO_2 is diminished, the heart's action is slowed, the appetite and digestion are impaired, the nervous system is depressed, the action of the kidneys is increased and that of the lungs is diminished, less food is required, metabolism is decreased, less urea is eliminated. *Preventive measures* include the avoidance of too sudden change from heat to cold, the protection of the body from cold and draughts, the wearing of proper clothing, and the protection of the extremities from cold. Attention must be paid to the skin and the urine, a proper amount of water must be drunk, alcohol should be avoided, and food must be suitable in quality and quantity.

Probable effects of dampness: "Damp houses are cold houses, damp walls are cold walls, because damp walls and moist air are good conductors of heat. Individuals lose more body heat in damp houses; more fuel is needed to warm such houses. Damp houses favor chilling of the body surfaces, have a depressing effect on the human organism, and decrease its resisting powers. Damp houses favor development of moulds, fungi, dry rot in wood, efflorescence and saltpetering in masonry, and also favor insects and germ life within the house. Damp houses cause the mildewing of clothes, injure furniture, produce spots on walls, make house cleaning difficult, heating expensive, interfere with ventilation, and decrease the suitability of the house as to comfort and shelter. Damp houses may safely be regarded as predisposing causes of tuberculosis, bronchitis, pneumonia, nephritis, rheumatism, and other diseases."—(Price's *Epitome of Hygiene.*)

To prevent dampness: "Perfect dryness of foundation, walls, and roof, and exclusion of ground air, are necessary conditions of house construction. The subsoil around the site, and, if there is much damp, also below it, should be drained, and, except where there is a rock foundation, the walls should be embedded in concrete, and under the whole house should be a layer of concrete 6 inches thick, having on the top a layer 1 inch thick of some impervious material, such as asphalt or cement. In order to prevent damp rising from the ground a *damp-proof course* should be inserted in the wall just above the ground level. Perforated slabs of glazed stoneware may be made to serve not only as a damp-proof course, but to ventilate the space under the floor. It is advisable to have a damp-proof course also where the rain-gutter joins the parapet, and in chimney-stacks just above the roof. Basement walls are liable to become wet when in contact with a damp soil even when there are drains and damp-proof courses. In this case 'a dry area' must be formed by digging out or by building a second thin wall outside and a few inches away from the main wall, or by inserting slabs in a slanting position between the soil and the house wall, or the walls may be built hollow (with two damp courses) and joined together with iron ties or bonding bricks, or the hollow may be filled with asphalt. Walls exposed to driving rain or sea spray may be coated with slates, vitrified slabs, alkaline silicates, or cement; but such coating should continue down to the 'footings,' and should not be applied while the bricks are wet. The walls of a newly built house are damp from the water used in mixing the mortar, and also that absorbed by the bricks. If salt water, sea sand, or refuse lime from soap works, containing glycerin, has been used in the mortar, it will never dry. Mortar should be composed of good lime combined with clean sharp sand, free from earthy matter (road scrapings or mold have sometimes been used by unscrupulous builders), or with crushed stone, slag, or well-burnt clay. Walls are sometimes built of concrete made with cement. For internal walls, where space is limited, coke-breeze with cement has been used. The settling of the walls sometimes breaks the drain passing underneath, if not properly protected by concrete or by the formation of an arched opening in the wall. It is usual to defer putting in drains until after the building has been carried up, with the view of allowing it to settle upon its foundations. If there be no cellars the flooring ought to be raised two feet above the ground, which should be covered with cement and the space ventilated to prevent growth of the fungus of 'dry rot.' Walls and ceilings are usually covered with plaster, which should be of good materials ('jerry' builders have been known to use a mixture of lime and sifted mold or street refuse for this purpose). It should be finished with a smooth, non-porous surface. If a room is not to be papered the walls should be coated with some form of cement or distemper, which sets hard and prevents percolation. In cheaply built modern houses the inner walls are often not carried up in brick beyond the first floor, and above this height are continued by a frame of wood filled in with lath and plaster."—(*Aids to Sanitary Science.*)

OBSTETRICS AND GYNECOLOGY.

1. In *threatened abortion* there are slight pains or hemorrhage which indicate that the uterus may empty itself, but there is a fair prospect that this may be prevented.

An abortion is *inevitable* when the signs and symptoms indicate that there is no method of preventing the uterus from emptying itself.

A *complete abortion* is one in which both the ovum and its membranes are cast off intact.

An *incomplete abortion* is one in which part of the ovum or membranes is retained in the uterus.

In *threatened abortion* the woman should be put to bed and her rectum should be emptied by an enema, a suppository containing morphine may be administered; if the hemorrhage is more than moderate in amount a vaginal tampon of sterile or iodoform gauze may be indicated.

Inevitable abortion demands rest in bed, and tamponade of the cervix and vagina; after the cervix is dilated the ovum must be removed and the uterus thoroughly cleaned out. Aseptic technique is necessary, and trauma and lacerations must be avoided.

In *incomplete abortion* the cervix must be dilated (if necessary), the uterus thoroughly cleaned out, and an intrauterine douche of sterile water given, a light tampon of iodoform gauze is placed in the vagina; a strip of gauze may be placed in the uterus in case of sharp retroflexion to secure free drainage, and sometimes an intrauterine tampon will be necessary when the hemorrhage persists or the uterus refuses to contract.

2. ECTOPIC GESTATION. *Diagnosis:* "When extrauterine pregnancy exists there are: (1) The general and reflex symptoms of pregnancy; they have often come on after an uncertain period of sterility; nausea and vomiting appear aggravated. (2) Then comes a disordered menstruation, especially metrorrhagia, accompanied with gushes of blood, and with pelvic pain coincident with the above symptoms of pregnancy; pains are often very severe, with marked tenderness within the pelvis; such symptoms are highly suggestive. (3) There is the presence of a pelvic tumor characterized as a tense cyst, sensitive to the touch, actively pulsating; this tumor has a steady and progressive growth. In the first two months it has the size of a pigeon's egg; in the third month it has the size of a hen's egg; in the fourth month it has the size of two fists. (4) The os uteri is patulous; the uterus is displaced, but is slightly enlarged and empty. (5) Symptoms No. 2 may be absent until the end of the third month, when suddenly they become severe, with spasmodic pains, followed by the general symptoms of collapse. (6) Expulsion of the decidua, in part or whole. Nos. 1 and 2 are *presumptive signs;* Nos. 3 and 4 are *probable signs;* Nos. 5 and 6 are *positive signs.*"—(*American Text Book of Obstetrics.*)

3. *Forceps in occipito-posterior positions:* "The blades are put in exactly as for cases where the occiput has rotated anteriorly. But since the occiput is now toward the sacrum, the *extension will, of course, be downward and backward over the perineum,* instead of upward toward the pubes; hence the handles of the instrument, at first lifted somewhat upward toward the pubes to draw the occiput up to the edge of the perineum, must, when the head emerges, be directed *downward and backward,* instead of toward the *mons veneris.* A moment's reflection will show that the short *straight* forceps (without any sacral curve) should be used in these cases; for the said curve is only adapted to follow the axis of the pelvic canal, but during *backward* extension of the occiput over the perineum the head departs from the axial line and goes in an almost opposite direction. If the *curved* forceps were used, the ends of the blades would impinge against the pubic

arch while the handles were being depressed in following the movement of backward extension. Again, owing to the depth of the posterior pelvic wall being three times as great as that of the anterior one, there is so much the more difficulty in getting the occipital end of the occipitomental diameter to escape over the edge of the perineum, hence greater danger of laceration, and necessity for extra care that the occipital pole *really* shall have cleared the perineum before extension is attempted."—(King's *Obstetrics.*)

4. Conditions that justify the induction of premature labor: (1) Certain pelvic deformities; (2) placenta prævia; (3) pernicious anemia; (4) toxemia of pregnancy; (5) habitual death of a fetus toward the end of pregnancy; (6) hydatidiform mole; (7) habitually large fetal head. The methods that may be employed are: Partial dilatation of the cervix and the introduction within the cervix (and vagina) of a tamponade of sterile gauze; (2) dilatation of the cervix; (3) puncturing the membranes; (4) introduction of a soft rubber bougie into the uterus; (5) intrauterine injection of glycerin, water, or some other fluid.

5. *Fibroids are classified* as: (1) *Interstitial* or *intramural*, when they are entirely in the muscular wall of the uterus; (2) *Subperitoneal* or *subserous*, when they bulge ontward beneath the peritoneum; (3) *Submucous*, when they bulge into the uterine cavity.

The *symptoms* are: (1) *Hemorrhage*, the degree of which depends upon the nearness of the tumor to the endometrium or to the peritoneum; the nearer to the uterine mucosa, the greater the hemorrhage, and the nearer the tumor is to the peritoneum, the less the hemorrhage. There is no relation between the degree of hemorrhage and the size of the tumor. (2) *Pressure* and *traction* may cause disturbances of rectum, bladder, ureters, urethra, and uterus; hence there may be tenesmus, diarrhea, frequency of urination, dysuria, retention of urine, uterine displacements, hydronephrosis, and cystitis. Other symptoms are pain, leucorrhea, anemia, and generally impaired health.

6. *Causes of dysmenorrhea:* Pelvic congestion, pelvic inflammation, malnutrition, overwork, lack of development, neuralgia, stenosis or obstruction of the cervix, prolapse or displacement of the uterus.

Treatment should first of all be directed toward discovering the cause and (if possible) removing it. General methods of treatment and hygiene are indicated; advice should be given on such matters as rest, exercise, proper diet, care of bowels and bladder, bathing, clothing, change of residence; massage, douches, tampons, and electricity may prove of service. Innumerable drugs have been recommended, such as apiol, bromides, phenacetin, antipyrin, cannabis indica, viburnum prunifolium, amyl nitrite, and salicylates. Alcohol should be avoided, if possible; so, too, should unnecessary local examinations and applications.

(*To be concluded.*)

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading, but it must be with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

ACUTE POLIOMYELITIS (INFANTILE PARALYSIS). By GEORGE DRAPER, M.D., with a foreword by SIMON FLEXNER. 19 illustrations, 149 pages. Published by P. Blakiston's Son & Co., Philadelphia, Pa. Price, $1.50 net.

THE MICROSCOPE. An introduction to microscopic methods and to histology. By SIMON HENRY GAGE. Twelfth edition, rewritten and illustrated by over 250 text-figures. 472 pages. Price, 3.00 net. Published by The Comstock Publishing Company, Cornell Heights, Ithaca, N. Y.

DISEASES IN MILK. THE REMEDY—PASTEURIZATION. THE LIFE WORK OF NATHAN STRAUS. By LENA GUTHERZ STRAUS. Second edition, revised and enlarged, to commemorate the twenty-fifth anniversary of the inception of the work. Published by E. P. Dutton & Co., New York City. Price, $2.50 net.

Therapeutic Hints.

Hemoptysis.—Excessive hemoptysis, not amenable to simpler remedies, may be stopped by the following:

℞ Ergotin .....
Acidi gallici.....āā gr. xv
Syr. althæ.....
Aquæ destill.....āā ℥vj

M. S.—A teaspoonful every two hours, p. r. n.

Urticaria in Children.—First remove the offending cause, whether external or dietary, more frequently the latter. Locally, baths containing bicarbonate of soda, also salines to clear out the intestinal tract, and local applications of ointments containing menthol, camphor, or carbolic acid. Small doses of salicylate of sodium or aspirin will relieve the intestinal fermentation.—*Diseases of Children*, Chapin and Pisek.

Acute Nasal Catarrh.—Sajous has found the following to act efficiently in the beginning of this condition:

℞ Ammonii chloridi.....gr. xl 2.6 gm.
Tr. opii.....m. xxx 2.0 c.c.
Sacch. albi.....℥ j 4.0 gm.
Aquæ camphoræ.....f℥ j 30.0 c.c.

M. S.—One teaspoonful in water every hour or two.—*Hughes' Practice of Medicine.*

Neuralgia.—This condition produced by exposure to cold and wet may be relieved by the following:

℞ Phenacetin .....
Salophen .....āā ℥jss (6.0)
Codeinæ .....gr. iij (0.2)

Fiant chartulæ No. xii.

S.—One powder every two or three hours.—*Stevens' Modern Materia Medica and Therapeutics.*

Epistaxis.—Harold Hays offers the following means for relief when hemorrhage from the nose occurs: The first thing to guard against is the demoralizing effect on the patient of the continuous bleeding. Careful watch of the pulse should be kept and patient assured that there is no danger of bleeding to death. In many instances, a dose of morphine will quiet the heart action and sometimes cure the hemorrhage, while fainting accomplishes the same result. If the condition cannot be attacked directly packing must be resorted to; anterior packing through the nostril, preferably with strips of bismuth subnitrate gauze may be all that is required. If more is needed posterior plugging is done by making a hard plug of gauze to fit one posterior naris, to which is tied a long piece of string, leaving two long ends; then a baby catheter is inserted through the affected nostril and out through the posterior nares, to which is tied one end of the string with the plug fitted into position. Such a plug should never be left in position longer than twenty-four hours, as an inflammation of the Eustachian tube and middle ear may result from irritation of the nasopharynx. Styptics, such as iron, alum, trichloracetic acid, suprarenalin powder, etc., may act and again they sometimes fail. Fifteen grains of calcium lactate or hypodermic injections of emetine or the extract of pituitary gland usually relieve this condition. Large doses of serum have been resorted to, and also transfusion.—*Medical Times.*

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Original Articles.

NEUROTIZATION OF PARALYZED MUSCLES BY IMPLANTATION OF MOTOR NERVES.

BY JOHN C. A. GERSTER, M.D.,

AND

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NEW YORK.

(From the Surgical Laboratories, Department of Surgery, College of Physicians and Surgeons, Columbia University.)

IN 1906 Gersuny[1] noticed that incidental to the removal of a tumor of the face, a muscle which had been severed from its connection with the facial supply on that side, if replaced so that it lay in contact with the normally innervated muscles (from the facial) of the same or opposite side of the face, would ultimately regain its function. The case on which he based this theory was one of facial paralysis in which he dissected the orbicularis oris free and brought the sound portion of it past the midline, suturing it in this position. There was an ultimate return of function in the muscle.

Another case of his was a paralysis of the deltoid of unknown origin. Here he freed the deltoid and trapezius from their attachments to the acromion and scapular spine, and then brought up the paralyzed deltoid under the healthy trapezius and sutured it there. The arm was fixed horizontally. In 50 days the deltoid began to show return of function. Stimulation of the spinal accessory caused contraction of the trapezius, but stimulation of the circumflex evoked no contraction of the deltoid. Frankl-Hochwart at the time pointed out that this was no proof of non-function of the nerve—it is well known that voluntary contraction often returns before response to electrical stimulation.

In 1908 von Hacker divided the spinal accessory incidentally to extirpation of tuberculous cervical lymph nodes. There was a paralysis of the trapezius. Some time later (he does not state exactly) he implanted the central end of the cut nerve into the trapezius higher up, the peripheral end was implanted into the brachial plexus lower down, and, lastly, a flap from the levator scapulæ was implanted in the center of the trapezius. Apparently recovery was slow, for, at a second operation, the deltoid was

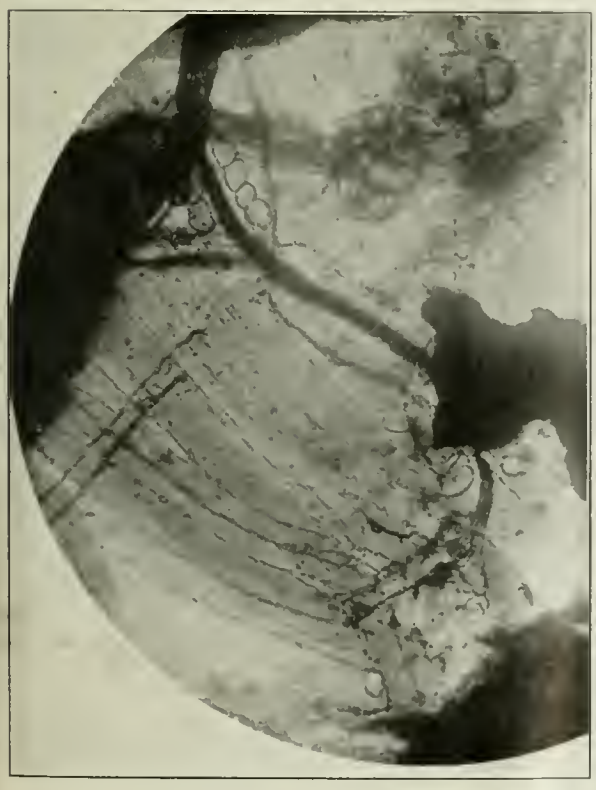

FIG. 1.

FIG. 2.

freed and implanted into a freshened cross section of the trapezius. Two years later there was complete restoration of function.

In a second case, von Hacker performed neurolysis for a deltoid paralysis of three months' standing. There was no result six weeks later; he then freed a flap of healthy trapezius and brought it into contact with the deltoid fibers. Six weeks later there was a return of function—the anterior fibers of the deltoid reacted to electrical stimulation. None of the cases just described are conclusive.

In 1914 Heinecke[2] of Leipzig reported having cut the posterior tibial nerve in rabbits and then having implanted the peroneal into the paralyzed gastrocnemius. In 14 days function began to return and in 8 weeks there was complete restoration. Implantation as late as 21 days after paralysis was successful.

Fig. 3.

Shortly after, Erlacher[3] of Graz reported having been at work on this problem since 1911. In a monkey the musculocutaneous had been severed and then reimplanted at another point into the biceps. There was return of function. Many other experiments (34 in all) were made on guinea pigs, using the biceps. As a result of these he claimed it was also possible to innervate (hyperneurotize) normal muscle with additional nerve trunks (by implantation), and lastly, to innervate paralyzed muscles by bringing their fibers intimately in contact with non-paralyzed muscular tissue.

Steindler[4] of Iowa City, in 1915, reported positive findings in 5 dogs. The anterior crural was resected and the sciatic was cut across low down, it was then implanted into the paralyzed quadriceps. After 10 weeks there was some return of function and after 16 weeks restoration was complete. He also reported innervation of paralyzed muscle in 3 cases of residual deformity following poliomyelitis (pes calcaneus with fair or good function of the long flexors of the toes). The posterior tibial was isolated and split; part of it was then implanted into the gastrocnemius by suture. There was return of function within 4 to 6 weeks.

In a later communication (1916) Steindler[5] recounted a second experimental series of 5 dogs and 2 cats in which the artificially paralyzed quadriceps was innervated by implantation of the cut anterior tibial.

In a recent number of *Science*, Elsberg[6] gives his experimental experience in this field. He states that it is possible to innervate a muscle after it is artificially paralyzed. It is not possible to hyperinnervate a normal muscle supplied by its proper motor nerve.

Since February, 1916, the author, with the assistance of W. C. Cunningham, has been conducting experiments on innervation (neurotization) of muscles along the lines described above. The gluteal hamstring group of muscles was deprived of its motor nerve supply. The anterior tibial nerve was divided close to the knee and then implanted into the paralyzed muscle belly. Owing to an epidemic among the operated rabbits, only 3 out of 13 furnished any positive findings. In fact, it was not until February, 1917, that a rabbit was obtained in which stimulation of the implanted nerve trunk evoked a normal strong contraction in the previously paralyzed muscle; this response was as strong as that obtained from stimulation of normally connected motor nerve trunks in the vicinity. This finding was repeated and confirmed at the end of May, 1917, the animal was killed and the muscle in the vicinity of the implanted nerve was examined for the author by Dr. J. H. Globus, who used the gold chloride precipitation method. The appended figures (1, 2 and 3), show branchings of the implanted nerve as well as motor nerve endings. Similar findings were subsequently obtained in two other animals. One showed a weak but definite response* at the end of 4 weeks, and a normal, strong response at the end of 12 weeks. The other showed a definite response at the end of 12 weeks.

From the foregoing experimental work of others as well as the author's—in which the same procedure has been applied to different groups of muscles in different species of animals with the same result—it seems fairly well proven that a recently paralyzed muscle can be innervated by implantation of a motor nerve. This may be the identical nerve which originally supplied the paralyzed muscle *or some other motor nerve.*

REFERENCES.

1. Gersuny: *Wiener med. Woch.*, 1906, p. 520.
2. Heinecke: *Zentralblatt für Chirurgie*, 1914, p. 465.
3. Erlacher: *Zentralblatt f. Chir.*, 1914, p. 625.
4. Steindler: *Am. Jour. Ortho. Surg.*, July, 1915, p. 33.
5. ————: *Ibid*, December, 1916, p. 707.
6. Elsberg: *Science*, March 30, 1917, p. 318.

34 East Seventy-fifth Street.

*Only the fibers immediately adjacent to the implanted nerve end contracted. At a subsequent examination 8 weeks later, the entire muscle contracted—seeming to indicate that innervation had spread peripherally from the site of implantation.

ETIOLOGY AND TREATMENT OF HEMORRHOIDS;

By J RAWSON PENNINGTON, M.D., F.A.C.S.,

CHICAGO

In a preliminary report to the American Proctological Society at the Detroit meeting (June, 1916) on "Anatomic and Bacteriologic Findings of the Ano-Rectal Region," the writer called attention to the sinuses and diverticula in this region. It was announced that cocci and other forms of bacteria had been found in their walls and contents, and the possible relations to focal infections, etc., were pointed out. The object of the present communication is to emphasize the connection between these sinuses and diverticula and hemorrhoids.

Fig. 1.—Photomicrograph of cross-section of the rectum just proximal to the pectinate line, showing many sinuses and blood vessels have been cut across.

Fig. 2.—Photomicrograph which shows beginning of a rectal sinus in a fetus six months *in utero*.

The principal causes of hemorrhoids are predisposing (embryological and mechanical) and exciting (bacterial). The *embryological* are the sinuses and diverticula just referred to. They were first noticed by the writer many years ago, when investigating the structure of the rectal valves, and were referred to in a paper published at that time[2] as "epithelial glands." He then frequently noticed the apertures of the sinuses and diverticula during the course of various operations on the lower bowel, and pointed them out to his classes from time to time. Not long ago, in a patient with hemorrhoids, one aperture was so prominent that a probe was inserted into the lumen for quite a little distance. This aroused renewed interest in the subject, specimens were collected, and investigations commenced from a bacteriologic standpoint.

Fig. 3.—Photomicrograph of a rectal sinus in a still-born child at full term. This sinus passes through the mucosa and sub-mucosa down to the circular muscular fibers.

Fig. 4.—Photomicrograph showing round-celled infiltration and infection in a rectal sinus

On looking up the literature it was a great surprise to find that these sinuses and diverticula had been described by Hermann and Desfosses[3] nearly forty years ago. Yet they are ignored in all text-

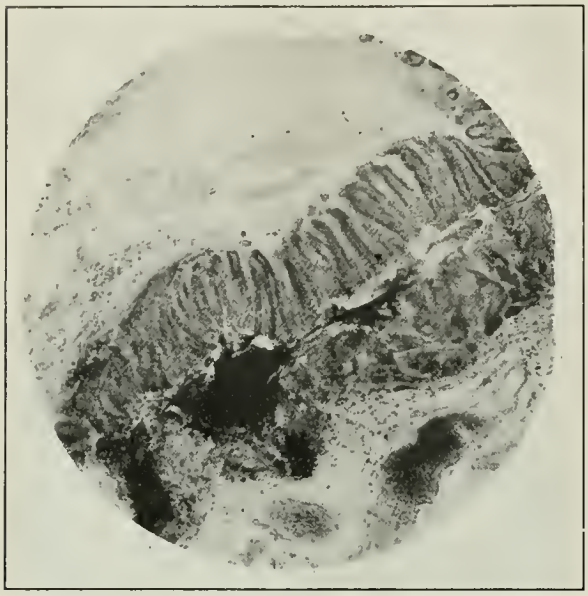

Fig. 5.—Photomicrograph of an infected rectal sinus in a hemorrhoidal specimen. The mucous membrane lining the sinus is broken down and numerous bacteria are seen in the sinus and surrounding tissues, as shown in Fig. 6.

books on diseases of the rectum and those on medicine and surgery. The only reference found of late years is in a paper on the anatomy, by Johnson[4].

It is not clear why they have been ignored unless it is that they have had no pathological possibilities

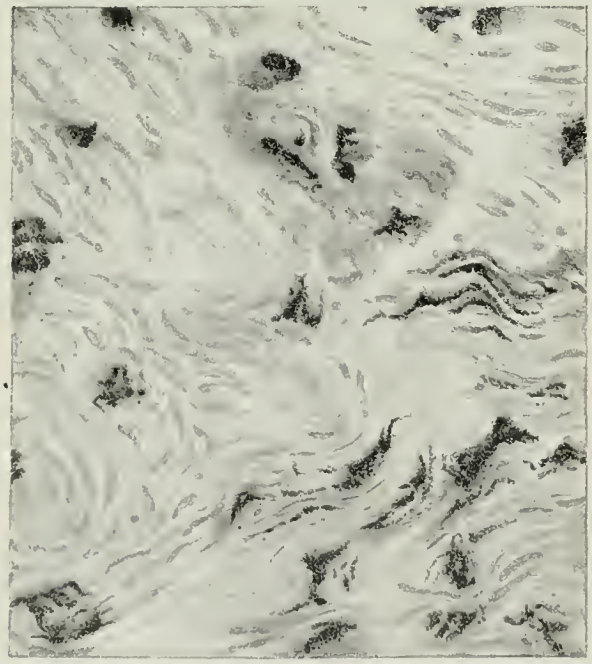

Fig. 6.—Photomicrographic sketch of a field in Fig. 5. It shows the microorganisms in the surrounding tissues in many places.

attributed to them. Yet, as will be seen both by referring to Figs. 1-6, and by actual clinical experience, they can be shown to be an exceedingly important factor in pathological processes in the rectum itself, primarily; and in exciting constitutional conditions, secondarily.

That an important anatomical fact should, in this scientific age, be disregarded or lost sight of for many years, after being placed on record, and then, without knowledge of its former discovery, be rediscovered and found to be of great importance as a disease-producing factor, is almost unbelievable. However, this anatomical finding when resurrected proves to be of a vital etiological factor in the causation of hemorrhoids and other diseases of the rectum with their metastatic sequelæ.

The *mechanical* causes are those conditions interfering with the return flow of blood; these slow the blood current and produce dilatation of the

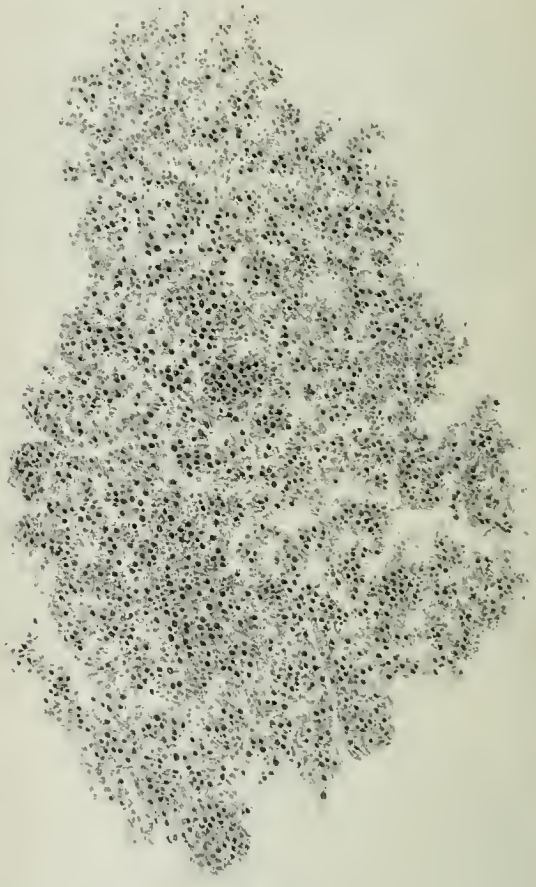

Fig. 7.—Photomicrographic sketch of a culture made from specimen that appeared to be the remains of a former hemorrhoidal operation. The specimen was washed in boiling water and then dipped in alcohol. After burning the alcohol off, the specimen was cut across and dropped into bouillon. A microscopic examination of the bouillon later shows numerous streptococci together with a few colon bacilli and other cocci, probably staphylococci.

blood vessels. Although retarding the blood stream will not of itself cause an inflammatory condition of the lining of the vessel, which is necessary to thrombosis, yet dilatation of the vessel favors thrombosis by aiding the entrance of bacteria.

That bacteria, the *exciting* cause, either directly or through their toxins, produce thrombosis has been definitely proven, and clinical experience shows that thrombosis is met with most frequently in those veins which, by reason of their location, are most exposed to infection. It would seem, from the anatomical conditions heretofore mentioned, the microscopic findings to be referred to, and from cur

knowledge of thrombosis elsewhere, that bacteria are the exciting cause of thrombosis in the anal and rectal veins. The rectal sinuses or diverticula (Fig. 3) serve as catch-basins or traps for the bac-

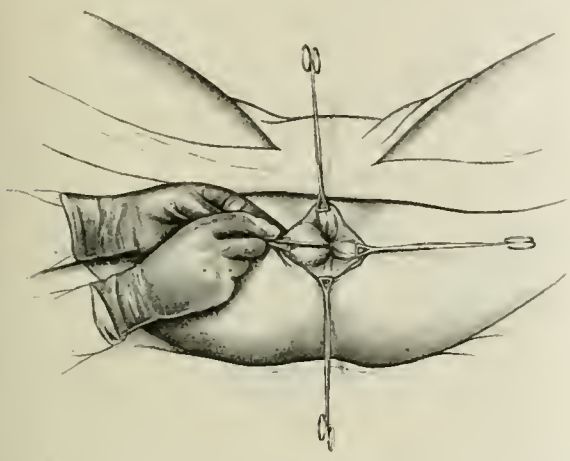

Fig. 8.—The hemorrhoidal field exposed and the hemorrhoid being incised.

teria. Here they give off toxins, which aid in producing irritation and congestion, to be followed by inflammation and their entrance into the stroma. The resistance of the tissues and vessels being lessened by the destructive processes produced by the bacteria, dilatation is favored and thrombosis follows. Besides this route, they may gain access to the stroma through some abrasion or otherwise, and produce a similar process of tissue destruction. Figs. 4, 5 and 6 show that bacteria are present in the sinuses and hemorrhoidal tissues and that the sinuses furnish a nidus for their incubation.

In specimens of hemorrhoids which were submitted by the writer to the Medical Research Laboratories of Chicago for examination there were found colon bacilli, diphtheroid bacilli, streptococci, staphylococci, diplococci, and other microorganisms. The same types of bacteria were found in specimens (Fig. 7) removed from points which seemed to be the stumps of former operations for hemorrhoids, as well as from the rectums of patients who did not

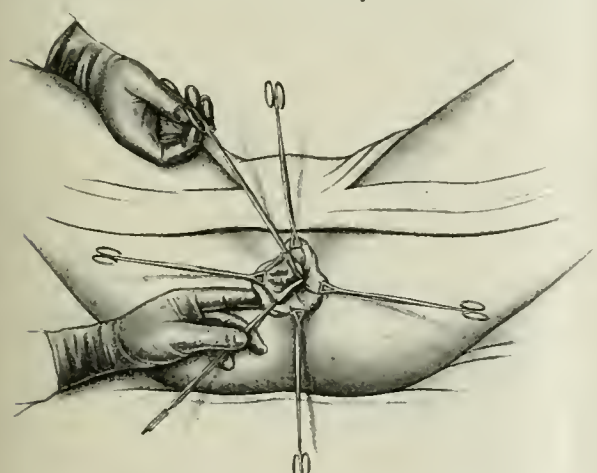

Fig. 9.—Forceps are placed on the incised covering of the pile, exposing the true hemorrhoidal mass.

present the clasical symptoms of hemorrhoids, but were suffering from some constitutional ailment. Removal of these points of infection corrected the constitutional or remote trouble.

The foregoing findings, it is believed, are sufficient to give rise to another classification of the hemorrhoidal condition—viz., that of non-infective and infective, as stated in a paper read before the

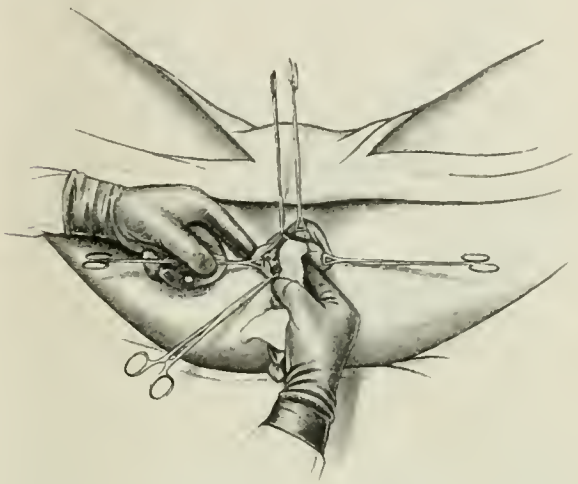

Fig. 10—The hemorrhoidal mass is removed with a piece of gauze on the index finger.

Ohio Valley Medical Association in November, 1916. This clasification is based, of course, on the relative virulence of the infection in the hemorrhoids. It is helpful to those who desire to compare and contrast the efficiency of the various methods of operative procedures in order to select the one which offers the best means for removing the infection as well as the tumor.

By the light of modern teaching, total removal of the hemorrhoid, when it is of the infective variety, is very essential. In the simple cutting off the top or removing part only of the hemorrhoid (as is done by the ligature, clamp and cautery, and many of the closed methods of operating), the infected base is left and closed over. This increases the danger of local and constitutional complications. How often has pruritus ani, ischio-rectal abscess, fistula or some other neurotic trouble been observed to follow one of the closed methods of operating? The writer has seen this not once, but many times.

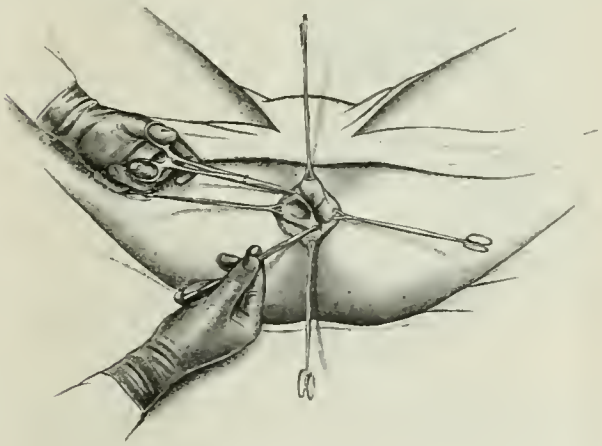

Fig. 11—Shows the appearance after the entire hemorrhoidal mass has been removed.

Locking in part of an infective hemorrhoid may give rise to a more serious condition than the original trouble. For example, tubercle bacilli when encapsulated are harmless; but when the encapsula-

tion is disturbed constitutional tuberculosis may develop.

Preparation of the Patient.—The patient is usually given a cathartic 12 to 18 hrs., and a colonic

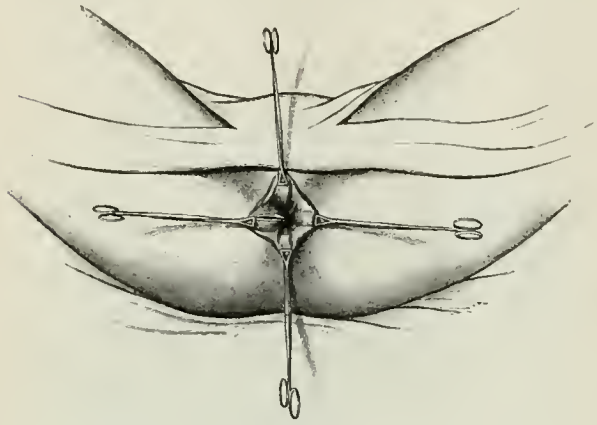

Fig. 12—Appearance after the excess of covering has been cut off.

flushing, until the water returns clear, 4 to 6 hrs. before operating. Simply flushing out the bowel 2 to 4 hrs. before operating seems to be quite satisfactory in many cases.

Anesthetic.—In an adult with a general hemorrhoidal condition—both internal and external piles—either local or general anethesia is used. We usually precede local anesthesia in an adult, with no contraindications. with a hypodermic injection of 1/4 gr. of morphine sulphate and 1 150 gr. of atropine sulphate twenty minutes before operating; or, give 1/6 gr. morphine sulphate and 1 150 gr. scopolamine $1^1/_2$ hrs. before, and repeat twenty minutes before operating.

As a rule, I use 40 m. to 60 m. of a 1 per cent. solution of cocaine muriate to "block off"[5] the field of operation. This amount of solution does not "water-log" the tissues nor disturb the anatomic landmarks and relations. The addition of adrenalin enhances its efficiency. The solution is deposited in

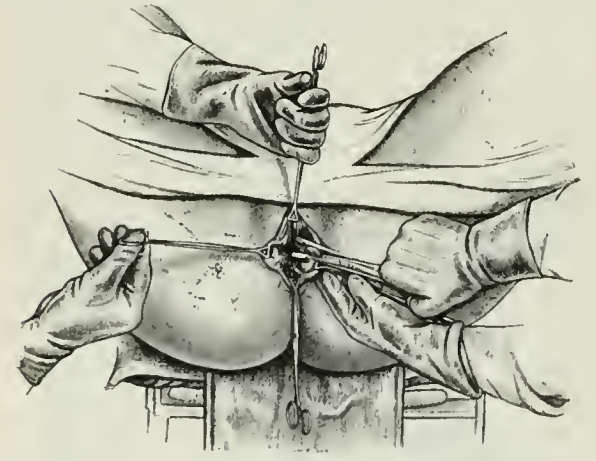

Fig. 13.—Illustrates method of prolapsing the hemorrhoids into view. The forceps attached to the left anal quadrant is grasped by the operator's left hand, the index finger is pushing the pile into the field and an ellipse is being removed from it.

and beneath the skin around the anus, and a few drops in the external sphincter in the anterior, posterior and lateral quadrants. If the operator is not familiar with the nerve supply and anatomy of this region, then he can add enough water to this quantity of solution to make a 1/8 or 1/10 of a 1 per cent. solution, and use this as he desires. When the patient is ready for the operation (he either

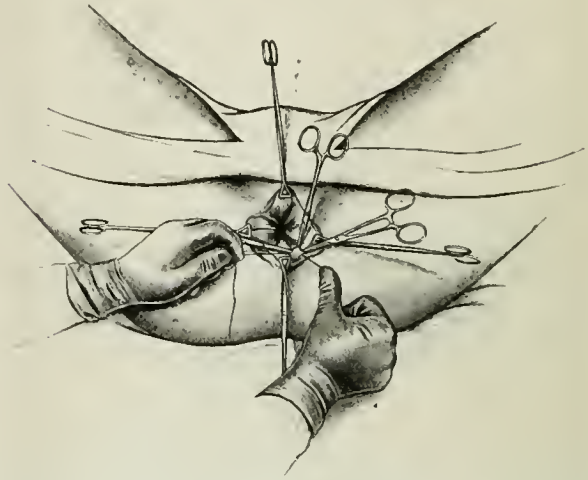

Fig. 14.—Illustrates a method of ligating a bleeding point by attaching two or more forceps to the field and separating them, which facilitates the tying.

being asleep or the field "blocked off") the rectum is dilated and washed out with either soap and water or lysol and water.

Treatment.—The treatment of hemorrhoid is preventive, palliative and curative.

Preventive Treatment: Prevention is a very important, if not the most important, factor in the treatment of hemorrhoids; yet authors of textbooks, so far as I have been able to ascertain, fail to give consideration to this therapeutic measure. Keeping the anus clean[6] and maintaining a respectable toilet is most important and essential, not only as a preventive measure in hemorrhoids, but in many other diseases of the anus and rectum, and in maintaining a respectable and sanitary condition of one's linen.

Briefly, people should be educated (*a*) to heed nature's call to evacuate the bowels; (*b*) not to hurry or force defecation by straining, etc.; (*c*) to keep the bowels regular by means of diet, exercise, periodic defecation, ablutions, etc. (Speaking of

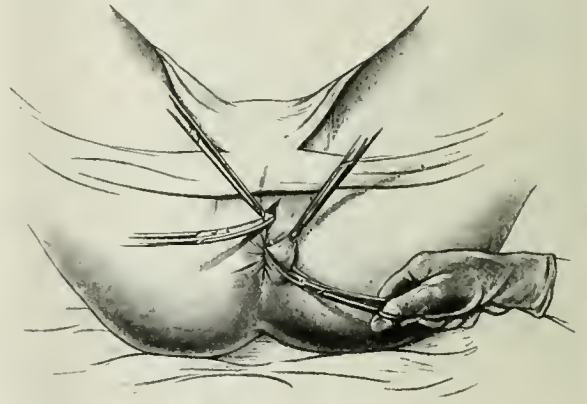

Fig. 15.—Illustrates the removal of an ellipse from the covering of a "fleshy pile," dissecting out the tumor mass, and the slit-like appearance after this dissection.

ablutions reminds me that Mr. Allingham says: "Many people seem to forget that the anus requires as much washing as any other part of the body."). (*d*) To avoid those articles of diet that tend to irri-

tate the anal canal; (*e*) not to use detergents that are hard or rough, or that may irritate, abrade, or infect the ano-rectal mucosa; (*f*) to know that neglecting hygienic and sanitary attention to the anus and rectum leads to a filthy condition of the parts, soiled linen, a luxuriant growth of bacteria, irritation, infection, cryptitis, and proctitis, to be followed by hemorrhoids, and other diseases of the anus and rectum and their metastatic sequelæ.

Palliative Treatment: This phase of the subject is very well considered in all text-books on diseases of the rectum.

Curative Treatment: Satisfactory curative treatment of hemorrhoids is difficult, as is evidenced by the multitudinous varieties of methods advocated by surgeons. This paper, however, will treat of the author's open operation only. Since new etiologic factors are now recognized in the causation of hemorrhoids, the pathology must be rewritten, and the operation made to conform to the new scientific developments.

The authors of our text-books divide hemorrhoids into the internal, the external, and the interno-external varieties. This classification, in the light of recent findings, is of but little service to those who desire to study and employ the most efficient method of operating. Nevertheless, it is on this text-book classification that practically all hemorrhoidal oper-

Fig. 16.—Rubber covered tampon.

ations have been based, and, doubtless, accounts for much of their inefficiency.

The writer in a former article[7] classified hemorrhoids according to their structure into those containing clotted blood, those containing fluid blood, those containing both fluid and clotted blood, and the "fleshy" variety. This classification is advantageous to those who desire to study the relative mechanical value of the various technics for overcoming the hemorrhoidal condition. It is the latest arrangement of the writer, however, that of simple (or non-infective) hemorrhoids and infective hemorrhoids, which determines the kind of operation which should be employed, and tells why.

Moreover, the foregoing findings emphasize the author's former claims for the advantages of the open method of operating. In the closed methods a section of the covering and a part of the hemorrhoid is removed, while the infected base is closed over or sealed in. While in the open method, not only a section of the covering is removed, but the entire infected mass or base as well, and the wound is left open for drainage. In the open method the amount of the covering to be removed is governed entirely by the operator. A simple incision in the covering is quite sufficient for the radical removal of the entire hemorrhoidal mass, should the surgeon so desire, as is shown in Figs. 8, 9, 10, 11, and 12.

But a more practical application of this procedure, and the one usually employed is as follows: T-forceps are applied, as shown in Fig. 13, then the forceps nearest the pile to be removed is grasped by the operator's hand, when the index finger naturally drops to the skin side of the hemorrhoid, and by slight pressure forces it into the field; then with a pair of scissors curved on the flat an ellipse commensurate with the size of the tumor, according to the surgeon's judgment, is removed. This incision, when properly executed, removes the ellipse from the covering, and most of the hemorrhoidal mass as well. Each tumor is treated in the same manner. Should there be a "spurter," it is picked up and ligated, as shown in Fig. 14. If a bleeding point is high in the rectum, a pair of curved forceps is applied to it, and another pair, of a similar curve, grasps the tissues near the one on the vessel and is so attached that the concave surfaces face each other; this forms an oval for the ligature to slip over and facilitates tying. This oval effect can be increased by divaricating the forceps. (The same principle may be applicable when ligating bleeding vessels in other cavities.) The internal tumors removed, the T-forceps are taken off, and the external piles excised, as shown in Fig. 15. In eliminating these growths, sufficient of the tumor mass is removed so that the anal region will present a normal appearance when the operation is completed.

Should a ring of flesh completely encircle the anus and extend distally for an inch or more, as it frequently does, it is removed by the same technic.

The field is then cleared of blood clots and a rubber-covered tampon, Fig. 16, which dresses the field in extension, is introduced into the rectum. Hot wet dressings, a piece of protective and a snugly fitting T-bandage are now applied.

The dressings and tampon are removed in from 18 to 24 hours and hot fomentations continued.

In 6 or 8 hours thereafter, an enema of 3 oz. of olive oil, and a laxative are given. The patient does not use a bed pan, but gets out of bed and goes to the water-closet or uses a commode; wet cotton is employed as a detergent.

Hot fomentations are applied every 4 to 6 hours for a day or so. The average patient is dismissed on the third or fourth day after the operation. Occasionally, one will remain a day or two longer; on the other hand, they frequently leave earlier.

Since no tissue is under stress, nor cauterized or ligated en masse, and there are not needle holes through the mucous membrane to carry in infection and no infection closed in, there is less likelihood of complications, and the patient should, and does, according to clinical observations, recover earlier, with less pain and a better result.

REFERENCES.

1. J. Rawson Pennington: Transactions American Proctologic Society, 1916, p. 38.
2. *Journal A. M. A.*, Dec. 15, 1900.
3. Hermann and Desfosses: C. R. Acad. des Sci. (Paris), 1880, xl; p. 1301.
4. Johnson: *American Journal of Anatomy*, March, 1914.
5. J. Rawson Pennington: *American Medicine*, July 29, 1905.
6. *Journal of the American Medical Association*, July 12, 1895.
7. *Ibid.*, April 3, 1915.

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HAYFEVER AND ITS RELATION TO 100 OF THE MOST COMMON PLANTS, TREES AND GRASSES.

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THE etiological relation of pollens to hayfever is evidently well established, but the special plants that are responsible are not well known as indicated by the inquiries which we are constantly receiving. While the ragweeds (Ambrosia) are accepted as the principal cause of hayfever, our correspondents inquire as to the toxicity of numerous harmless plants such as the honeysuckle, lily, rose, daisy, strawberry, golden rod, crysanthemum, resin weed,

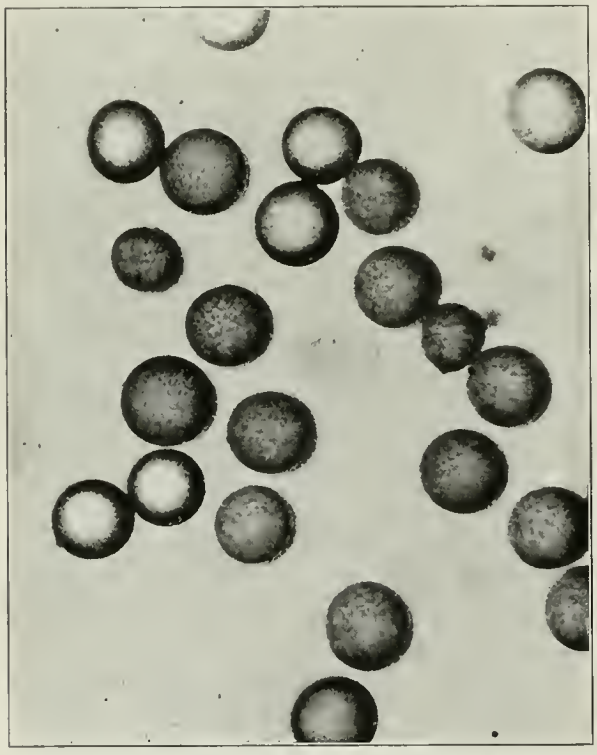

FIG. 1.—Pollen of red maple (*Acer rubrum*). Magnified 500 diam. A cause of mild hayfever.

aster, evening primrose, etc. As some of these are listed as hayfever plants even in our standard textbooks, we have decided to report the result of our investigations as a practical guide on this subject.

Generally speaking, the characteristics of hayfever plants are as follows:* (1) They are wind-pollinated; (2) very numerous; (3) the flowers (florescences)are inconspicuous, without bright color or scent, and (4) the pollen is formed in large quantities.

While all the hayfever plants are included in the above classification, there are many plants with these qualities whose pollen is harmless from a hayfever standpoint.

The pines, for instance, are wind-pollinated, numerous, with inconspicuous flowers (aments) which

*"Hay-Fever and Its Prevention," Wm. Scheppegrell, M.D., United States Public Health Reports, July 21, 1916.

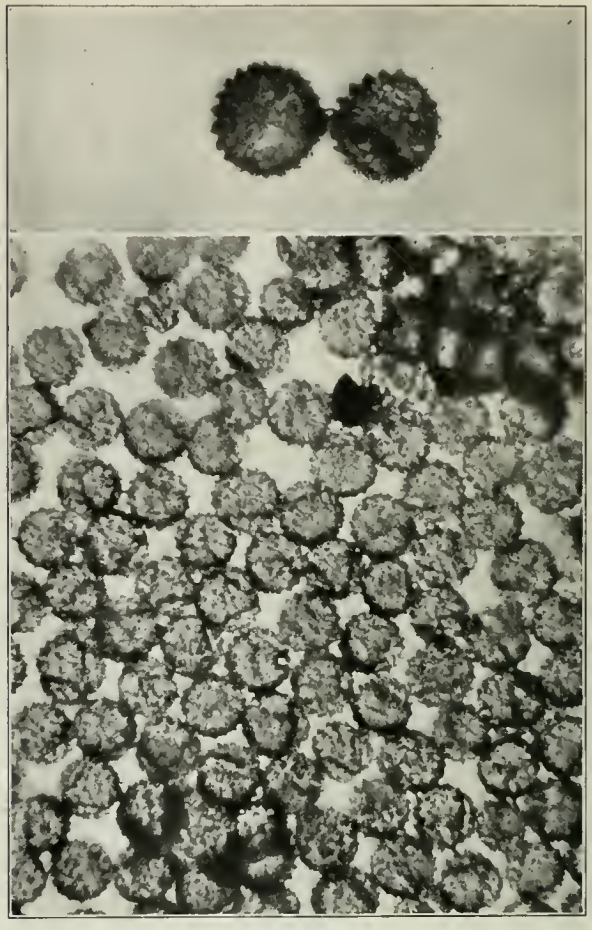

FIG. 2.—Pollen of the ragweed, × 500 diameters. The upper two (A) have a magnification of 1000 diameters. (From the biological laboratory of the American Hayfever Prevention Association.)

FIG. 3.—Pollen of sagebrush (*Artemisia tridentata*). Magnified 500 diam. The artemisias are the principal cause of hayfever in the Pacific and Rocky Mountain States.

are without bright colors or scent and whose pollen is formed in great quantities, yet, as shown in our list, they give a negative reaction in hayfever.

When it has been found, therefore, that a plant

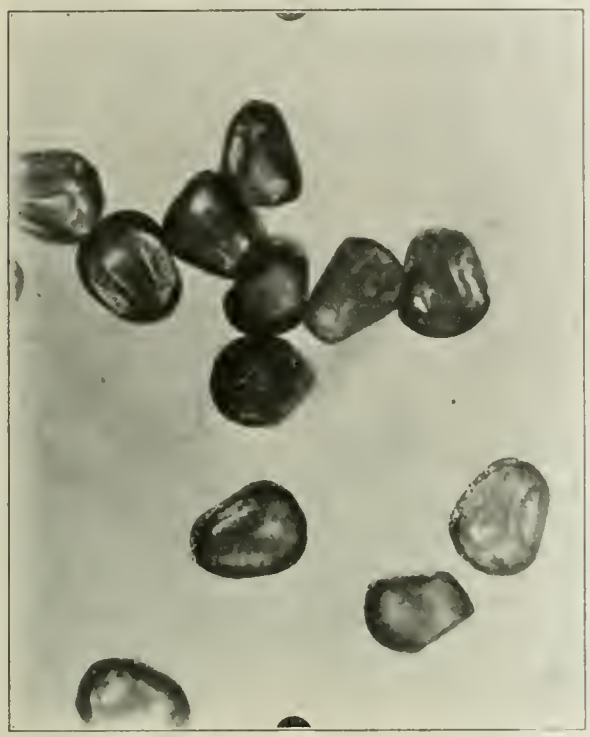

Fig. 4.—Pollen of field oats (*Avena sativa*). Magnified 500 diam. A member of the grass family which is the chief cause of early hayfever.

is wind-pollinated, the effect in hayfever must be determined by the biological test. A small amount of the pollen is applied to the nostril of a hayfever

Fig. 5.—Pollen of foxtail grass (*Chaetochloa glauca*). Magnified 500 diam. An important cause of early hayfever.

subject or to the conjunctival sac, and, if the reaction is positive, the pollen is a potential cause of hayfever. Instead of the conjunctival or nasal test, the skin is often preferred, a drop of the extract

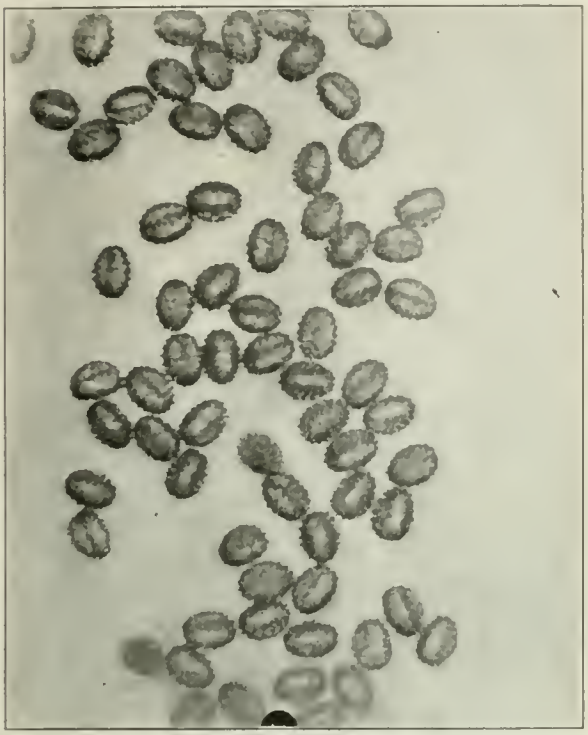

Fig. 6.—Pollen of daisy fleabane (*Erigeron strigosus*). Magnified 500 diam. Common cause of hayfever in children from direct inhalation.

of the pollen being applied to the scarified skin or injected intradermically.

When the pollen is applied to the eye, a positive

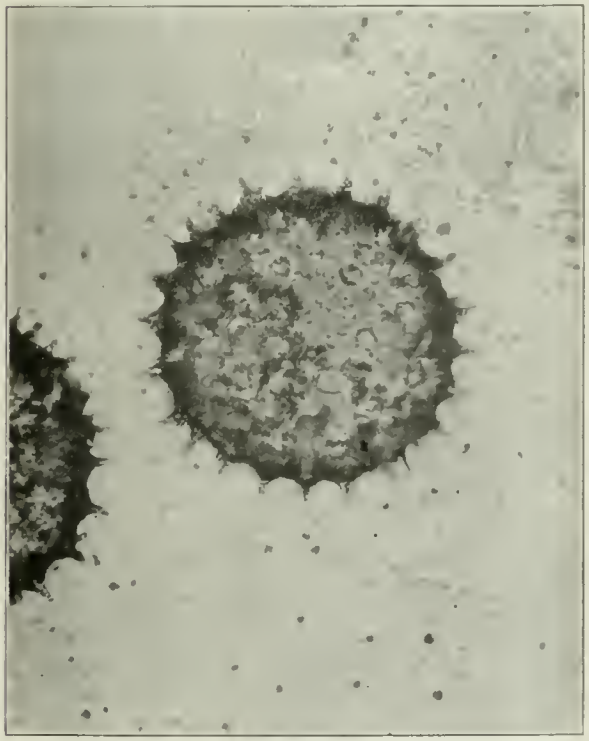

Fig. 7.—Pollen of cotton. (*Gossypium peruvianum*). Magnified 500 diam. Harmless in hayfever.

reaction is indicated by a transient injection of the conjunctiva. In the nostril, it is shown by a temporary hayfever reaction which lasts from ten minutes to several hours according to the amount of pollen inhaled and its toxicity.* The skin reaction is shown by a slight swelling resembling uticaria accompanied by a sensation of heat and itching.

The pollens that are responsible for hayfever are not toxic to all hayfever subjects. The majority of persons sensitive to the ragweed (Ambrosia) pollen are not affected by the grass (gramineæ) pollens, and many persons who have vernal hayfever due to the grass pollens are relieved of their hayfever in the fall, in spite of the fact that the air contains large numbers of ragweed pollens.

Ignorance of the fact that the plants which cause hayfever must necessarily be limited to those which are wind-pollinated, is responsible for much of the

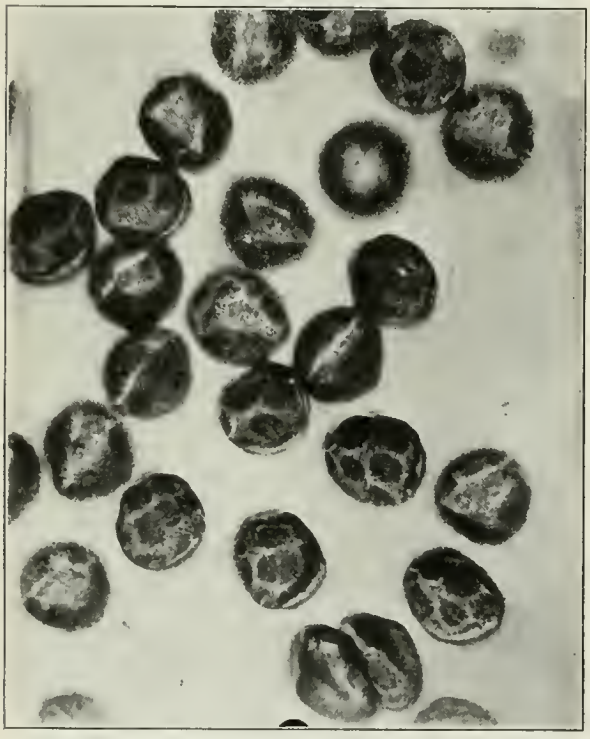

Fig. 8.—Pollen of black walnut (*Juglans nigra*). Magnified 500 diam. Important cause of hayfever in some sections (Central California, etc.).

confusion on this subject. While the roses, for instance, are not wind-pollinated, being typical insect-pollinated plants, the term "Rose-cold" is still commonly used, even by physicians, for the vernal type of hayfever due to the pollen of the grasses (gramineæ).

While ordinary reasoning will show that only those pollens which are inhaled in normal respiration can cause hayfever, this has been corroborated by our atmospheric-pollen plates which are exposed daily at various stations.* The procession of the pollens is carefully recorded from the pollination of the trees in early spring, followed by the grasses and ending with the ragweeds in the fall, and naturally only those of wind-pollinated plants are found.

*"Toxicity" in pollens refers to their reaction in hayfever subjects. The existenceof a true toxin in hayfever is still under investigation.

*"Hay-Fever and Hay-Fever Pollens," Wm. Scheppegrell, M.D. *Archives of Internal Medicine*, June 15, 1917.

While wind-pollinated plants alone are responsible for hayfever, we have tested many others which have been added to the list. Some of these will cause

Fig. 9.—Pollen of Coulters pine (*Pinus coulteri*). Magnified 125 diam. Harmless in hayfever. Shows "winged" pollens characteristic of the pine family.

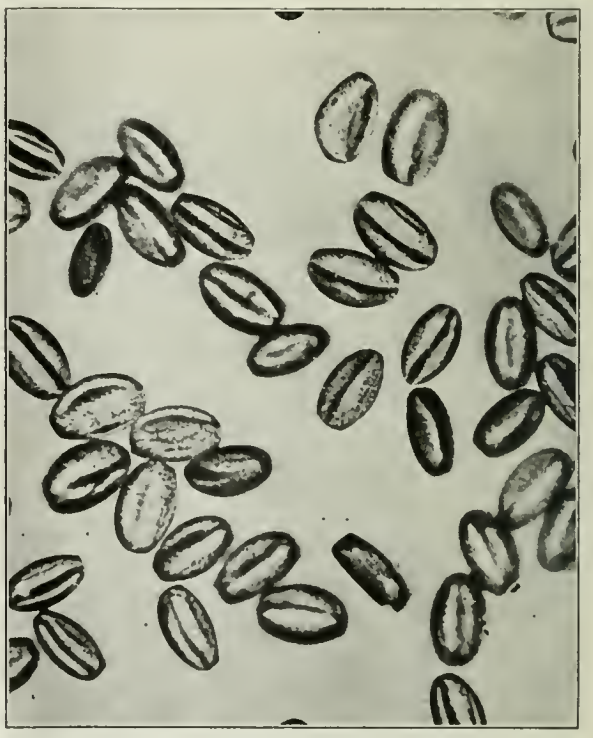

Fig. 10.—Pollen of cottonwood (*Populus deltoides*). Magnified 500 diam. This is a common form of the tree pollens. (Oak, willow, box elder, etc.)

an acute attack of hayfever on direct inhalation which not infrequently happens with children. In this class are included such plants as the daisy

PARTIAL LIST OF PLANTS TESTED FOR HAYFEVER REACTION AT THE BIOLOGICAL LABORATORY OF THE AMERICAN HAYFEVER PREVENTION ASSOCIATION

Botanical Names	Principal Common Names	Surface of Pollen	Size in Microns	Hayfever Reaction	Pollination	Amount of Pollen	Seasons of Bloom	Geographical Distribution	Remarks
Acer drummondii	Hard maple	Smooth, spherical	45	Mild	Wind	Very large	March, April	Mo. to Ga., Fla. and Tex.	Occasional cause of early hayfever.
Acer negunda	Box elder	Smooth, ovoid	25x40	Negative	Wind	Very large	April, May	Me. and Ont. to Manitoba; south to Mex., Fla. and Tex.	Harmless in hayfever.
Acer rubrum	Red maple	Smooth, spherical, Fig. 1	40	Mild	Wind	Very large	March, April	Nova Scotia to Neb., Fla. and Tex.	Occasional cause of mild early hayfever.
Acnida tamariscina	Western water hemp	Smooth, spherical	25	Mild	Wind	Very large	July, Sept.	Ill. to Dak., Tex. and N. M.	A minor cause of mild hayfever.
Allenrolfea occidentalia	Grease weed	Smooth, spherical	20	Medium	Wind	Very large	March, Nov.	Cal., Ore. to Tex.	A cause of hayfever in Pacific and Rocky Mt. States.
Amaranthus spinosus	Spiny amaranth	Smooth, spherical	20	Mild	Wind	Large	June, Sept.	Me. to Minn., Fla. and Tex.	Accessory cause of mild hayfever.
Ambrosia elatior	Common rag-weed	Spiculated, spherical Fig. 2	15	Very active	Wind	Profuse	Aug., Oct.	Nova Scotia to Fla.; west to Kan.	Principal cause of autumnal hayfever east of Kan.
Ambrosia psilostachya	Western rag-weed	Spiculated, spherical	26	Very active	Wind	Large	July, Oct.	Ill. to Sask., Tex., Mex., Cal. and La.	Important hayfever weed west of Kan.
Ambrosia trifida	Giant rag-weed	Spiculated, spherical	20	Very active	Wind	Profuse	Aug., Oct.	Quebec to Fla.; west to Neb., Col. and N. M.	Important cause of autumnal hayfever.
Andropogon halepensis	Johnson grass	Smooth, spherical	45	Positive	Wind	Very large	June, Sept.	N. J., Ky., E. Kan. and Ariz.; south to Fla. and Tex.	Common cause of early hayfever.
Artemisia biennis	Biennial wormwood	Spiculated, spherical	15	Positive	Wind	Large	Aug., Oct.	Manitoba to Nova Scotia, Mo., Ky. and Del.	A cause of typical hayfever.
Artemisia dracunculoides	Indian hair tonic	Smooth, 3-lobed	11	Severe	Wind	Very large	June, Sept.	Manitoba to Col., Ill., Mo., Neb., Tex. and Cal.	Common cause of hayfever in the Pacific and Rocky Mt. States.
Artemisia frigida	Wormwood sage	Smooth, 3-lobed	20	Severe	Wind	Very large	July, Oct.	Minn., Idaho, Neb., Tex. and Ariz.	A cause of hayfever west of Kan. Also found at high altitudes (6,000 ft.).
Artemisia heterophylla	Mugweed	Smooth, 3-lobed, Fig. 3	22	Severe	Wind	Very large	July, Oct.	Cal. to Brit. Col. and Nev.	Important hayfever weed, west of Kan.
Artemisia ludoviciana	Dark-leaved mugwort	Smooth, 3-lobed	18	Severe	Wind	Very large	July, Oct.	Cal. and Rocky Mt. States	Common cause of hayfever in Pacific and Rocky Mt. States.
Artemisia tridentata	Sagebrush	Smooth, 3-lobed	22	Severe	Wind	Very large	July, Sept.	Neb. to Col., Utah and Cal.; north to Minn.	Important cause of hayfever in the Rocky Mt. States.
Aster ericoides	Michaelmas daisy	Spiculated, spherical	15	Positive	Insect	Small	Sept., Dec.	Ohio to Car., Mich.	Hayfever on direct inhalation only.
Aster novæanglia	New England aster	Spiculated, spherical	18	Positive	Insect	Small	Aug., Oct.	S. C., Ala., Kan. and Col.	Hayfever on direct inhalation only.
Avena sativa	Oats	Smooth, spherical Fig. 4	35	Positive	Wind	Abundant	May, June	Cultivated	A cause of early hayfever.
Capriola dactylon	Bermuda grass	Smooth, spherical	25	Positive	Wind	Abundant	June, July	Mass. and N. Y. to Mo., Fla. and Mex.	A cause of early hayfever.
Celtis Mississippiensis	Hackberry	Smooth, spherical	25	Negative	Wind	Very large	April	Va. to Ill. and Mo.; south to Fla. and Tex.	Harmless in hayfever
Centaurea cyanus	Cornflower	Smooth, ovoid	20x40	Positive	Insect	Small	July, Sept.	Que. to Ont., N. Y., Neb. and Va.	Hayfever only on direct inhalation.
Chætochlon glauca	Foxtail grass	Smooth, spherical, Fig. 5	40	Positive	Wind	Large	July, Sept.	North America generally except extreme North.	Common cause of early hayfever.
Chætochloa magna	Giant foxtail grass	Smooth, spherical	26	Positive	Wind	Large	July, Aug.	Del. and Va. to Fla. and Tex.	Occasional cause of hayfever.
Chenopodium album	White goosefoot Lamb's quarters	Smooth, spherical	19	Mild	Wind	Large	June, Sept.	Common throughout North America, except the extreme north.	A cause of mild hayfever.
Chenopodium ambrosioides	Mexican tea	Smooth, spherical	20	Mild	Wind	Large	Aug., Oct.	Me. to Fla.; west to Cal.	A cause of mild hayfever.
Chrysanthemum leucanthemum	Ox-eye daisy	Spiculated, spherical	24	Positive	Insect	Small	May, Nov.	Common throughout north. Less abundant in south and west	Hayfever on direct inhalation.
Cirsium lanceolatum	Horse thistle	Smooth, ovoid	20x30	Negative	Insect	Small	June, Oct.	Newfoundland to Ga., Minn., Neb., Ore. and Cal.	Harmless in hayfever
Cupressus macrocarpa	Monterey cypress	Smooth, spherical	22	Negative	Wind	Large	March, April	Pacific Coast	Harmless in hayfever.
Cyperus rotundus	Nut grass (sedge)	Smooth, prismatic	22	Negative	Wind	Large	July, Sept.	Va. to Fla., Mo., Kan. and Tex.	Accused of causing hayfever but harmless.
Datura stramonium	Jimson weed	Smooth, spherical	18	Positive	Insect	Small	June, Sept.	Nova Scotia to Fla., west to Minn. and Tex.	Reaction only on direct inhalation.
Dianthus chinensis	Chinese pink	Smooth, spherical	40	Positive	Insect	Small	June, Aug.	Cultivated	Hayfever only on direct inhalation.
Drucopis amplexicaulis	Blackeye Susan	Spiculated, ovoid	25x35	Active	Insect	Medium	June, Aug.	Mo. to Okla., La. and Tex.	Causes hayfever only on direct inhalation.
Erianthus compactus	Plume grass	Smooth, spherical	28	Positive	Wind	Abundant	Sept.	N. J. to Fla. and Tex.	A minor cause of early hayfever.
Erigeron canadensis	Horseweed	Spiculated, ovoid	17x24	Positive	Wind	Large	June, Nov.	Common throughout North America, except in extreme north	Contributory cause of hayfever.
Erigeron strigosus	Daisy fleabane	Spiculated, ovoid, Fig. 6	15x20	Positive	Insect	Small	May, Nov.	Nova Scotia to Brit. Col., Fla., Tex. and Cal.	Frequent cause of hayfever in children from direct inhalation.
Eupatorium serotinum	Thoroughwort	Spiculated, ovoid	18x21	Positive	Wind and insect	Medium	Sept., Nov.	Del. to Fla., Minn., Iowa, Kan. and Tex.	Cause of hayfever but is not sufficiently abundant to be of importance.
Eupatorium sessilifolium	Upland boneset	Spiculated, spherical	20	Positive	Insect	Medium	Aug., Oct.	Vt. to Mass., Pa., Ga., Ala. and Mo.	Hayfever only on direct inhalation.
Franseria acanthicarpa	False ragweed	Spiculated, spherical	15	Positive	Wind	Large	July, Sept.	Sask. to Neb. and Tex.; west to Brit. Col. and Cal.	Common cause of hayfever in the Pacific and Rocky Mt. States.

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Franseria dumosa	Sandbur	Spiculated, spherical	18	Positive	Wind	Large	March, June	Utah to Cal. and Ariz.	Common cause of hayfever in the Pacific and Rocky Mt. States.
Fraxinus americana	White ash	Smooth, spherical	20	Negative	Wind	Very large	May, June	Nova Scotia to Ont., Minn., Fla., Kan. and Tex.	Harmless in hayfever.
Gossypium peruvianum	Cotton	Spiculated, spherical Fig. 7	110	Positive	Insect	Small	June, July	Southern States	Negligible in hayfever on account of large size of pollen.
Grindelia squarrosa	Resin weed	Spiculated, spherical	20	Positive	Contact	Small	June, Sept.	Ill. and Minn. to Mo., Ariz. Adventive in N. J., Pa., N. Y.	In spite of popular belief in certain sections it does not cause hayfever.
Helenium quadridentatum	Sneezeweed	Spiculated, spherical	25	Very active	Insect	Small	July, Oct.	Va., Fla., Mo., Kan. and Tex.	Causes hayfever only on direct inhalation.
Helianthus annuus	Common sunflower	Spiculated, spherical	40	Very active	Insect and wind	Medium	July, Sept.	Minn. to N. D., Idaho, Mo., Tex. and Cal.	Causes hayfever only in close proximity.
Helianthus angustifolius	Perennial sunflower	Spiculated, spherical	40	Positive	Insect	Medium	Aug., Oct.	L. I. to Fla., Ky. and Tex.	Hayfever only in direct inhalation or close proximity.
Hibiscus palustris	Marshmallow	Spiculated, spherical	170	Positive	Insect	Small	Aug., Sept.	Mass. to Fla. to La., Iod., Mo.	Negligible on account of large size of pollen
Hicoria ovata	Hickory	Smooth, spherical	35	Positive	Wind	Abundant	May	Que. to Ont. to Fla. and Tex.	Accessory cause of early hayfever.
Hemalocenchrus virginicus	White grass	Smooth, spherical	26	Positive	Wind	Large	Aug., Sept.	Me. to Ont., Fla and Tex.	Minor cause of hayfever.
Hymenochloea salsola	Grease weed	Smooth, spherical	20	Mild	Wind	Large	July, Sept.	Cal., Ariz., Nev.	Minor cause of hayfever in the Pacific and Rocky Mt. States.
Ilex opaca	American holly	Rough, 3-lobed	20x30	Negative	Insect	Small	April, June	Mass. to Fla., Pa., Ind. Mo. and Tex.	Harmless in hayfever.
Ipomœa purpurea	Morning-glory	Spiculated, spherical	75	Positive	Insect	Small	June, Oct.	Nova Scotia to Fla.; west to Ont., Neb., Tex.	Occasional reaction from direct inhalation.
Iva axillaris	Poverty weed	Spiculated, spherical	20	Positive	Wind	Large	May, Sept.	Manitoba and N. D. to Neb., N. M. and Cal.	Common cause of hayfever in the Pacific and Rocky Mt. States.
Iva ciliata	Rough marsh elder	Spiculated, spherical	25	Active	Wind	Profuse	Aug., Oct.	Ill. to Neb., La. and N. M.	A cause of hayfever.
Iva xanthiifolia	Burweed marsh elder	Spiculated, ovoid	15x20	Positive	Wind	Large	July, Sept.	Wis., Neb., N. M. and Utah	Important cause of hayfever west of Kan.
Juglans nigra	Black walnut	Smooth, spherical, Fig. 8	40	Positive	Wind	Abundant	April, May	Mass., Ont. and Minn. to Tex. and Fla.	A cause of early hayfever.
Juniperus virginiana	Red cedar	Smooth, spherical	20	Positive	Wind	Abundant	April, May	Nova Scotia to Ont. and S. D. to Fla. and Tex.	Occasional cause of early hayfever.
Kalmia latifolia	Mountain laurel	Smooth, 3-lobed	25	Negative	Insect	Small	May, June	New Brunswick to Ont. Ind., Ky., Fla. and La.	Harmless in hayfever
Lagerstræmia indica	Crepe myrtle	Smooth, ovoid	22x31	Negative	Insect	Small	April, May	From Md., southward	Harmless in hayfever.
Leontodon taraxacum	Dandelion	Spiculated, hexagonal	46	Marked	Insect	Small	Jan., Dec.	All parts of the world	Causes reaction only on direct inhalation.
Leptochloa filiformis	Feather grass	Smooth, spherical	20	Positive	Wind	Abundant	June, July	Va. to Ill. and Cal.; south to Fla. and Mex.	Accessory cause of early hayfever.
Ligustrum amurense	Japanese privet	Smooth, ovoid	23x37	Negative	Insect	Small	June, July	Cultivated	Harmless in hayfever.
Liquidambar styraciflua	Sweet gum	Smooth, spherical	30	Negative	Wind	Abundant	April, May	Conn. and N. Y. to Fla., Ill., Mo. and Mex.	Harmless in hayfever.
Lonicera flava	Yellow honeysuckle	Spiculated, spherical	55	Mild	Insect	Small	May	N. C., to Ky., Mo., Ga. and Ala.	Causes mild reaction only on direct inhalation.
Magnolia virginiana	Laurel magnolia	Smooth, ovoid	45x83	Negative	Wind and insect	Abundant	May, June	Eastern and southern States.	Harmless in hayfever.
Mirabilis	Four o'clock	Spiculated, spherical	185	Negative	Insect	Small	June, Oct.	Cultivated	Harmless. One of the largest pollens investigated.
Morus alba	White mulberry	Smooth, spherical	19	Negative	Wind	Abundant	May	Me. and Ont. to Fla.	Harmless in hayfever.
Oenothera biennis	Evening primrose	Smooth, triangular	130	Negative	Insect	Small	June, Oct.	Fla., Minn., Ark. and Tex.	Harmless in hayfever.
Osmunda cinnamomea	Cinnamon fern	Spiculated, ovoid	35x53	Negative	Insect	Abundant	May, June	Newfoundland to Minn., Gulf States and N. M.	Spores harmless in hayfever.
Oxydendron arboreum	Sourwood	Smooth, 3-lobed	25	Negative	Insect	Small	May, June	New Brunswick to Ont., Ind., Ky., Fla. and La.	Harmless in hayfever.
Panicum crus-galli	Cockspur grass	Smooth, spherical	26	Positive	Wind	Abundant	Aug., Oct.	North America generally	A cause of early hayfever.
Panicum repens	Marsh grass	Smooth, spherical	47	Positive	Wind	Large	July	Salt marshes of southern states	Occasional cause of hayfever.
Parthenium hysterophorus	False wormwood	Spiculated, spherical	20	Positive	Wind	Medium	July, Sept.	Pa. to Ill., Mo., Fla., Tex. Throughout tropical America	In some sections this is a perennial bloomer and may cause hayfever at any season.
Paspalum vasyanum	Small bull grass	Smooth, spherical	26	Positive	Wind	Abundant	Aug., Sept.	Va. and Tenn. to Fla. and Tex.	Common cause of early hayfever.
Phœnix	Date palm	Smooth, ovoid	23x50	Negative	Mild	Large	June	Cultivated	Harmless in hayfever.
Pinus palustris	Long-leaf pine	Smooth, spherical (winged)	40	Negative	Wind	Very abundant	March, April	Va. to Ala., Fla. and Tex.	Negative in hayfever.
Plantago lanceolata	Lance-leaved plantain	Smooth, spherical	13	Mild	Wind and insect	Medium	April, Nov.	Northwest, Fla. and Kan.	Occasional cause of mild hayfever.
Poa annua	Annual meadow grass	Smooth, spherical	24	Positive	Wind	Abundant	May, Oct.	Throughout North America	Common cause of early hayfever.
Polygonum aviculare	Knot-grass	Smooth, spherical	17	Mild	Wind and insect	Medium	June, Oct.	Common almost throughout North America.	Occasional cause of mild hayfever.
Populus deltoides	Yellow cottonwood	Smooth, ovoid, Fig. 10	22x32	Positive	Wind	Abundant	April, May	Que. to Manitoba, south to Conn., Fla. and Tenn.	Only about one-half of the trees (male) furnish pollen (positive).

PARTIAL LIST OF PLANTS TESTED FOR HAYFEVER REACTION AT THE BIOLOGICAL LABORATORY OF THE AMERICAN HAYFEVER-PREVENTION ASSOCIATION

Botanical Names	Principal Common Names	Surface of Pollen	Size in Microns	Hayfever Reaction	Pollination	Amount of Pollen	Seasons of Bloom	Geographical Distribution	Remarks
Prosopis glandulosa	Prairie mesquite	Smooth, ovoid	20x50	Negative	Insect and wind	Medium	April, June	Kan. to Tex., Ariz., Cal. and Tex.	Harmless in hayfever.
Prunus avium	Wild cherry	Smooth, ovoid	12x23	Negative	Insect and wind	Medium	April, May	Ont. to Conn., Pa. and Va.	Harmless in hayfever.
Quercus nigra	Water oak	Smooth, ovoid	18x34	Medium	Wind	Abundant	April, May	Del. to Ky., Mo., Fla. and Tex.	Occasional cause of early hayfever.
Rhus typhina	Staghoro sumac	Smooth, ovoid	30x40	Mild	Insect	Medium	June	Nova Scotia to Ga.; west to S. D., Iowa and N. H.	Negligible in hayfever.
Robinia pseudacacia	Locust tree	Smooth, ovoid	10x30	Negative	Insect	Medium	May, June	Pa. to Ga.; west to Iowa, Mo. and Okla.	Harmless in hayfever.
Rosa hybrida	Garden rose	Smooth, ovoid	20x26	Negative	Insect	Medium	April, Oct.	Cultivated	Its influence in hayfever is a popular myth.
Rudbekia laciniata	Goldenglow	Spiculated, spherical and ovoid	30	Positive	Insect	Small	June, Aug.	Cultivated	Hayfever only on direct inhalation.
Rubus procumbens	Blackberry	Smooth, ovoid	10x30	Negative	Insect	Small	April, May	Ont. to Lake Superior; south to Va., La. and Tex.	Harmless in hayfever.
Rubus neglectus	Wild raspberry	Smooth, ovoid	15x35	Negative	Insect	Small	May, July	Vt. to Ont., Pa. and Ohio	Harmless in hayfever.
Rumex crispus	Yellow dock	Smooth, spherical	25	Mild	Wind	Abundant	June, Aug.	Nearly throughout the United States	Minor cause of hayfever.
Salix nigra	Blackwillow	Smooth, ovoid	20x32	Mild	Wind	Abundant	April, May	New Brunswick to western Ont., N. D., Fla. and Tex.	Occasional cause of early hayfever.
Sambucus canadensis	American elder	Smooth, ovoid	15x20	Negative	Insect	Small	June, July	Nova Scotia to Fla., Kan. and Tex.	Harmless in hayfever.
arcobatus vermicularis	Grease weed	Smooth, spherical	28	Mild	Wind	Large	Sept., Oct.	Neb., Wyo. to Nev. and N. M.	A cause of hayfever in the Rocky Mountain States.
Scirpus mucronatus	Bog bullrush	Smooth, spherical	20	Negative	Wind	Medium	July, Sept.	Pa.	Harmless in hayfever.
Solanum carolinense	Horse nettle	Smooth, ovoid	20x30	Positive	Contact and insect	Small	June, July	Nova Scotia to Fla., west to Ill., Neb. and Tex.	Hayfever on direct inhalation.
Solidago canadensis	Canadian goldenrod	Spiculated, ovoid	18x22	Positive	Insect	Medium	Aug., Oct.	Va., Tenn. and S. D.	Hayfever on direct inhalation or close proximity as from room decorations.
Sonchus asper	Sow thistle	Spiculated, spherical	30	Active	Insect	Small	May, Nov.	Widely distributed in all parts of United States	Causes reaction only on direct inhalation.
Sporobulus angustus	Smut grass	Smooth, spherical	25	Positive	Wind	Abundant	June, July	Va. to Fla.; west to Mo. and Cal.	Common cause of early hayfever.
Trifolium pratense	Red clover	Smooth, ovoid	40x50	Negative	Insect	Small	April, Nov.	Common throughout north and south.	Harmless in hayfever.
Triticum vulgare	Wheat	Smooth, spherical	50	Positive	Wind	Large	July, Aug.	Cultivated	A cause of hayfever but potential area limited by large size of pollen.
Ulmus americana	American elm	Smooth, spherical	30	Negative	Wind	Abundant	March, April	Newfoundland to Manitoba, Fla. and Tex.	Harmless in hayfever.
Vaccinium pallidum	Blueberry	Smooth, spherical	35	Negative	Insect	Small	May, June	Va. to S. C.	Harmless in hayfever.
Vernonia noveboracensis	Iron weed	Spiculated, spherical	40	Positive	Insect	Few	July, Sept.	Mass. to Pa., N. C., W. Va., Miss. and Mo.	Hayfever only on direct inhalation.
Xanthium pennsylvanicum	Cockle burr	Spiculated, spherical	36	Positive	Wind	Abundant	Aug., Oct.	Minn. to N. Y., Mo. Col. moist soil)	Less active reaction than the ragweed. Large size of pollen limits potential area.

fleabane (*Erigeron strigosus*) golden rod (*Solidago canadensis*), aster (*Chrysopsis*), cornflower (*Centaurea*), sunflower (*Helianthus*), etc.

The *size of the pollens* are given in this list, as this has an important bearing on their potential area. That the common ragweed (*Ambrosia elatior*) is so widespread in its noxious effect is greatly influenced by its small size (15 microns). On this account, it is so buoyant that when the wind reaches a velocity of 20 miles per hour, it will travel several miles, while the pollen of the cocklebur, on account of its greater size (34 microns), will travel only one-fourth of this distance and therefore infect only one-sixteenth of the area. The pollen of corn (80 microns) under the same conditions will traverse only one-thirtieth of the distance and spread over only one nine-hundredth of the area infected by the ragweed. On this account the corn pollen, although noxious to many persons, is rarely responsible for hayfever.

The *quantity of pollen* generated by the plants is also stated in this list. The amounts are relative and based on the number of pollen given off by the ragweeds. The number of pollens on the daisies and sunflowers, for instance, are many thousands, but our investigations have shown that a single ragweed plant (*Ambrosia elatior* or *trifida*) may generate 4,000,000,000 pollens daily,* so that the quantity of the former are listed as "small" and of the latter "abundant."

The amount of pollen generated by a plant is an important item in its potential responsibility of hayfever. In spite of its toxicity and great buoyancy, the ragweeds would not be an important factor in hayfever were it not for the enormous quantity which they distribute into the air. Our atmospheric-pollen plates (Louisiana Stations) have shown that from September 22, 1916, to October 22, 1916, there were an average of 33 ragweed pollen per square yard of air, while on days of unusual atmospheric disturbances the number rose as high as 365.

The *period of bloom* (florescence) of the various plants is given as this will assist in establishing

*The pollen of the common ragweed (*Ambrosia elatior*) measures 15 microns, and there are about 420 millions to the cubic centimeter. The plant therefore generates about 2.5 c.c. of pollen per day.

the differential diagnosis of hayfever. The common ragweed (*Ambrosia elatior*), for instance, in most locations blooms from August 15 to October. An attack of hayfever in June or July could therefore not be due to the ragweeds, but to some other plant blooming during these months.

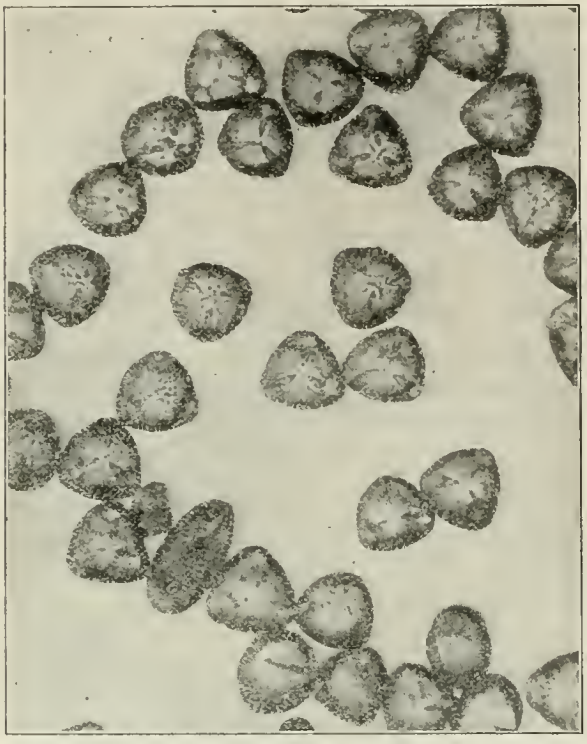

FIG. 11.—Pollen of flowering crab-apple (*Pyrus japonica*). Magnified 500 diam. Harmless in hayfever. An unusual form of pollen.

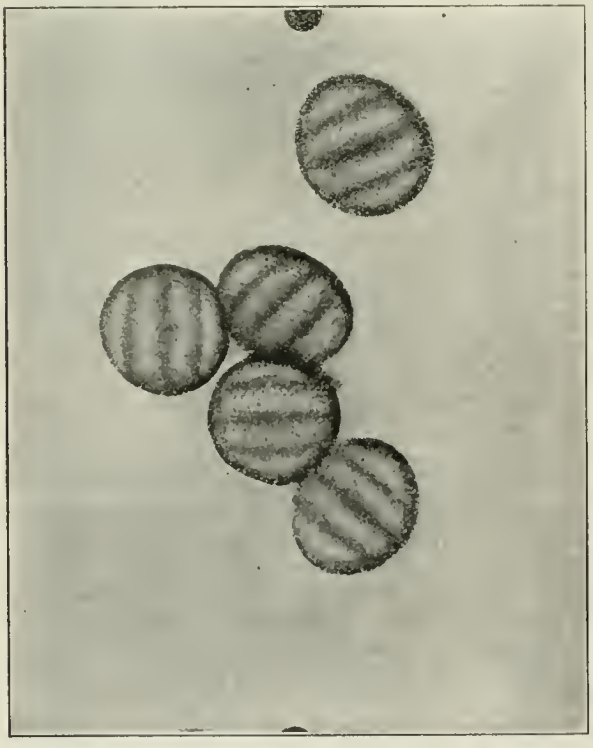

FIG. 12.—Pollen of flowering sage (*Salvia splendens*). Magnified 500 diam. Harmless in hayfever. Unusual on account of the number of lobes, three-lobed pollens being common (artemisias, etc.).

The *geographical distribution* of the plants is also given as furnishing a certain amount of assistance. An attack of hayfever in Pennsylvania can not be due to the mugweed (*Artemisia heterophylla*) as this plant, which we have found to be an important cause of hayfever on the Pacific Coast, is not found in Pennsylvania. The same principle applies to other plants in this list.

Every plant listed has been carefully tested for the hayfever reaction. With some of the plants, such as the ambrosias, gramineæ, artemisias, and chenopodium families, hundreds of tests have been made both in our Biological Laboratory and in making the differential diagnosis preliminary to immunizing patients against hayfever.

In the most important hayfever plants, such as the ragweeds (Ambrosias) and wormwoods (artemisias), the most common species have been listed. With most of the plants and trees, however, only a few of each genus are given, as we have found it a rule that the species of a family, in spite of considerable variation in size and general appearance, have pollens which are similar in their hayfever reactions.*

Many of these plants on this list have been sent to our Biological Laboratories for testing from all parts of the United States. The remainder have been collected in the course of regular inspections for hayfever plants by members of our Research and Botannical Departments. The list, which represents the most common plants in over 300 varieties examined during the past three years, has been of practical value in our hayfever work, and will, we hope, be of service to the medical profession.

AUDUBON BUILDING.

*The pollens illustrating this article have been photomicrographed at the Biological Laboratory of the American Hayfever-Prevention Association.

A CASE OF A BILATERAL CYSTIC DEGENERATION OF THE KIDNEYS.

BY LOUIS WENDER, M.D.,

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POLYCYSTIC disease of the kidney is a term accepted for that renal disorder which is characterized by the presence of multiple cysts of all sizes throughout the renal tissue. According to various authorities, this disorder is common at two periods of life; namely, before or after birth, or after the age of forty. Although many cases have been reported in the literature, this case is of special interest to warrant its publication, as it did not show any objective or subjective symptoms.

CASE.—A. W., admitted to St. Elizabeth's Hospital, Washington, D. C., on Dec. 19, 1912, suffering from auditory hallucinations and delusions of persecution. Physically he was in good condition. He stated that his grandparents died of paralysis (?). His mother died from a "numb chill" at the age of 48. His father was a victim of tuberculosis at the age of 44. One sister died at the age 23 from pneumonia.

The patient was born in 1865. He began his occupational career by farming, but later became a common laborer. He escaped the usual diseases of childhood, but had an attack of typhoid fever at the age of 17, which kept him in bed for about two months. Several years ago he was overcome by the heat. He admitted the excessive use of alcohol and stated that he was intoxicated on several occasions. He was married at an early age and had two children living and well. Five

died during infancy, cause unknown to him. His wife was living and well. He was admitted to the hospital with the following symptoms: Patient says that a society is against him and that they are preventing him from getting any work. This society had him locked up in jail and that they were anxious to take his life. He had to take extra precaution lest they poison him. Voices called him bad names.

During his entire sojourn in the hospital, which was about three years and nine months, he showed a slight change in his mental condition. The hallucinations and delusions became more quiescent. He was seclusive in his habits and asociable, and although he was in the ward with better class of patients he never entered into conversation with them. He read the newspapers and was well posted on current events. He never had any complaints to make and was contented with his environment. He helped with the ordinary ward work and went out walking daily in the company with the other patients.

Physical examination on admission to the hospital showed him to be well nourished; height, 5 feet 10½ inches; weight, 189 pounds. No stigmata of degeneration were in evidence apart from a left sided hydrocele. All the other organs were negative. Uranalysis showed a trace of albumin and hyaline casts. Wassermann reaction with the blood serum was negative.

He continued to be in good physical condition, never complaining of any pains or aches. He became very obese and at one time weighed as much as 236 pounds. He never complained and performed his duties in a satisfactory manner. He was found dead one morning by the nurse when the latter came to awake him at the

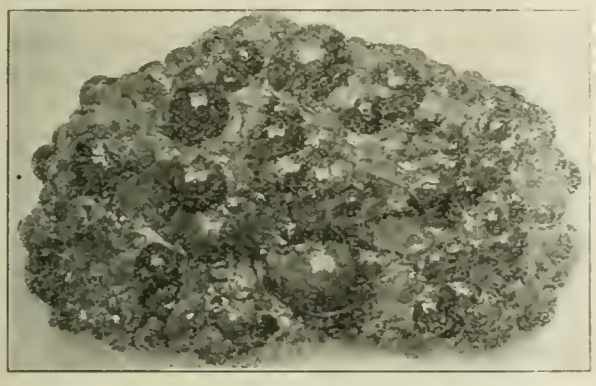

Fig. 1.—Right kidney; weight 360 grams; length 24 cm.

usual hour. A fellow patient stated that for the past few months A. W. had been suffering from asthmatic attacks during the night and that he would sit up on the edge of the bed to relieve the dyspnea.

Summary of autopsy findings: General examination showed a well developed and well nourished obese individual. Heart weighed 560 grams. The epicardial fat was increased and the pericardial sac contained a large quantity of serum and a blood clot. Both auricular walls were thin and flabby. The cavities were large. The right ventricle was large and its wall was thin and flabby. The left ventricular wall was thick and its cavity was spacious. The mitral and aortic leaflets were thickened and fatty deposits were found in the arch of the aorta. A longitudinal rupture was found at the base of the pulmonary veins, from which the blood escaped into the pericardial sac. The respiratory system was negative. The liver was large, weighing 1300 grams. The capsule was firm. Small cysts were found throughout the liver substance. The spleen weighed 200 grams. The pulp was soft and dark red in color. The right kidney (Fig. 1) weighed 360 grams and was about 25 cm. long. Cysts, as shown in the illustration, were found throughout the substance. The left kidney was in similar condition, weighing 420 grams (Fig. 2). A cross section of the right kidney shows the size of the cysts in the renal substance. (When the kidney was cut open after hardening it was found that the fluid had also hardened into a gelatinous mass in each one of the cysts, and before the kidney was photographed on one side the jellylike masses were picked out so as to show the depth of the cysts, this being the left side. The other side was left as it was cut, but from a few of the small cysts the material dropped out.) (Fig. 3) A left hydrocele was also present.

Comment: There are several theories concerning

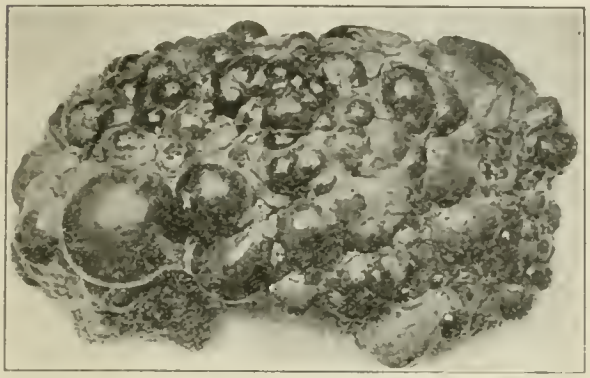

Fig. 2.—Left kidney; weight 420 grams; length 23 cm.

the etiology of cystic degeneration of the kidney. The one which is generally accepted is that of von Multach. He believes that cystic disease of the kidney is due to malformations of the organ in the course of its development. It has been shown that in one-fifth of all cases of cystic disease of the kidney, the liver and other organs are also affected with a similar disorder. In this case the liver and the left hydrocele seems to confirm the above assertion.

The symptoms of this disorder are not very marked during the early stage. At times during the course of an examination an irregular tumor is found at both flanks, the patient being unaware of its existence. However as the disease progresses, symptoms due to the presence of a tumor in the abdominal cavity make their appearance. The coexisting nephritis usually brings the patient to the physician. The renal secretion continues in spite of the degeneration of the structure. In this case on account of the deteriorated mental state, no sub-

Fig. 3.—Cross-section of right kidney.

jective symptoms were present. Albumin and casts were present, but the urinary secretion was present throughout his residence here. It would seem that the kidney can attain and undergo many changes without interfering with its functioning power.

The diagnosis is usually made at the operating table or at autopsy. Occasionally when the tumor is very large it can be palpated in the flanks. Uremic attacks are also present in some cases.

I wish to express my thanks to Dr. William A. White, superintendent of St. Elizabeth's Hospital, for permission to publish this case which occurred during my service at that hospital.

ON THE USE OF SMALL DOSES OF PITUITRIN FOR INDUCING AND SHORTENING LABOR AT TERM.

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THE mode of action of pituitrin, an extract of the posterior lobe of the cerebral hypophysis, has been the subject of much controversy in the recent obstetrical literature, and this is not surprising considering that much uncertainty still prevails in regard to the action and interaction of the secretions of the endocrinic glands in general. Imperfect knowledge of the powers of a given drug is apt to lead to more or less experimental and tentative administration, and the result in this particular instance has been manifested in the increasing reports of uterine rupture through the violent muscular contractions set up by the injudicious use and excessive doses of pituitrin.

It is precisely on account of these frequent accidents that we have entered upon a close clinical study of the effect of minute dosages, and our findings, as will be seen, are an ample vindication of the obstetrical virtues of pituitrin. A tendency to discrimination against the use of this efficient drug can be plainly traced to its abuse.

The fact is generally conceded that pituitrin, during the second stages of labor, usually retains the physiological character of the labor pains, although some observers believe that pituitrin labor pains are not equivalent to physiological pains, but that uterine tetanus follows, lasting two to three minutes, and even up to a quarter of an hour. According to the majority of those who have had experience with the drug, the labor pains induced by it have a normal rhythm, the uterine contractions are increased and gradually subside again. With special reference to the value of pituitrin as an adjuvant in normal labor, the diversity of opinions is such as to forbid even a condensed summary of the numerous contradictory reports in the literature.

Our own findings, based on experience with 64 cases during labor and 34 cases for induction of labor at term, are so essentially different from those recorded by other authors as to lead us to the publication and discussion of our pituitrin labor cases. We are well aware of the fact that to advocate the use of pituitrin in small doses early in normal labor at the beginning of dilatation, and especially for the induction of labor at term, a procedure suggested to us by Dr. S. W. Bandler, is to depart radically from the methods adopted by the pioneer workers in this field.

Upon the basis of our personal experience we are led to indorse:

(1) The use of pituitrin in far smaller doses than the customary ones. (2) The use of small dosages of pituitrin in the first stage of labor as well as later on. (3) The use of small dosages of pituitrin for the induction of labor at term.

Small Dosages of Pituitrin During Labor.—Our claims are based on personal observations in altogether sixty-four cases in which pituitrin in form of the Parke-Davis product was employed during the labors of forty primiparæ and twenty-four multiparæ. The pituitrin was always injected intramuscularly, as this was found to be a safe and highly efficient method of administration.

The usual dose consisted of two to three minims, far less than the smallest doses reported to our knowledge by most contributors to the obstetrical literature. A tacit agreement has apparently been arrived at among obstetricians making the contents of one ampoule, namely 1 c.c., the standard dosage for the acceleration of childbirth when the labor pains are sluggish and inefficient as the result of uterine inertia. Judging from the literature, ½ c.c. is almost the smallest amount in which obstetricians, both here and abroad, have been willing to place their confidence.

Aside from the question of dosage, the proper time for the administration of pituitrin has been referred with equal empiricism to the later stages of labor after the os has become more or less dilated and the presenting part has become engaged. In our close clinical observations the uterine contractions set up by minimal doses of pituitrin were of the normal, rhythmical, physiological type, with a gradual rise and fall in intensity.

Pituitrin in small doses during the first stage of normal labor.—Pituitrin is now generally recognized as an efficient adjuvant during the progress of labor, although there seems to be an unfounded prejudice against its administration at the onset of labor in the dilatation stage, a period when the drug rendered excellent service in our clinical experience. This prevailing opinion against the use of pituitrin during the early stages of labor is no doubt due to accidents from 1-c.c. doses. By the use of minimal doses we have been enabled to administer it with perfect safety during all the stages of the birth process.

A single three-drop dose proved sufficient, in our experience, for the production of efficient labor pains in about one-third of the total number of cases. Where pituitrin was repeated, the succeeding doses of 3 minims of pituitrin were usually given at half-hour intervals, the average number of small doses in each case being 1.78, with an average dose of 3 minims.

The duration of labor in the forty primiparæ under these small doses of pituitrin averaged fourteen hours, and in the twenty-four multiparæ eleven hours. In nineteen cases of this series where the cervix was fully dilated when the use of pituitrin was begun, the average duration of the second stage of labor was one hour and three minutes. It is

unnecessary to emphasize that this means a marked reduction in time of the expulsive stage.

No complications of any kind were noted in the 64 cases of this form of pituitrin administration. The mothers, without exception, did well under the use of pituitrin. Among the 64 infants there were but six stillbirths, and these were in no way referable to the minute doses of pituitrin, but the result of prolapsed cord and similar causes of fetal death.

In conformity with our own experience, a reduction of the large customary dose (1 c.c.) of pituitrin is recommended by Bandler, Schwartz, Bubis, Friedman, Norris, Druskin and others. Bandler, for instance, finds one-third of an ampoule of the Parke-Davis preparation an entirely sufficient dose in ordinary labor, subject to modifications according to special requirements in a given case. Norris points out that the usefulness of pituitrin would not be diminished and its dangers would be lessened, if it were dispensed in doses equivalent to half the customary ones. Small doses of pituitrin are credited by Friedman with a greater efficiency than large amounts for stimulating the activity of the uterine muscle. Bubis likewise indorses the use of small doses of pituitrin, and he also points out that the drug may be administered in any stage of normal labor, where it will shorten the birth process from two to twelve or more hours.

There is no reason, in the opinion of Bandler, why the use of pituitrin should be delayed until the second stage has been reached. These views are well borne out by our personal observations on the largest series of cases on record in which pituitrin in minute dosages has been employed as a routine medicinal agent in the management of ordinary labors. The freedom from complications and the shortening of the duration of labor certainly illustrate the efficiency of very small doses.

Pituitrin in small doses for the induction of labor at term.—The employment of intramuscular injections of small doses of pituitrin for the induction of labor at term constitutes the most interesting and important part of our observations. In the cases in which this treatment was adopted (34) it proved succcessful in one-half the entire number (17), contrary to the statements abundantly scattered through the obstetrical literature to the effect that pituitrin cannot be used to bring on labor before the os has at least begun to dilate. Numerous writers in this country and abroad assert the non-efficiency of pituitrin in the artificial induction of premature labor and abortion (which is also our opinion), as well as labor at term (a conclusion with which we are unable to agree.)

In view of the novelty of this plan of treatment, the method adopted at the Obstetrical Division of Harlem Hospital (Chief Dr. Brodhead), and also in private practice of one of us (Stein) is herewith given in detail:

At 7 A. M. the woman receives 1 ounce of castor oil, and two hours later, at 9 A. M., an intramuscular injection of 2 minims of pituitrin, followed at 11 A.M. by a repetition of this dose. If labor pains are elicited, the pituitrin is resumed at intervals of ½-1 hour; if no pains result, the treatment is stopped and another attempt is made on the third following day, again administering the same small dosage.

All the mothers in whom labor at term was induced by means of small doses of pituitrin did well, and the infants were invariably born in excellent condition.

In the successful cases, true labor pains usually began after the second small dose of pituitrin, sometimes after the first, or not until after the third dose. In a typical responsive case concerning a three para at term, labor pains began after the second dose. At half-hour intervals three other doses were given, making a total of four doses of altogether 9 minims. It agrees with the observations of others that in a certain number of normal parturient women—one-half our clinical material—absolutely no response to the administration of pituitrin for the induction of labor can be elicited.

The recommendation of pituitrin in small doses for the induction of labor at term without auxiliary measures of any kind is decidedly new. Together with the employment of mechanical means, in form of the bag, the use of pituitrin is indorsed for the induction of labor by Bandler, who finds that the repeated injection of pituitary extract often brings on or produces more marked labor pains when administered just as soon as discomfort and suggestive or actual pains begin after the introduction of the bag. In one of our own cases concerning a two para who was three or four weeks overdue, the introduction of the bag and bougie served as a supplementary measure to a single intramuscular injection of a 2-minim dose of pituitrin. The child was born in short order and in good condition.

Pituitary extract in form of infundin, a Burroughs-Welcome preparation, was used for the induction of labor at term by Blair Bell in England, but he employed the drug merely as a supplement to mechanical means. This combined treatment yielded excellent results in his experience, and the best method of inducing labor in ordinary circumstances is believed by him to consist in the combination of bougies and infundin, the drug serving to sensitize the uterus, which is the essential factor. It is recommended, therefore, first to sensitize the uterine muscle tissue with the extract so that the bougies may be better able to induce labor, during which the contractions are rendered more effective by the previously administered extract. Based upon a personal observation in a case which he thinks was the first occasion in which primary uterine inertia was recognized and treated before labor, he points out that this condition, if discovered before labor, may be dealt with efficiently through intramuscular injections of pituitary extract in preparation for the confinement.

Combined with other means, or independently, pituitrin was used six times to induce labor by Ingraham and Chase, who found it effectual in two cases with the rubber bag, and with slight manual dilatation in another. Once it was used alone, but without result. According to Sachs, the drug will act provided labor has already begun, but is incapable of eliciting labor pains, as it can act only by adding strength to the existing labor pains. There is, he claims, no sense in giving pituitrin before the work of delivery has commenced, the preliminary condition for its employment consisting in the presence of labor pains, meaning such

pains as have begun to open the birth passages.

The evidence contained in the literature as to the efficiency of pituitrin for the induction of labor is scanty, scattered and contradictory. The majority of writers seem to be agreed as to its uselessness for this purpose, namely, the arbitrary induction of labor, premature or at term. According to Quigley, for instance, pituitrin will not by itself induce premature labor or abortion (also our own view), but it is a valuable adjuvant to dilating bags or the cervical pack. We find that precisely in the scientific and judicious induction of normal labor at term, pituitrin, in very small physiological doses, has a remarkably fertile field of application.

We have endeavored to show that our personal findings, in a series of cases large enough to permit a reasonable estimate of the powers and limitations of pituitrin, are decidedly at variance with the great majority of statements in the literature not only for the indication of the drug in the induction of labor at term, but for its employment in extremely small quantities as compared to the customary dosage. Contributions to the subject of pituitrin in obstetrics are, in general, very numerous, and quotations from contemporaneous observers could be indefinitely extended, but this suffices to emphasize the prevailing lack of unanimity. Our own figures are strongly illustrative of the efficiency of pituitrin in very small doses, not only as an aid to the progress of parturition, but especially for the scientific and judicious induction of normal labor at term.

Equipped with this latest and best addition to the adjuvants at his disposal, the modern obstetrician will be enabled not only to hasten a tedious labor that has already begun, and more or less exhausted the patient's strength, but to select at his discretion and to the best interest of mother and child the most auspicious moment for the induction of labor.

Since the introduction of minimal pituitrin dosage in our service the number of forceps deliveries has been strikingly diminished. A comparative review of the total deliveries in twelve consecutive months at the Obstetrical Division of the Harlem Hospital (Chief, Dr. Brodhead) in 1915-1916, excluding the three months in which pituitrin was used, shows 1018 deliveries with 40 forceps operations or 3.9 per cent. In three consecutive months taken at random during 1914 prior to the introduction of pituitrin into the obstetrical service there occurred 166 births with 8 forceps deliveries or 4.8 per cent. The figure of forceps applications in three consecutive months when pituitrin in small doses was used is only 1.3 per cent. as compared to 3.9 per cent. in 1018 cases where pituitrin was not used at all or only occasionally in large doses (1 c.c.) at the end of the second stage.

This powerful drug given in the small doses recommended throughout this paper may be relied upon to lessen the number of forceps deliveries, thereby preventing the infliction of birth traumatism by the unskilled accoucheur. What is equally important, although not yet sufficiently recognized, all unnecessary moulding of the infantile skull in the maternal passages, in consequence of unduly protracted, unassisted, labor, will be avoided, thus guarding the infants against the dangers of brain injury and stunted mental development.

On account of their direct bearing on the recommendation of pituitrin as an adjuvant in childbirth, mention must still be made of two articles which have appeared since the completion of this paper. One of the writers, Wertenbaker, warns against the obstetrical use of the drug because of threatened rupture of the uterus following the employment of pituitrin. This warning rests essentially on the basis of a personal unfavorable experience limited to two cases. The amount administered in a single injection while not exceeding the customary dosage of one ampoule (1 c.c.) was very large as compared to our own method of administering pituitrin in small repeated doses.

Certainly the quantity of this powerful drug was enormous for the first patient, a negress of 44 years, with a pendulous relaxed abdomen, in her fourteenth labor, which had already lasted 24 hours when the injection was applied. Had pituitrin been given in small doses when the pains began, or better still, had this labor, which was delayed 18 days beyond the expected term, been induced by means of pituitrin alone or the bag and pituitrin, the outcome would in all probability have been very different.

In the second case also pituitrin was resorted to very late, namely on the day following the onset of the patient's fifth labor.

The figures compiled by Mundell from many sources do not afford a fair basis of comparison because of insufficient data in the individual reports. This observer still stands on the old ground that pituitrin practically always fails in the induction of labor and that "to give pituitary extract in the first stage of labor is bad obstetrics."

Our own experience does not suggest that pituitrin should be reserved for the so-called "ideal case" of a healthy multipara with a history of previous normal labors, and late in the second stage of labor. Perhaps the drug acts best *early in labor* before the chemical changes due to fatigue have altered the response of the uterine muscle to the physiologic stimulus of the glandular extract. Closer investigation of reported ruptures of the uterus under pituitrin (one rupture in about every 106 pituitrin cases, according to Mundell) will almost invariably show that the drug was given as a last resort often in excessive doses at the end of a protracted labor, or in other unsuitable cases (contracted pelves, etc.).

It cannot be overemphasized that the method which has yielded such excellent results at our hands, is beneficial because physiological, and can never result in muscular overstimulation with rupture of the uterus.

Conceding the vale of pituitrin for the mother, when administered in suitable cases and in small doses, Mundell fears the effects on the child and on the basis of a number of case reports describes them as undoubtedly bad in view of the high percentage of stillbirths and asphyxiated infants. This has not been our experience after the use of fractional doses. All of the children (with the exception of those that were dead before the drug was used) were born alive and in good condition after the routine employment of this drug in small doses,

either for the induction of labor at term, or for the acceleration of unduly protracted labor.

Our findings are in opposition to the statement that pituitrin should never be used in normal labor. When given with the discrimination that must govern the employment of all powerful drugs, pituitrin is a boon to both mother and child, whose interests are best served by the resourcefulness of the progressive obstetrician.

The novelty of our suggestions renders it advisable to emphasize our attitude toward pituitrin by condensing our findings in a brief summary as follows:

(1) The best mode of administration is by the intramuscular injection of an average dose of two to four minims.

(2) Pituitrin in small doses should be employed in labor at term exclusively, never for the induction of abortion or premature labor, where it would fail entirely.

(3) Pituitrin is indicated after the onset of labor for strengthening the uterine contractions; also in combination with castor oil for the induction of labor at full term.

(4) Pituitrin may be utilized as an efficient adjuvant to the bougie method.

(5) The judicious employment of these small, entirely harmless doses of pituitrin serves to reduce the need for the application of forceps, thus causing otherwise instrumental deliveries to terminate like normal progressive labors.

BIBLIOGRAPHY.

Aubert, L.: "Pituitrin bei Gebärenden," *Monatschrift. F. Geb. u. Gyn.* Vol. XLI, 1915, p. 254.

Bandler, S. W.: "The Value of Pituitary Extract in Obstetrics and Gynecology," *Am. Journal of Obstetrics*, Vol. LXXIII, 1916, p. 77.

Bell, W. Blair: "Infundibulin in Primary Uterine Inertia and in the Induction of Labor," *Proceedings of the R. Soc. of Med.*, Vol. VIII, 1914-5, p. 71.

Brockman, R. S.: "Pituitary Extract and Obstetrics," *N. Y. Med. Jrnl.*, Vol.CII, No. 14, 1915, p. 712.

Bubis, J. L.: "Small Doses of Pituitrin in Obstetrics," *Surgery, Gynecology and Obstetrics*, Vol. XXI, 1915, p. 659.

Croci, C.: "Sull' Impiego Degli Estratti Ipofisarin in Ostetricia," *Ginecologia*, Vol. IX, 1912, p. 521.

Druskin, S. J.: "Pituitary Extract in Obstetrics," *Am. Jrnl. of Obstetrics*, Vol. LXX, 1914, p. 980.

Esbensen, K. A.: "Pituitary Extract in Obstetrics," *Ugeskrift f. Laeger*, Vol. LXXXVI, 1914, p. 635.

Friedman, L. J.: "Pituitary Extract in Obstetrics," *N. Y. Med. Jrnl.*, Vol. CII, No. 14, 1915, p. 712.

Gardlund, W.: "Hypophysenextrakt als Wehenmittel," *Archiv. für Gyn.*, Vol. CI, 1914, p. 543.

Goodman, S. J.: "Recent Progress in Obstetrics," *Am. Jrnl. of Surgery*, Vol. XXX, 1916, p. 317.

Hendley, P. A.: "Pituitrin in Labor," *British Medical Jrnl.*, Vol. I, 1914, pp. 906 and 1098.

Hughes, E.: "Pituitrin in Labor," *British Med. Jrnl.*, Vol. I, 1914, p. 995.

Ingraham, C. B., and Chase, P. M.: "Observations Upon the Use of Pituitary Extract in Obstetrics," *Colorado Medicine*, Vol. XII, 1915, p. 190.

Malinowski, M.: "Tokodynamometrische Untersuchungen über die Wirkung des Pituitrins auf die Uteruskontraktionen unter der Geburt," *Monatschrift. f. Geb. u. Gyn.*, Vol. XL, 1914, p. 1.

Mundell, J. J.: "Pituitrin in Labor," *Am. Jrnl. of Obstetrics*, Vol. LXXIII, 1916, p. 306.

——: "The Present Status of Pituitary Extract in Labor," *Jrnl. Am. Med. Assoc.*, June 2, 1917.

Norris, R. C.: "The Use and Abuse of Pituitrin in Obstetrics." *Med. Press & Circular*, N. S. 99, 1915, p. 589.

Procopio, S.: "L'estratto ipofisario in 41 casi ostetrici." *Ginecologia*, Vol. X, 1913, p. 161.

Quigley, J. K.: "Pituitary Extract in Obstetries," *Jrnl. of Am. Med. Assoc.*, Vol. LXIV, No. 15, 1915, p. 1222.

Rehs, K.: "Beitrag zur Indikationstellung für das Pituitrin in der Praktischen Geburtshilfe," *Inaugural Disscrtation*, Königsberg, 1913.

Sachs, E.: "Weitere Erfahrungen mit Pituglandol in der Geburtshilfe." *Monatschrift f. Geburtsh. u. Gynaekol.*, Vol. XL, 1914, p. 544.

Schwarz, H.: "Discussion of Dr. Bandler's Paper." *American Journal of Obstetrics*, Vol. LXXIII, 1916, p. 90.

Seitz, L.: "Innere Sekretion und Schwangerschaft," Leipzig, 1913, p. 161.

Weber, C.: "Ueber Hypophysenextrakte als Wehenmittel," *Inaugural Dissertation*, Kiel, 1914.

Wertenbaker, W.: "Spontaneous Rupture of the Uterus Following Administration of Pituitary Solution," *Journal of the American Medical Association*, June 2, 1917.

AURICULAR EDUCATION OF DEAF CHILDREN.

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THE cooperation of physicians is needed in order that advantage may be taken of unrealized possibilities of educating slight powers of hearing remaining in the cases of many deaf children attending the special schools for the deaf throughout the country.

Since the intensity with which a sound affects the organ of hearing varies inversely as the square of the distance between the source of the sound and the ear, a child may be one hundred and forty-four times as deaf as a person who can hear ordinary conversation at a distance of one foot, and yet hear that conversation at a distance of one inch. If we speak with twice our ordinary loudness, the child may be two hundred and eighty-eight times as deaf and still hear what we say at a distance of an inch from his ear.

The distance at which speech is uttered under the conditions of ordinary daily intercourse preclude its being heard by such a child, and this explains why he grows up in utter ignorance even of the existence of language. Yet with proper auricular education, the brain of that child can be trained to associate ideas with spoken sounds; in other words. the child can be taught to hear and comprehend spoken language through the very imperfect organ of the ear.

I have had children seven years of age brought to me who were so deaf that, though of perfectly normal intelligence and living among educated people, they had reached that age not only without learning to speak but without understanding any spoken language or even having the conception of language. Within a few months, largely through the ear, I have taught them to speak many words and sentences and to understand them when spoken very near the ear. This has been accomplished by first awakening attention to sounds, then by patiently training the brain to associate ideas with certain groups of sounds which we call words. Gradually they learn that by giving attention to those sound impressions they can get something that is helpful and interesting. The idea dawns upon them that all objects and actions have certain

sounds that we associate with them which are their names.

Under the ordinary conditions of daily life very few and very imperfectly-defined sounds had reached them; so few and so indistinct that they could not attach meaning to them. By the simple process of uttering these sounds at sufficiently short range and with sufficient loudness to reach them *at the moment when we had awakened in their minds the ideas for which the sounds stood,* we trained their brains to comprehend language just as children with normal hearing gradually learn to comprehend it.

Our own understanding of language through hearing was arrived at by a long process of brain training. If we, with our normal hearing, were suddenly set down amidst a people who spoke a language which we had never heard before, we would understand nothing of what was said to us; not because we were deaf, but because our brains had not been trained to associate ideas with the sounds we heard. Slowly, day by day, as we heard the same sounds over and over again uttered at the moment when certain ideas were awakened in our minds, we should learn to associate those sounds with those ideas and the sounds would become words, and the groups of words sentences, and thus we should arrive at an understanding of the new language.

The small deaf child labors under some serious handicaps that we should not have in thus acquiring a new language. To begin with, he has no conception of what language is. We have already acquired one language. He has none. Then we hear the sounds distinctly and do not have to pay the close attention that he does in order to discriminate between sounds.

He has a somewhat retarded mental development, having missed the intellectual stimulus that comes with the acquisition of language and speech. It is difficult, therefore, to secure an adequate cooperation from the child, and this cooperation is essential in order to get the intensity of attention required to interpret imperfectly heard sounds. Perhaps you have yourself had the experience of trying to hear what was said to you over a telephone with a bad connection when the person speaking was using a language with which you were not entirely familiar. If so, you can then form some conception of the strain upon the attention of the listening deaf child. Ten minutes at a time is enough at the beginning, and until a considerable ability to comprehend has been attained.

During the past twenty-three years 35 per cent. of the pupils brought to my small private school have had sufficient residual hearing to benefit greatly by the form of auricular education we provide. I believe that an adequate examination of all the pupils in our special schools for the deaf would show that fully one-third of them, that is more than three thousand, are suitable subjects for such training of the brain through the normal channel of approach.

It is the easiest means of access to the language faculty of the child since it follows the line of normal development through millions of years. There are, of course, certain areas of the brain that can be reached in no other way and, therefore, a more symmetrical development can be obtained when any use can be made of the hearing.

It has been my experience that while artificial aids to the hearing may sometimes be useful in the earliest stage of awakening attention to sounds, and in the later stage in extending the range at which the hearing can be made of service, throughout the real educational process of teaching the brain to associate meaning with sounds and to remember those associations, the use of the unaided voice, applied directly to the ear, produces the best and most rapid results. Therefore, while I often use an acousticon to begin the work, and return to it when some considerable comprehension of spoken language has been attained, I do not use it in the intermediate educational process.

What should be our standard for the amount of hearing power that must be possessed by the deaf child to respond satisfactorily to educational auricular training? In the first place, such islands of hearing as remain must be located within the range of the speaking voice. Sometimes a child will respond to very high shrill sounds, such as a sharp, high-pitched bell or whistle, and yet be absolutely deaf to all sounds lying within the range of speech tones. In such cases, no satisfactory results can be attained in teaching the comprehension of language by the ear. Lip-reading and writing are alone available.

Having determined that the child has some power of perceiving tones within the range of the speaking voice, my own standard of amount is his ability to learn to distinguish between five unlike vowel sounds shouted an inch from his ear. I am willing to spend from two to six months of practice for ten minutes each day before definitely deciding that the brain cannot be reached educationally through the ear. If, at the end of that time, he cannot discriminate with 90 per cent. of accuracy, day after day, between five vowel sounds, or between five words of one syllable containing those sounds, I drop further effort along that line for a year. Then I make another, briefer test, and if the result is the same I again abandon the effort for another year. Each year I repeat my tests, as I have found in some instances that a power of sound perception, or at least of interpretation has appeared after a number of years of education by purely visual and tactile means. Then, too, the increased power of concentrated attention and the greater understanding of the importance of hearing that come with greater maturity are powerful aids in these auricular exercises.

The aid of physicians is much needed, both in detecting the existence of even very slight hearing power in the little deaf children of from four to ten years of age that they see and also in exerting their influence with parents and schools to secure the necessary auricular education for these deaf children.

Often the mere planting of the idea of possible auricular education in the minds of the parents by the physicians is enough to set the wheels in motion to accomplish it. But frequently he needs to use much effort to get the thing done. If all physicians, whether otologists or not, would lend a hand in disseminating this knowledge, many a deaf child would grow into a more normal man or woman than could possibly have been the case if no access had been found to the brain through the ear.

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Medicolegal Notes.

Effect of Dismissal of Physician on His Liability.—In an action for malpractice the issue raised was whether the defendant was guilty of negligence which directly and approximately caused a gauze pack to remain in the abdominal cavity of the plaintiff's wife longer than it should have remained therein after an operation. The jury found for the defendant, and the plaintiff appealed from judgment for the defendant. The evidence showed that the defendant performed the operation in the usual way; that the insertion of the gauze pack was necessary; that several days after the operation the defendant attempted to remove the pack, but the removal created or again started a dangerous flow of blood, which, under such circumstances as shown by the testimony made it necessary to desist; that the plaintiff removed his wife from the defendant's sanitarium without the defendant's permission during his temporary absence. The defendant and the attendant physician and nurse all specifically testified to this fact, and further that the plaintiff was then informed that the pack had not been removed, because of which, and because of the presence of fever, it would be dangerous to remove the patient. The evidence further seemed uncontradicted that the physician who afterward attended the patient knew that the gauze had been placed in the wound and suspected its presence when the patient returned home, but relied wholly upon the assurance of plaintiff and his wife that it had been abstracted. That there was evidence in behalf of the plaintiff of contrary import could not alter the conclusion, since such evidence merely presented a conflict which it was the function of the jury to determine. Under such circumstances and under the findings of the jury, it was not the defendant's duty to follow the patient and be further liable for the due care of her wound. The court quoted Lawson v. Conaway, 37 W. Va. 159, as follows: "All of the authorities admit that the patient may at any time discharge or dismiss his physician, and from that moment such physician is relieved from responsibility. It would be very strange if the law were otherwise."—Miles v. Harris, Texas Court of Civil Appeals, 194 S. W. 839.

Administering Anesthetics Not Practicing Medicine.—Ky. St. Section 2613, makes it unlawful for any person to practise medicine in any of its branches in the State who has not registered a certificate of the State board of health authorizing him to engage in the practice. Section 2615, subsection 5, provides for the examination by the State board of health of any other persons applying for authority to treat the sick or injured or in any way discharge the duties usually performed by physicians, and that the term "practice of medicine" shall not include trained or other nurses, etc. Section 2618 provides that to announce to the public in any way a readiness to treat the sick and afflicted shall be deemed to be engaging in the "practice of medicine." A duly licensed and trained nurse was employed to administer anesthetics by a duly licensed surgeon under his direction, and the administering in each case was done by her under his personal direction and supervision. In an action by the State board of health against the surgeon and the nurse for violation of the statute, on an agreed statement of facts, it was held that in the performance of such services the nurse was not engaged in the "practice of medicine" within the statute.

The evidence disclosed a variety of opinions as to whether women or men make the most safe and efficient anesthetists, or whether trained nurses educated for the purpose or licensed physicians are most competent for the work of administering anesthetics to patients undergoing surgical operations. Some of the opinions were to the effect that the work of an anesthetist is most responsible, and that upon his or her competency and efficiency depends in some measure the safety of the patient, while others seemed to hold to the opinion that the administering of the anesthetic is attended with little danger to the patient if the surgeon has properly performed his studies in the examination of the patient beforehand to discover his physical condition and whether there is any reason existing why a certain anesthetic should not be administered, and to what extent and in what quantity it should be administered, and thus equip himself to be able to give the necessary directions to the anesthetist. There was not any contention that a nurse trained for the purpose is not thoroughly competent for such duties, or that the nurse in question was not qualified for the work, and both sides agreed that one to administer anesthetics safely and efficiently must have training and experience for such purpose in order to be efficient and competent for the service whether the anesthetist is a licensed physician or a trained nurse. Some of the opinions were to the effect that the licensed physicians, taken as an entire body, contain a very large number of members who are not qualified for such duties, never having made a special study of it and being without experience. The court held, however, that these differences of opinion were questions for discussion and investigation by the members of the medical profession, and the only question it could determine was whether the nurse was engaged in the practice of medicine within the statute; and this it determined in the negative.—Frank v. South, Kentucky Court of Appeals, 194 S. W. 375.

Prescriptions of Intoxicating Liquors.—South Dakota Laws 1905, Chapter 123, Section 1, provides that it shall be unlawful for any physician to furnish a prescription for any kind of intoxicating liquors to be used as a beverage for any purpose except for medicinal purposes in case of actual sickness. It is held that this section applies only to cases where the application for the prescription is made by some one other than the person alleged to be ill. Section 2 makes it unlawful for any physician to furnish any person a prescription for any kind of intoxicating liquors except to patients of such physician, where the patient is afflicted with some disease and his condition is such that in the opinion of the physician the taking of intoxicating liquors would be beneficial. It is held that this section applies where a person himself seeks the advice of the physician and states his ailments, and such person is a "patient" within the meaning of the act. In a prosecution of a physician under such acts the essence is whether or not the physician acted in good faith in giving the prescription to his patient.—State v. Morton, South Dakota Supreme Court, 162 N. W. 155.

Expulsion from Medical Society—Resort to Courts.—When parties form voluntary associations, such as medical associations, and adopt rules by which to regulate their conduct and measure their rights, and by the provisions of which members may be admitted and expelled, such rules are articles of agreement to which all who have become members are parties and must be governed thereby in their relations to such associations. The decision of the association in admitting members and in disciplining, suspending, or expelling them, is of a quasi public character, and in such cases the courts never interfere except to ascertain whether or not the proceeding was pursuant to the rules and laws of the society, whether or not it was in good faith, and whether or not there was anything in it in violation of the laws of the land. In other respects the sentence of the society is conculsive like that of a judicial tribunal. Where an association under its rules expels a member, such member must resort to and exhaust the remedies provided by the association itself, through its constitution and bylaws, before applying to a court of equity for relief. But where a member has been expelled in violation of the rules and bylaws of the association, and the bylaws do not allow adequate relief by appeal from such expulsion, the member may resort to a court of equity for relief.

A member of a county medical association, in an action for an injunction to restrain his compulsion, alleged that he had been tried by the association upon charges presented on the night on which he was tried and convicted, he having had no notice or knowledge of the existence of such charges until after he had presented his defense to other charges of which he had notice; that his trial was in violation of the bylaws and rules of the association, while the provisions for appeal made by the association were wholly inapplicable and inadequate, and could not have afforded the plaintiff any relief for his alleged unlawful conviction and expulsion. It was held that he had a right to resort to a court of equity for relief.—Brown v. Harris County Medical Soc., Texas Court of Civil Appeals, 194 S. W. 1179.

Military Medicine.

A DAY'S WORK.

"THE United States Army must have 24,000 physicians." These words bring to our minds a realization of the significant part that is to be played in the Great War by the Medical Profession of the United States. Within the next year the medical service of the army will require the service of 144,000 men, of whom 24,000 must be trained physicians. Approximately two out of every nine physicians of military age, 22 to 55 years, throughout the United States and its possessions will be taken to raise the number to the necessary total. Five thousand commissioned medical officers are already in the Reserve Corps and every effort is being made to obtain the remaining number of physicians between now and October 1.

For the American doctors who are to be called from the comparative quiet of their practice and are to be whirled into the midst of the great European cataclysm, Andrew Macphail's description in the *Lancet* of June 30, of the taking of Vimy Ridge and the doctor's part in it, helps to a visualization of a day's work at the front.

"It is difficult," he says, "for you to appreciate how small is the battle area occupied by a division. It is measured in that case (cited) 2000 yards in depth with a frontage of 1000 yards—about the size of a nice farm. This area was approached only by night or in fog, though ambulances and persons singly on foot might take a chance. Once the area is entered all life is underground.

"Regimental aid posts and field ambulance relay posts were parts of a system which ended at the rear of the battle area where a huge advanced dressing station was partly excavated and partly built. Two tram lines had been thrust up by night on either flank . . . and were of great service in bringing casualties down. . . .

"Let us now attempt to follow the progress of a wounded man. When he falls he is attended by the regimental medical orderlies and is sent back a few hundred yards by regimental bearers to the aid post, where he is more carefully dressed by the regimental medical officer. There he is handed over to the field ambulance bearers and borne by hand, by wheeled stretcher, or by trolley from one relay post to another until, finally, at a distance of one or two miles he arrives at the advanced dressing station. There the dressings are examined and, if necessary, renewed. Trains of trolleys drawn by gasoline engines are in waiting to bear the loads farther to the rear, where the motor ambulance convoy waits, which takes them to the main dressing station. Here the cases are redressed and so sent on to railhead, clean, warm, and fed."

"Of the wounded in detail one sees little; one sees them in the mass. Our business is to speed them on their way, and 12 surgeons in a dressing station, working night and day, will clear the casualties as fast as they come in. The walking classes went direct from the field to collecting points and were sent down in 'buses, forty at a load. The lying cases neither move, nor speak, nor utter a sound. It is only when we get to the base or come to England that we see the wreck of war and the pity of it all. . . .

"Sixteen battalions were engaged on this 1000-yard front, 16 men to a yard. Each one had its piece to do, and when done another battalion passed through and took up the advance. All winter the performance had been rehearsed behind the lines on a terrain marked off with tapes to imitate the battle area as discovered by aerial photographs. To each battalion was allotted a certain number of minutes for its task. All was over by 2 o'clock, and before darkness fell the field was clear. The evacuation from the front was so perfect and rapid that cases began to accumulate at the advanced dressing station; and there they lay, a piteous spectacle, but their presence was the finest tribute ever paid to the medical service. A general passed by, and when he saw the wounded lying in ranks on each side of the road covered with snow, he thought the medical service had broken down, until it was explained to him that all casualties were dressed and fed, eased with morphine, and covered with blankets, instead of lying where they fell. Additional convoy was procured and by midnight all were in their beds. That day's work was over."

TRACHOMA AND ARMY RECRUITS.

THE examination of army recruits is a matter of grave responsibility. The examining medical officer must be possessed of much diagnostic perspicacity, or he may be the indirect means of spreading disease and impairing the fighting efficiency of an army. For instance, trachoma is a common eye affection, in a high degree contagious, and if not detected in time may be responsible for the invaliding or even blinding of hundreds of soldiers. Surgeon John McMullen, U. S. Public Health Service, points out in *Public Health Reports*, July 13, 1917, that during every recent war trachoma has been one of the greatest menaces to the health of armies. The malady, he says, is extremely frequent in this country, and is most extensively found among the Syrian, Armenian, Hebrew, Italian, Polish, and Greek races. It is common among the Indians, and on some of the reservations, McMullen says, 90 per cent. of the inhabitants suffer from trachoma. It is widely distributed throughout this country. Diagnosis is often difficult, since, as the causal organism is unknown, it is still based on clinical evidence. Trachoma is transmitted from the sick to the well by the secretion which is conveyed to the healthy eye by means of such infected articles as towels, handkerchiefs, bed linen, etc. Trachoma is essentially a chronic disease, and, untreated, lasts, as a rule, for the greater part of a lifetime. It frequently exists in a latent or dormant stage, and on this account there is grave danger that recruits may be enlisted suffering from this disease, unless the greatest care is exercised.

The eyelids of all recruits and drafted men should always be everted, the examination to include the retrotarsal fold, and the conditions of the membrane should be noted in a space on the blank form reserved for this purpose. If the conjunctival surface of the eyelids is not smooth and pink, if there

is any redness or secretion, especially in the retrotarsal fold, such cases should be segregated for examination by those trained in the diagnosis of trachoma. An applicant who is found to be suffering from a well-marked trachoma should not be immediately rejected, but should be given treatment and his trachoma cured. He can then be again examined to determine whether he has resulting visual defects sufficient to cause his rejection. In this way a case of dangerous contagious disease will be eliminated, and probably a good soldier gained.

LETTERS FROM AN M. M. R. C.

A Training Camp Somewhere in The United States.

The medical man who has been ordered into active service or is about to join one of the numerous governmental training camps for officers of the U. S. A., should prepare himself for many disillusions. His enthusiasm will undergo some tremendous slumps. There are certain prescribed rules and regulations (of which he is quite ignorant) that have to be carried out to the letter or trouble intervenes. He will probably travel in his new uniform and will have certain titillating surprises by having every soldier he passes salute him. An officer is not supposed to burden his hand carrying luggage, so his right hand which is the only one he may salute by, is quite free. This is quite the reverse of many privates whom he will find at every turn and corner of the street and railroad station. One must not be sentimentally sorry for these privates. They have probably just learned how to salute and are only too keen for the opportunity to try it out. If you decide to travel in civilian costume you are breaking one of the laws of the service. On active duty an officer is not permitted even to have a civilian's dress in his immediate possession. It is forbidden any officer to be in any public place in company with anyone who is drinking anything stronger than water no matter what mild beverage he, the officer, might indulge in. On the streets of strange cities he will have odd experience with strangers—mostly girls, coming up and wishing Godspeed. If of a naturally retiring disposition he will likely become most embarrassed.

A training camp is all that the name implies. You would not expect the niceties of Windsor Castle at Muldoon's.

Your first mental shock will come on your arrival at destination. Officialdom has a particular faculty for picking out the most impossible sites for establishing training camps. Would they choose a nice golf course with rolling meadow and green turf, with a river nearby clean enough for the tired and sweaty soldier to bathe in? Perish the thought! If the place is alive with bugs, hot as Hades, with a nice sticky clay soil surface when it rains, infested with flies, ticks, jiggers, and mosquitos, it becomes at once a desirable spot in governmental eyes for the establishment of a camp. Of course day laborers are so tender that they can not begin to stand what the ordinary soldier or doctor can! That's why they so often quit while construction is in progress. When the government tells you that you are to go in training it means it with a sincerity past human belief.

On your arrival at the station you will seek in vain for anyone to carry your hand luggage. You will find yourself alone amidst teamsters, expressmen, contractors, sub-contractors, and others who are trying to sell their line of goods to the Government. No one is in uniform except yourself and apparently you have no place to go and no one wants you. Of what use is it to you at this particular juncture having accepted a commission of major to uphold the honor of your country? Your printed governmental instructions tell you that when ordered to a station on active duty, on arrival you must present yourself to the adjutant and show him your credentials. Depositing your luggage in any old place you ask to be shown the way to his quarters. You are told it is one of the houses on the parade grounds and you follow the road that leads in this direction. It is a long way off! There are no taxis or other conveniences around, so you have to foot it. As you near your destination the midsummer tropical heat beating down on the high collared, closely buttoned heavy khaki uniform, the leather puttees, and regimental cap, produce a state of perspiration that would defy a Russian bath towel to mop up. It streams down in rivulets from the band of your cap till it sinks absorbingly in your collar and ever increasing on, down and down. To add to the discomfort, soldiers are getting as thick as flies and you are constantly returning salutes. This prevents you using your saturated handkerchief with any degree of satisfaction. At last you have arrived and now await your turn among the many who have business with the Adjutant.

It is now you realize in full force what a bee hive the center of the fort is like. You look out of the window and take notice of the pretty houses of the officers of the regiment with gay colored flower beds indenting the cool green lawns in front. You wonder in which house you will be given quarters. Your book of governmental instructions tells you that even second lieutenants are provided with three rooms and if their furniture has not as yet arrived the quartermaster will furnish you with whatever you need. From beyond the compound of the parade grounds, seem to stretch miles and miles of tan colored tents. Ambulance motors, prairie schooners drawn by mules, express wagons, vans of butcher supplies, and other like, congest the road that leads to the stretching land of tentdom. You speculate on the enormity of the proposition of having to feed and house thousands of men. These musings are interrupted when you find it is your turn to see the adjutant. You introduce yourself by your full military title when you are at last face to face and as it seems to make no visible impression somewhat hesitatingly you produce your orders. He looks the document over in rather a bored manner and icily tells you to go to the adjutant of the training camp which someone will direct you to. With a nod of dismissal you leave the office (probably with your hat hindside before, this oversight being most politely brought to your attention by a passing sergeant); your feelings of pride and enthusiasm have now oozed to the lowest ebb. There is none of the sensation, the thrill, that you experienced when you first put your uniform on to show to the family at home and your native village at large.

A friendly face that salutes you gives you courage to ask the direction to the officers' training camp of the medical reserve. It's a long way off! Yes, over a mile! Not quite two! It's the furthest line of tents and shacks in the direction pointed.

As the major walks in the broiling sun he looks longingly at the railroad station and a train just pulling out. He crushes the thoughts that leap uppermost. The adjutant's quarters of the training camp is found located in a wooden shack recently constructed, surrounded by more tents and more rough hewn shacks. To reach this point you have traveled by foot the deeply pitted road, dodging in and out between the drays, ambulances, and motors bumping by on army business. This adjutant is more friendly and when you introduce yourself as Major So and So, he says, "I am glad to meet you, *doctor!* The secretary will fill out your card and will then direct you to the way to Captain Smith's quarters, who will inform you what is required of you."

The Sanitary Service of a Battalion During an Offensive Campaign.—According to Cheyrou in *Le Caducée* for June 15 it was expected before the latest French offensive that much would have been learned from the Somme campaign in 1916. As a matter of fact, but little difference was to be noted, although there was some improvement in the rapid evacuation of wounded to the rear. The commander of the batallian informed the author before the offensive of the point of departure of the attacking waves so that the site of the *poste de secours* could be appropriately chosen. An excavation was prepared and roofed in with planking and sheet iron, the work being done by the stretcher men. This shell proof room was furnished with a bench, table, shelves, etc. On the morning of the day of attack the author was at his post with some musicians, who acted as emergency stretcher men. Soon the regular stretcher men arrived with supplies, which included socalled compass stretchers, small vehicles for transporting stretchers, dressings and Vincent's powder. Just before the attack, in the evening, the soldiers were accompanied in their march by orderlies with first aid dressings. The auxiliary physician now gave the word for the stretcher men to advance with the troops. The author remained at the dressing post, his task being to relay the wounded to a central *poste de secours* in the rear. The auxiliary who accompanied his stretcher men was to distribute them as he saw fit. The author, at his post, was accompanied by musician stretcher men, who were to relay wounded after they had been dressed. A ranking orderly registered the wounded as they arrived and made out the attests. A second subordinate with motorcycle kept the chief batallion physician in the rear closely informed as to the need of fresh men and supplies. Those but slightly wounded at the front were guided by orderlies to the *poste de secours*, having received no first aid dressings. After their wounds had been dressed they were directed to the rear by the relay men. All of the other wounded received first aid treatment on the spot in the most sheltered places and the stretcher men, informed as to their whereabouts, bore them to the first *poste de secours*.

After the troops had advanced well beyond the first post the auxiliary physician saw to it that an advanced post was established in a natural or artificial shelter. The author's original post now functioned in part as a base. With the further advance of the troops others were established, while messengers, by a system of reports, kept the new posts supplied with stretches, relay men, dressings, etc.

The author acted as middle man between the auxiliary physician at the front and the chief battalion physician at the rear. To protect the wounded and stretcher men as much as possible a trench was cut from the *poste de secours* forward and the stretcher men traveled along certain definite lines, which culminated in the socalled ravine. Some of this work was done in advance of the battle, but when new posts were needed the excavation must have been impromptu. Apparently certain first treatment was given after entrance into the trench. Some stretchers were carried, others transported in wagonettes; as a rule the wounded remained in the stretchers, but were carried onward by relay men.

In an offensive those wounded by machine gun bullets show a marked preponderance. Shell fragment wounds are correspondingly rare. Machine gun fire may be so deadly as to cause wide havoc.

In wounds of the head and chest tincture of iodine was sprayed on; in wounds of the abdomen ether is preferred and for wounds of the extremities Vincent's powder. The rule is never to explore a wound at a dressing post nor to touch one with the fingers. Nevertheless every attempt is made to secure thorough disinfection by means of irrigation and insufflation. Fractured limbs and injured abdomens are immobilized. Those wounded in the thorax receive morphine. In shocked subjects oil of camphor is injected and the patient is allowed water, with or without rum. Much pains have been taken to mitigate the severity of transport. Wagonettes for stretchers are provided with springs and rubber tires. Coverlets are available for the wounded. Ambulance autos come up as near the front as is safe. If possible there is no change from one stretcher to another.

The Successful Conservative Treatment of Early Gas Gangrene in Limbs by the Resection of Infected Muscles.—C. H. S. Frankau, Hamilton Drummond, and G. E. Neligan report their method of treatment of gas gangrene which is carried out along the lines laid down by Cuthbert Wallace in an article in the *British Medical Journal*, September 16, 1916. Wallace made the following points: (1) It is rare to meet gas gangrene without muscle injury. (2) It is chiefly a disease of muscles, and is rarely dangerous unless muscle is involved. (3) The lesion in its early stages may be described as a longitudinal one, running up and down the wounded muscles from the seat of the lesion. Muscles, or groups of muscles, are involved, while others escape. (3) It is rare to find all the muscles of a segment of a limb involved, save in a segment distal to one in which the main blood supply has been cut off. Thus the whole leg dies and becomes gaseous when the femoral artery has been blocked in the thigh. (5) There is little tendency for the infection to pass from one muscle to another. This is well shown in amputation stumps, where one muscle dies and becomes gaseous, while the rest of the cut muscles remain healthy.

From observations made in clearing stations over a period ranging up to twenty-one months, these surgeons agree with the above facts. In no case did they find gas gangrene commencing as a subcutaneous infection; injured muscle is in all cases the initial focus, the appearance of crackling in the subcutaneous tissues being a secondary phenomenon, due to extravasation of gas from the infected muscles below. In view of this, they planned their treatment on the following lines as soon as the diagnosis was made: To explore the primary focus with a view to attempting to arrest the infection in the muscle, or group of muscles, involved by resection of the infected areas. Such a resection may involve a part or whole of single muscles, or groups of muscles.

Resection should be limited to cases in which the main vessel of the limb is intact, and should be replaced by amputation where the operation must be to extensive as to be likely to give a limb which would be of less value than an artificial limb. Extensive resections, however, may be performed regardless of the ultimate utility of the limb as a life-saving operation, it having been quite clear in some of the cases that an amputation, or a further amputation could not have been carried out without grave risk of life. Resection should extend until muscle is reached which has the following characteristics: (1) The color is unchanged. (2) The contractility is normal. (3) A good blood supply is present, as indicated by free bleeding from the cut surface. Experience has shown that even if such muscles are, as they may be, slightly infected, free drainage and an open wound will arrest further development of the condition.

The treatment of cases after resection is carried out on the following plan: The dressings are reduced to the absolute minimum—that is, one or two layers of gauze only are placed over the wound so as to allow free access of air, and, if possible, sunshine to the wound region; constant of intermittent irrigation of the wound by some modification of the Carrel method—eusol, saline, or hydrogen peroxide being used as the irrigating fluid.

In connection with the cases cited in the report the point must be specially emphasized that gas gangrene had already developed in some patients, though they were admitted a very short time after being wounded. In fact, in units at the front established gas gangrene has to be treated *ab initio*, in addition to gas gangrene developing at a later stage.

One case illustrative of the treatment is as follows: Lieut. F., wounded 4 p. m. on November 2, 1916, by rifle grenade fragment; admitted at 7.15 p. m. same day—three and a quarter hours after being wounded. While admitted as a walking case, he was very ill; pulse 120, of poor quality and irregular; tongue furred, and features pinched and worn. There was an irregular wound the size of a threepenny-piece (about 1.6 c.m. in diameter) on the posterior aspect of the right arm just above the internal condyle of the humerus; there was no exit. The whole upper arm appeared swollen; crepitus was present and gave a tympanitic note on percussion. The crackling was most marked on the inner aspect of the arm and extended as high as the anterior axillary fold above in front, but to not quite so high a level behind. He was given a general anesthetic at 8 p. m. The wound entry was first excised; much damage to the triceps was found locally, and the projectile could be felt to the inner side of the vessels in the front of the arm at the junction of the lower and middle thirds; a second incision was made over this and the biceps muscle showed evidence of gas infection. A further incision was made along the length of this muscle from origin to attachment; some bruising of the inner border of the muscle at the situation of the projectile, discoloration of the inner half of the muscle, varying from a dull red color at either end to a deep plum color in the center was found. Over this discolored area bubbles of gas were present under the fascia covering the muscle. This half of the muscle did not respond to tap stimulation, whereas the normal half responded sharply. The inner half of the muscle was resected in its entirety.

A tube drain was inserted into the posterior wound; anterior wounds were left open, small tubes being inserted and continuous eusol irrigation began immediately after completion of the operation. The pulse dropped to 88 six hours later and never rose again. Wounds remained clean without pus formation and were closed by secondary suture with discontinuance of irrigation on November 9. By November 17, wounds practically healed and patient evacuated to base with fair power in his arm and remaining portion of biceps could be felt contracting. Pathological report gave presence of an anaerobic gas-forming organism in infected tissue, with hyaline degeneration of groups of fibres with separation. This condition represents a very early stage in the process of gas gangrene. Long bacilli could be recognized between the muscle fibres, but they were very scanty.

This case showed the extreme rapidity of the spread of this infection, and if treatment had not instituted so early, the patient would in all probability have lost his life owing to the virulence of the infection. The resection of half the muscle rather than the whole was due to the longitudinal spread of the infection along the length of the fibres. The transverse spread is a late manifestation of the advanced stages of the condition.—*British Medical Journal*, June 2, 1917.

Military Hospitals Planned.—Announcement has been made in Washington that thirty-two new army hospitals are being built at a cost of $14,500,000 for National Troops' and National Guards' camps. Plans have been made for enlarging some of the thirty hospitals used in connection with the officers' training camps. Two general hospitals at ports are being taken over by the army and a number of general hospitals are being taken over or built for special treatment work. Steps are being taken to work out plans for reconstruction hospitals where artificial limbs will be made and fitted, repair surgery done, and the re-education of cripples begun to enable them to use the artificial limbs. The aim of the medical department is to have hospital provisions for 5 per cent. of the enlisted force by fall and to then extend that to 10 per cent. Abroad facilities for 20 per cent. of the expeditionary force will be provided for. Provisions will be made at the cantonments in this country for 3 per cent. of

the troops in each camp. The hospitals constructed at each of these camps will contain at the fewest 1000 beds and the cost of each hospital will be approximately $500,000. Each of these hospitals will have an equipment equivalent to that of the best hospitals in this country. Each man in the new armies will have the equivalent of six or more examinations by specialists, in addition to the examination as to his general health and condition.

Troops at Forts Adams and Greble Quarantined.—Owing to the prevalence of diphtheria in Newport, Jamestown, and Portsmouth, troops at Forts Adams and Greble have been placed under quarantine. Orders have been posted warning the men to refrain from eating ice-cream because of the discoveries made at a farm in Portsmouth from which came the cream for at least two of the manufacturers of ice-cream.

Would Not Draft Hospital Employees.—At the recent annual meeting of the American Psychological Association in New York, a committee was appointed to take up the matter of getting the employees of hospitals for the care of the mentally disordered exempted from conscription. This organization expressed the opinion that these employees are rendering such a significant service to society that drafting them for the army would be a misfortune. The members of this committee are Dr. William A. White of the Government Hospital for the Insane at Washington, D. C., Dr. Franwood E. Williams of the National Committee for Mental Hygiene, and Dr. L. Vernon Briggs of Boston, Mass.

Examinations for Regular Corps of Army and Navy.—The National Board of Medical Examiners announces that at the examination held in Washington, June 13 to 21, there were 24 qualified candidates, 12 of whom appeared for examination, the others having been ordered to active duty between the time of their application and the date of the examination. Of the 12 who took the examination 9 passed. The next examination will be held in Chicago, October 10 to 18. There will also be an examination held in New York in the early part of December. The regular Corps of the Army and Navy may be entered by successful candidates, without further professional examination, providing they meet the adaptability and physical requirements.

Army Wants Free Doctors.—The Surgeon General of the Army has sent out the following message to various hospitals: "The office of the Surgeon General of the Army is being put to much inconvenience by the fact that many physicians of the staffs of hospitals are accepting commissions, although they cannot be spared for military duty. The Surgeon General does not wish to commission those who cannot respond to service when called. While it is imperative that as many men as possible be made available for the service, those members of hospital staffs who cannot be spared are requested not to apply for or accept commissions unless they intend to respond to any order for service which may be received."

X-Ray Tests for the National Guard.—The Sixty-ninth Regiment, New York, has been subjected to the *x*-ray examination for tuberculosis. Of the first 600 plates examined only 22, a fraction more than 3 per cent., were found to have tuberculosis sufficient to disqualify them for military service. In addition there were 18 who showed old lesions or lung changes, indicating arrested tuberculosis.

Petition for Selective Draft for Doctors.—A petition asking Congress to provide for a selective draft for doctors for military service and pleading for the exemption of bona fide medical men from the provisions of the present draft law has been sent to the various New York City Hospitals to be signed by the physicians practising there. The draft proposed would take men between the ages of 21 and 45 and would be carried out similarly to the draft for the army. It is said that the petition was sent by the Council of National Defense at Washington. The reasons given for suggesting this plan are that the volunteer system of recruiting has failed to secure the required number of physicians desirable for active army service and has failed to exclude physicians whose services at home are essential to the public welfare in health departments, hospitals, medical colleges, and isolated communities. Announcement has been made at Washington that 24,000 physicians will be needed for war service and that 12,000 of these must be obtained by October 1. There are in the United States approximately 90,000 physicians of military age—from 22 to 55 years—so that to obtain 24,000 will mean that about one of every four physicians must be enlisted.

John F. Harris has been elected chairman of the New York County Chapter of the American Red Cross. He succeeds Harvey D. Gibson, and will serve without pay as did Mr. Gibson.

Lieut. Linsly R. Williams, M. R. C., formerly Deputy Commissioner of Health of New York State, who has recently returned from France and England, where he made an investigation of the health and sanitary conditions of both the military and civil populations for the National Research Council, has gone to Washington to take an assignment in the office of the Surgeon General.

American Women's Hospitals.—The War Service Committee of the Medical Women's National Association has organized the American Women's Hospitals for work at home and abroad. The Surgeon-General of the Army and the General Director of the Department of Military Relief of the American Red Cross, have approved the provision made for service to the Army and to the civil population. The work will be officially part of the medical and surgical service of the American Red Cross. The scope of the plan is a broad one. It includes units for maternity service and village practice in the devastated parts of the Allies' countries, and hospitals run by women for service there as well as for the United States Army in Europe. In this country, acute and convalescent cases will be treated in hospitals equipped for the purpose; soldiers' dependents will be cared for, interned alien enemies will be given medical aid, and substitutes will be provided to look after the hospital service and the private practice of physicians who have gone to the front. The first units hope to go to France and to Serbia in the early fall. Headquarters have been established at 637 Madison Avenue, New York City. Dr. Rosalie Slaughter Morton is Chairman of the War Service Committee.

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THE FUTURE OF THE CRIPPLED SOLDIER.

AMONG the many problems which we shall have to face in connection with our share in the great war there are few, if any, which exceed in importance the question of what to do with the war cripples. The facile, obvious solution to the problem, namely, that they should be pensioned off for the rest of their lives is, like so many obvious things, a poor solution. In the first place, pension disbursements which would be at all adequate would be a tremendous burden on the nation—one, indeed, which it could scarcely bear, superimposed upon the gigantic actual cost of the war. In the second place, such a procedure would be extremely unfortunate for the men themselves. It is a mistaken kindness to make a pauper of a man. These patriots, crippled in the defense of their country, should not have their moral fiber destroyed by accustoming them to accept charity. Let us then "find a w'y," as Sentimental Tommy would say. Let us see how our Allies have approached the problem.

In Paris, from May 8 to 12, there was held a meeting of the *Conférence Interalliée pour L'Etude de la Rééducation Professionnelle et des Questions qui Interessent les Invalides de la Guerre.* This society of the formidable name was well attended by large employers of labor, by lawyers, and doctors, and by many disabled soldiers themselves. Six main sections were formed, each of which discussed one particular feature of the subject. These six aspects were as follows: First, physical re-education; second, the question whether doctors or instructors should have main charge of these cases; third, the placing of the disabled in civil life; fourth, the economic and social interests of the disabled; fifth, the blind, deaf, and nervous cases; sixth, the documentation and propaganda of matters relating to the disabled.

The first section discussed reeducation from the standpoint of physiotherapy, artificial apparatuses, and work. The second section disclosed a considerable difference of opinion as to whether the doctor or the instructor should have charge of the work of rehabilitation, although the final verdict seemed to be that the doctor should advise from his professional examination of the patient, while the instructor should actually carry out the work. The third section found considerable difference in the problems according as it was contemplated placing the charges in England or in France. Although the latter country has a much greater quota of cripples, the problem of placing them in civil life has been thought out much more completely in England. Section four voted that workshops be established in the Allied countries similar to those in England, that is, workshops especially adapted to men who cannot compete with the perfectly sound workman. Section five directed its energies to devising schemes to keep together the families of the blind soldiers; in other words, to avoid the fault of those institutions for the blind where only the blind man himself can find a home. Section six discussed plans for the extensive documentation of the various schemes of caring for the war cripples so that no useful bit of knowledge should remain local.

An extremely interesting feature of the conference was the exhibition of charts, statistics, and photographs, artificial limbs, inventions, games, and modifications of the tools in use in the ordinary trades by which they may be adapted to the cripple. Almost half of the French cripples, it was found, belonged to the agricultural class, and hence the French tools were largely of that kind. At the end of the conference all these exhibits were removed to the permanent war medical and surgical museum of Val-de-Grâce, where, no doubt, they will be exhibited in 2017 as marvels of crudity.

Many things were brought out by this conference, aside from the demonstration of *solidarité morale* among the Allies, which cannot but have a beneficent psychic effect. The various countries seem to be progressing in a fairly uniform manner along the same path, their progress varying only according to national conditions. The lot of the war cripple will undoubtedly be an easier one than it has been in the past. For one thing, the tremendous depletion of the working population of the nations will make such a scarcity of labor that these cripples will be welcome even if they cannot do as much as sound men. Then, too, so ingenious are the devices for remedying physical defect that in many cases the cripple can be rendered self-supporting, in other cases partly so.

The war cripple then will not be a pauper. He will not have to go through life accepting charity from the country he has helped, and suffering the consequent inevitable deterioration of his self-respect. The United States will undoubtedly follow the lead of our Allies, and, it is to be hoped, will find many ingenious methods of aiding the returned soldier to make up for the arm or leg he has left in France.

ETHER-OIL COLONIC NARCOSIS IN THE RUSSIAN ARMY.

THE Petrograd journal *Vraeh* for March 25 is devoted very largely to this subject, no less than five original articles having been contributed by as many army surgeons. The subject is

one which has excited the most active interest and a considerable Russian literature is already extant. An article by Protopopoff begins with an historical account of ether-oil narcosis. Nothing seems to have appeared on this subject in Russian until two years after the earliest accessible report of Gwathmey in 1913, the work of the Danes some twenty-five or thirty years ago having apparently been forgotten. From his own and the experience of his colleagues the author is able to draw up data as to advantages and contraindications. The latter are not numerous but include colitis, hemorrhoids, fistula of the rectum, and, in general, inflammatory phenomena of all kinds in the lower bowel. Among its advantages are, he thinks, the following: It is very convenient for operations on the head and neck; its technique is simple and adaptable; it is safer than other methods of narcosis (?); its operation is smooth and automatic, etc. A number of the advantages claimed are merely corollaries to others. Emphasis is laid on the fact that the action of the heart in debilitated subjects is augmented.

Markoff writes at great length on the same subject, giving his personal experience in considerable detail. He agrees with the opinion of an earlier writer—Gubareff—that it is a valuable acquisition to surgery. Yakovenko relates his experience with twenty-two cases and draws some brief conclusions. He commends its use in operations on the cranium, face, neck, and in part the chest. In weakened patients it is an advantage, and, in general, whenever chloroform or ordinary ether narcosis may be contraindicated. It may be administered by the ordinary practitioner. The author, however, recognizes certain disadvantages inseparable from the nature of the method.

Kramarenko deals especially with the untoward phenomena seen in connection with the method. In a certain number of cases the anesthesia has to be completed by the use of inhalation; the sensibility of patients shows variability; it is not possible to control the narcosis or to dose the ether accurately. Two cases are reported in detail in which the use of the method was attended with disastrous results, illustrating the danger of severe bronchorrhea despite the previous injection of morphine. The only fatality, however, which has been placed on record took place eight hours after completion of the operation. It was not a military case, the patient, a young man, having been the victim of a fibrosarcoma of the left half of the nose. Before intervention he received a morphine injection. The colonic mixture consisted of 150 c.c. of ether and 100 c.c. of oil of sesame. The operation was successfully performed. There was but slight hemorrhage, controlled readily with a tamponade. Pulse and respiration were good during the operation. At its completion the patient was placed in bed under the charge of the Sisters of Mercy. About five hours later there was a sudden fall of pulse and despite the application of all possible remedies the patient could not rally, death occurring, as stated above, eight hours after operation. At autopsy nothing was found to account for the death. The fact is of interest that with close control of patient, both during and after operation, collapse should appear without the slightest apparent cause or warning and fail to respond in the least to the usual treatment. This death occurred in the very class of cases in which the ether-oil narcosis is most commonly recommended.

Despite the fact that the ether-oil narcosis has been employed in hospitals in which there should have been thousands of wounded soldiers the case material shows that but few wounded were anesthetized in this manner. Such narcosis would not of course be selected for first interventions after injury at the front. Most of those operated on were soldiers with affections not due to their calling and which would naturally render them unfit for service, as tumors, aneurysms, etc.

MUSHROOM POISONING.

We find in the *Revue Médicale de la Suisse Romande* for May, 1917, two articles on this subject. The first, by Rock, gives twenty-four histories of 99 cases, the poisoning incidence being usually multiple—in one episode 14 having been attacked jointly. These cases all occurred in the neighborhood of Geneva, in the fall of 1916. Of the 99 cases, 3 ended fatally. The condition is as serious to the community as some of the infectious diseases. If the ratio is the same throughout Switzerland as it is in the Geneva region, the morbidity from this cause should be 1900 cases annually. In regard to the source of error, a trained mycologist is never poisoned except by inadvertence. In most other cases it is rank stupidity in people who erroneously believe themselves to be connoisseurs, and who have a sort of pseudological system for distinguishing between edible and poisonous mushrooms and for detoxicating the latter. A mycologist makes no mistake, because he has only to identify the edible and poisonous species; and while there are certain criteria in use which would exclude some edible fungi, this is merely acting on the safe side. Very many of the 99 cases of mushroom poisoning were found to have been due to the *Entoloma lividum*, which nature seems to have framed with the especial purpose of deceiving the inexpert. It is large, with beautiful white flesh, delicate, with appetizing, exquisite odor. An amateur who grew this species because of these qualities, and who had always believed them to be edible, was saved from disaster only when his excessive prudence led him to consult a mycologist, who, however, had all he could do to convince the grower of his error.

About one-half of the cases of mushroom poisoning can be traced to the *Amanita phalloïdes* and its congeners. Characteristic of poisoning by these species is the prolonged incubation period. They cause profound dehydration, so that the injection of

isotonic saline infusion is indicated. Hemolysis never occurs. *Amanita muscaria* produces a characteristic pseudo-drunkenness. In treatment there is no room for fads of specific procedure. Plenty of water and saline infusion with laudanum and heart stimulants are the remedies to use.

Gautier and Saloz publish an interesting case of poisoning by *Amanita phalloïdes* in which death occurred after the patient was apparently out of danger. A robust man of 45, familiar with edible fungi, ate some wild mushrooms of his own picking. They comprised several varieties, only one of which was unfamiliar to him, but this was guaranteed by a friend. He ate them at noon and at 10.30 P. M. was suddenly taken ill with atrocious cramps and presternal suffering followed by vomiting and profuse serious diarrhea. The following day he came to the medical clinic, reeling as if drunk, and with a syndrome of cholera, cramps in the calves being prominent. He did not improve after gastric lavage and caffeine injection. He presented cyanosis without dyspnea, and was profoundly collapsed. The liver was not enlarged, anuria was complete, pupils strongly contracted, mind clear. There was intense abdominal pain and tenderness, and the body was markedly dehydrated, but there was no hemolysis. Despite the desperate condition the patient rallied, and his general state alternated until the twelfth day of illness, when he seemed well enough to go home. However, on resuming work he found himself far from well, was weak, without appetite, and passing little urine. His gums bled, and he was markedly constipated. There appeared later a dry colic and nausea, with staggering, which caused him to take to his bed, where he became stuporous. Eight days after his discharge he was back at the clinic, where he died, just 30 days after his fatal meal. A few similar cases of such deaths after apparent recovery are upon record.

A Conception of Neurasthenia.

The term neurasthenia is employed to cover so wide a field that not a few physicians are even yet very sceptical regarding its existence as a morbid entity. Specialists have ascribed its causation to those affections in which they are chiefly interested. Some ophthalmologists affirm that neurasthenia is due in the majority of cases to eyestrain; the Arbuthnot-Lanes and those who trace all the ills of human flesh to deviations from the normal in the mechanism of the intestines preach the gospel that it is owing to intestinal stasis; many nose and throat specialists look upon a deviated septum, bringing about deficient oxygenation of the blood, as responsible for the train of neurasthenic symptoms. Leonard Williams in the *Practitioner* for July, 1917, joins the chorus and gives his views with regard to its causation. As befits one, who is peculiarly sensitive to the wiles of the endocrine glands, he declares his belief that when these glands become inactive, the subjective symptoms of neurasthenia become vocative and even vociferous. Moreover, he holds that neurasthenia being a circulatory matter, should not provide cases for the neurologist but rather for the cardiologist or surgeon. As for treatment, the remedy lies in the purification and the correct composition of the blood supply. The purification refers to drainage and the good composition to the tribute of the endocrine glands. In short, Williams insists upon the practical identity of the symptomology of true neurasthenia with that of suprarenal insufficiency.

Red Tape versus Ordinary Sense.

A very large number of the registrants between the ages of 21 and 31 who have been drafted are manifestly exempt; many others claim and probably will be granted exemption. Nevertheless every drafted man must first be examined medically. The medical examiners are working without pay, losing much of their practice temporarily, animated solely by motives of patriotism. Yet they must in many instances waste hours and days of their precious time examining men who will probably if not surely be exempted later. (It takes thirty minutes or more to examine each man properly.) Another instance: A young man, within the registration age, enlisted in the navy, passed a satisfactory physical and mental examination, and was made a quartermaster. His number was called in the draft, and now he is notified by the provost marshal general's office to present himself for examination, "as the rules require examination even when the registrants are in the service." The *Official Bulletin* of August 1 contains a notice from Provost Marshal General Crowder that medical students who are drafted cannot be exempted, and this despite the medical famine in England and France due to just such folly. Comment is superfluous.

News of the Week.

Plea for More Accurate Death Certificates.—The Bureau of Census is planning to prepare and publish a monograph on the mortality from tuberculosis covering the calendar year 1918. To make this work of greater value, an endeavor is being made to obtain the cooperation of all physicians to the extent of carefully recording or supervising the statements of occupations upon the death certificates during that year. Circular letters have been sent to all the physicians in the United States, calling attention to the importance of such statistics, and urging them to take pains to see that the occupation items upon each death certificate are properly supplied.

Increase Resources of County Tuberculosis Hospitals.—With a view of mobilizing all the resources which will assist the counties of New York State in carrying out the provisions of the recently enacted law requiring the construction of tuberculosis hospitals in counties of 35,000 population or more, the State Commissioner of Health, Dr. Hermann M. Biggs, has appointed two committees which are to take entire charge of the tuberculosis situation in this State. The first committee will have general supervision of the sites, plans, construction, and equipment of tuberculosis hospitals, and will carry on the anti-tuberculosis campaign in

the State. On this committee are Dr. John A. Smith, Dr. O. R. Eichel, Dr. E. S. McSweeney, with Dr. Matthias Nicholl, Deputy Health Commissioner, as a member of the committee ex-officio, and also a construction and an engineering expert. The second committee is an advisory committee, consisting of Dr. Albert H. Garvin, Dr. John S. Billings, Dr. Charles Stover, Dr. Horace J. Howk, and Dr. Lawrason Brown.

Determination of Food Values.—The Carnegie Institute of Boston is to conduct a series of experiments this fall to demonstrate whether men and women cannot maintain their powers on a smaller ration than has hitherto been accepted as the minimum. The Battle Creek Sanitarium has just finished a metabolism experiment lasting forty-five days, with ten subjects. The object was to determine the effect of different diets on the chemical composition of the blood. The results have not yet been tabulated.

State Food Bill Framed.—A composite bill, including the best features of the National and the Whitman food-control measures, has been introduced into the New York Legislature, which is in special session. Governor Whitman does not favor giving the proposed State food commission of three members power to commandeer food products except those hold in cold storage by food speculators.

Bequests.—St. Mary's Free Hospital, Sea Breeze Hospital, Association for Improving the Condition of the Poor, and Charity Organization, New York City; Morristown Memorial Hospital, New Jersey, and All Souls' Hospital, receive $10,000 each by the will of Annie A. Peckham.

Feeding Children from Two to Seven Years Old.—A survey of leaflets giving advice on diets and food economies has disclosed the fact that little attention was being paid dietaries for children between the ages of two and seven years. At the request of the Department of Health, the Advisory Council of the Health Department, consisting of Drs. L. Emmett Holt, Graham Lusk, Linnaeus LaFetra, and Godfrey R. Pisek, have issued a statement on this subject, which is published in the Weekly Bulletin of the Department of Health for July 28. The caloric value of various food stuffs is given, the cost per calory, methods of cooking, and sample diets for children from two to four and from five to seven years of age.

Fatalties Caused By Heat.—The heat wave which culminated on August 2 resulted in the longest list of deaths and prostrations due to heat ever tabulated in national or local torrid-weather history. It is stated that in the metropolitan district 135 persons died directly as the result of the heat and that there were over 400 prostrations, ambulances and hospitals being kept busy. Washington estimated that more than 300 persons lost their lives and more than 800 were prostrated in the territory swept by the hot wave. Brooklyn broke her record for ambulance calls, which was 178 on July 4, 1915, by creating a new one of 225 for August 1.

Inspection of Soda Fountains.—All soda fountains in the city of Syracuse are being inspected this summer by city health officials. A score card has been prepared, and fountains falling below a specified average are being closed.

Prof. Theodore Kocher died at Berne, Switzerland, on August 1. Professor Kocher was the recipient of the Nobel prize for surgery in 1909, and was one of the greatest surgeons of his time. He was born at Berne in 1841, and studied medicine in Berne, Berlin, London, and Paris. He was professor of surgery at the University of Berne.

Restrictions on Rockefeller Foundation Removed.—The stipulation that $2,000,000 of the annual income of the Rockefeller Foundation is to be expended at the direction of John D. Rockefeller has been waived. The trustees of the Foundation have been given free rein to use the entire yearly revenue and, if necessary, part of the principal as they deem wise to meet the exigencies of war.

Examination for Office of Chief Medical Examiner.—The Municipal Civil Service Commission announces an examination for the position of Chief Medical Examiner of the City of New York. Physicians more than 30 years of age, who have had ten years' experience in a pathological laboratory, have until August 14 to file applications. The examination is to fill the place of the coroners who will by act of Legislature go out of office January 1. The position carries a salary of $7,500 a year.

Civil Service Positions.—The Civil Service Commission of the State of New York announces the following examinations to be held September 8, and for which application must be made before August 29: Diagnostician and epidemiologist in State Department of Health, salary $3,500, open to men and women, and limited to physicians; medical expert on tuberculosis, salary $3,200, open to men and women, and limited to physicians; assistant to the deputy commissioner, salary $3,500, for men only; bacteriologist, salary $2,000, open to men and women, minimum age 25 years, a degree in medicine or an equivalent education in a college maintaining a standard satisfactory to the commission, or training and experience in chemistry, is desirable but not essential. Persons desiring to take any of these examinations should write to the State Civil Service Commission, Albany, N. Y., for special circular of information.

Smallpox in New York State in 1916.—The July Bulletin of the Department of Health of New York State shows that thus far in 1917 smallpox has appeared in 11 counties of the State, with a total of 58 cases with two deaths. There were during 1916 23 cases. A study of the source of the disease shows that though the cases were widely scattered they could all be traced to a few definite sources, the epidemic in Chautauqua County being clearly traced to a man who contracted the disease in Wisconsin, and the outbreak in Beacon County to Waterbury, Conn. The report emphasizes the fact that as usual the victims were unvaccinated persons.

The Care of Expectant Mothers.—The New York Milk Committee has just published a report of an experiment in the care of expectant mothers covering a period of four years. During the four year period 3,145 expectant mothers were enrolled and given care and supervision averaging three and one-half months before and one month after confinement. Each mother was visited in her home every 10 days by a trained nurse and by a physician

when necessary. When the babies were one month old they were registered at the Department of Health Milk Stations. There were 3,192 babies born to these 3,145 mothers. Of these 115 were still births and 86 others died during the first month after birth. The still birth rate per thousand of these cases was 36 against 46 for the Borough of Manhattan, or a reduction of 22 per cent. The rate per thousand of deaths under one month was 28 against 39 for the borough, or a reduction of 28 per cent. Of this entire group of mothers only five died, giving a rate of 1.5 per thousand against a rate of 4.9 in the city at large, or a reduction in the maternal mortality rate of 69 per cent.

The Starvation Treatment of Diabetes.—In the review of this book appearing in the issue of July 7, the price was erroneously stated to be one dollar; it should have been given as $1.25.

The American Climatological and Clinical Association, at its thirty-fourth annual meeting held in Lakewood, N. J., on May 29, 30, and 31, elected the following officers: *President,* Dr. J. H. Elliott of Toronto, Canada; *Vice-Presidents,* Dr. W. G. Schauffler of Lakewood, N. J., and Dr. H. M. Bracken of St. Paul, Minn.; *Secretary,* Dr. Guy Hinsdale, Hot Springs, Va.; *Recorder,* Dr. W. Duffield Robinson, Philadelphia.

The Eighth District Medical Association of South Carolina, which met in Saluda, S. C., July 11, elected the following officers: *President,* Dr. L. J. Smith of Ridge Spring; *Vice-President,* Dr. J. B. Edwards of Monetta; *Secretary,* Dr. R. A. Marsh of Edgefield.

Licensed to Practise Medicine.—At the recent examination of the State Board twenty-seven men were licensed to practise medicine and surgery in the State of South Carolina and one woman was licensed to practice osteopathy.

Dysentery in Germany.—It is reported from Holland that a serious epidemic of dysentery is threatened in Berlin, Hamburg, and Bremen, many cases of the disease having occurred in these and some other German cities.

Drug Selling Gang Rounded Up.—Five young men who have been selling habit-forming drugs to men in naval uniform in the vicinity of the Brooklyn Navy Yard were hunted down by an agent of the Department of Internal Revenue and taken into custody by the police. Over one thousand bottles of heroin and cocaine were seized. It is said that they were selling on an average of forty bottles of narcotics daily in the neighborhood of the Navy Yard.

Need Funds for Sick Babies.—The Floating Hospital of St. John's Guild, New York, is making an urgent appeal for money with which to carry on its work. The Floating Hospital carries 1,000 sick babies and their mothers daily and the Seaside Hospital wards are crowded with sick babies.

Obituary Notes.—Dr. THOMAS J. THORNBURY, retired, died at his home in Forest Hills, L. I., July 29, at the age of 78 years. He practised medicine in New York City for forty years and in Brooklyn for five years.

Dr. HARVEY H. CONVERSE of Eastford, Conn., a graduate of the American Eclectic Medical College, Cincinnati, in 1878, died suddenly, July 9. Dr. Converse was a Civil War veteran.

Dr. HOWARD W. BASSETT, a graduate of the Medical College of Virginia, Richmond, in 1906, died at his home in Richmond after a long illness, on July 15, aged 56 years.

Dr. MARY H. BAYNUM, for many years a practitioner of Dexter, Me., died after a series of paralytic shocks, on July 15. She was a graduate of the Boston University School of Medicine, in 1885.

Dr. JAMES ALLEN NICOLS, a graduate of the Long Island Medical College and Hospital, died at his home in New York City, July 28, at the age of 58 years.

Dr. WELLINGTON JEFFERS, a graduate of the Victoria University Medical Department, in 1867, and a practitioner of Linsay, Ontario, died after a brief illness, on July 17, at the age of 71 years.

Dr. JAMES COWPER HANNAN, a graduate of the New York University Medical College, in 1873, for many years a practitioner in the Bronx, New York City, died August 2.

Dr. ADOLPH E. LOBERG of Minneapolis died from pneumonia on July 18, aged 41 years. He was a graduate of the University of Minnesota, Minneapolis, in 1901.

Dr. LINUS E. RUSSELL died of apoplexy at his home in Springfield, Ohio, on August 2, aged 66 years. He was a graduate of the Eclectic Medical College of Cincinnati in 1872, and for many years professor of obstetrics and gynecology in that institution.

Dr. WILLIAM RICHARDSON, a graduate of Dartmouth Medical College in 1883, and for many years a practitioner of medicine in Londonderry, N. H., died on July 25, aged 57 years.

Dr. JOSEPH W. MACDONALD, a graduate of University of Bishop College, Faculty of Medicine, Montreal, in 1878, died at his home in Manchester, N. H., July 25, at the age of 66 years.

Dr. ARTHUR WELLINGTON SMITH died at his home in Nashua, N. H., on July 21, aged 64 years. He was a graduate of the Dartmouth Medical School in 1876, and stood high in Masonic circles.

Dr. AUGUSTUS A. GREENBERG died in the Jewish Hospital, Brooklyn, from blood poisoning, on August 6, aged 38 years. He was a graduate of the Long Island College Hospital in 1909, and on the visiting staff of Gouverneur, Mt. Sinai, and Beth Israel Hospitals. He was to have reported to Fort Benjamin Harrison on August 10, to take his assignment as first lieutenant in the Medical Reserve Corps.

Dr. LESLIE T. PAGE, a graduate of the University of Vermont Medical School in 1891, died at his home in Lewiston, Me., on July 21, aged 51 years. Dr. Page spent the active portion of his professional life in Wilmington, Vt., going to Lewiston for his health last September.

Dr. ADOLPHE A. AUDREAN died at his home in Chicopee, Mass., on July 21, aged 77 years. He was born in France, and for some years lived in Montreal, Canada, where he held several prominent political posts. He later came to Chicopee, where he practised medicine for 39 years.

Dr. JOHN HAMILTON POTTER HODGSON of New York City died suddenly at Toronto, Canada, on August 4, aged 48 years. He was a graduate of the College of Physicians and Surgeons, New York, in 1889, an alumnus of the City Hospital, and a member of the Academy of Medicine.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

MENTAL HYGIENE AND SHELL-SHOCK

LONDON, July 14, 1917.

DR. F. W. MOTT devoted the Chadwick Lecture to the subject of "Mental Hygiene and Shell Shock," treating it in reference to the war, during and subsequently to that event. He applied the term to a group of varying signs and symptoms indicating loss of functions and to disorder of the functions of the central nervous system produced by exposure, either sudden or prolonged, to forces generated by high explosives. It may also be caused by cerebral or spinal concussion, though no injury be visible. Sandbags hurled from a distance and striking an individual on the head or spine have often furnished examples of this. Soldiers have sometimes suffered by the roof or wall of their dugout being blown in; others have themselves been driven by the force of an explosion against the wall or roof. The force generated by a 17-in. shell has been calculated as equal to 10,000 kilos per square meter, or 10 tons to a square yard, supporting in this the conclusion that death may occur as the result of aerial concussion produced by high explosives without any visible injury. Perhaps such death may be due to sudden arrest of the vital centers. The cerebrospinal fluid restrains oscillation of both anterior and posterior cerebral roots as well as of the ligamentum dentatum. Consequently that fluid acts as a water jacket to the spinal cord and a water cushion to the base of the brain. This fluid not only surrounds the central nervous system, but it fills up the hollow spaces, the ventricles and the central canal, as well as all the interstices of the nervous tissues; consequently a strong enough shock to the fluid would affect the delicate colloidal structures of the living tissues of the brain and cord. This would occasion disordered function or even loss of function. The higher centers would most likely suffer first, and it is often difficult to determine the point. The lecturer called attention to another factor sometimes complicating shell-shock. A soldier lying unconscious may be exposed to noxious gases generated by shells or mines. It is said that malingering as shell-shock is not uncommon and detection of the fraud by no means easy, for a functional neurosis due to a fixed idea may be mistaken for that condition.

OUR LETTER FROM PARIS.

(From Our Regular Correspondent.)

DERMATOLOGY OF THE WAR

PARIS, July 20, 1917.

THE diseases of the campaigning soldier differ considerably in nature and frequency from those encountered in times of peace. In the dermatological clinics of the Paris hospitals before the war, one would encounter as the most frequent forms of dermatosis, eczema, scabies, psoriasis, and tuberculous troubles under lupic or varicose forms. Today eczema, tuberculides, and scabies are rare, being replaced, in order of frequency, by phthiriasis, eczema, and trichophytinous diseases, oftentimes marked by varied peculiarities.

During the winter months there frequently appear several varieties of artificial forms of dermatitis; there are unusual forms of impetigo of the face, sycosis of non-parasitic origin, and particularly the subnasal form is frequent.

Tuberculides and tuberculosis of the skin are rare. This is not astonishing when one is acquainted with the rigorous care with which tuberculous subjects were eliminated by the medical examiners as the soldiers presented themselves for active service. The army life and exercise in the open air; the nourishment, good in quality and quantity, have constituted great obstacles to the development of the attenuated forms of tuberculosis of the skin.

Phthiriasis has been the disease in common evidence and chiefly in the acute form, which is rarely seen in ordinary times. In many cases the invasion of the parasites is so sudden and so abundant that nearly the whole of the body will be covered by small edematous papules of the size of a pinhead, resembling urticaria. The papules of excoriated prurigo, with their small black-brown crusts, habitually seen in phthiriasis are the exception; equally rare is the melanodermy common to chronic phthiriasis.

The sudden invasion and early care of these cases confined them to the acute manifestations, but with the more prolonged and exacting duties of this summer's campaign the papules of excoriated prurigo and melanodermy are beginning to appear. One of the marked peculiarities attending this disease among the soldiers is that they almost constantly present an ecthyma of the inferior members; these resemble artificial wounds, and when seen for the first time have been mistaken for voluntary mutilation, but were found to be the result of scratching by infected nails. The soldier standing upright reaches down and scratches himself.

Several articles have been published in the French medical press calling attention to the recrudescence of psoriasis observed among the soldiers resulting from nervous shock, violent emotion, or traumatism. Following the destruction of the "Jena," one of the soldiers had hospital treatment for a brusque attack of psoriasis resulting from violent emotion produced by the explosion.

A young soldier of twenty-two suffered an attack which appeared generally distributed over the whole body immediately following his first charge upon the trenches of the enemy. Another soldier, twenty-eight years old, had an eruption of this disease generally distributed over the trunk and arms following the explosion of a "marmite," which knocked him down but produced no wound. A young woman of twenty-five presented this eruption immediately following the bombardment of Arras, where she was living. A number of cases of this disease have been reported following wounds.

At the beginning of the war there were gathered five or six thousand head of cattle at Verdun to furnish meat to that entrenched camp. The soldiers in charge of the cattle were attacked with trichophytis, which appeared generally all over the body. It spread to the artillery and all the branches of the service where the men came into contact with animals.

There has been a remarkable absence of itch

among the soldiers. It would appear that men do not catch this disease from each other under the ordinary conditions of campaigning; that is, clothed and sleeping side by side in straw or on the ground.

146 Avenue des Champs Elysées.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 26, 1917.

1. Some Medical Practice Among the New England Indians and Early Settlers. Carolus Cobb.
2. Biologic Analysis in the Study of True Epilepsy. F. L. Dunham.
3. Surgical Treatment of Laryngeal Cancer. John E. Mackenty.
4. The Mastiche and Potassium Permanganate Tests Applied to the Cerebrospinal Fluid of the Insane. Lawson G. Lowrey.

2. Biologic Analysis in the Study of True Epilepsy.—F. L. Dunham considers that whether true epilepsy is to be regarded as a simple neurosis, as a manifestation of organic disease with evidence of cerebral toxemia, or as an "unconscious striving, with its insistent urge in the fits, to return to the maternal intrauterine life," analyses following biologic lines only are justified as a means toward the recognition of potential subjects. Until the facts of such an analysis are secured no amount of pathological detail can render practical service in the disposition of individual cases. Twenty cases were analyzed and the data for analysis were secured from the following examinations: (1) An anthropological examination. (2) An intelligence test (point-scale) checked by a second (Binet-Simon) test. (3) A complete physical examination, including an examination of the urine. (4) A Wassermann reaction. (5) An examination of the social history of the family, so far as possible through personal solicitation, otherwise by questionnaire. The subjects were also studied in their customary environment, now playing or working in groups, at other times alone with an attendant. An attempt was made to place each child at his ease by engaging him in some task, thus minimizing the changed emotional reaction incident to any examination, with its resulting inaccuracies. The various factors reported show conclusively that the prenatal environment of each of these individuals was modified sufficiently to induce, in any organism, profound structural changes. The objection may be raised, however, that this offers no explanation of the specific defect. Why epilepsy instead of idiocy or a monster? To this the only reply is that the various objective results of the process seem to differ in degree only. All cerebral disturbances presuppose some specific defect of organization. Idiocy and epilepsy are frequently synonymous, and the epileptic has many physical stigmata which are the hall marks of the monster. It is of interest to note in this connection that recent investigation points to the conclusion that the primary causes underlying the origin of monsters in man and other mammals are autogenous chemical modifications of the parental blood. Working with butyric acid and acetone, Werber concludes that all morphological deformities of sensory organs may be induced through the blastolytic action of the modified environment. Dunham further states that the epileptic's failure to make a good social adjustment follows as a logical consequence of his biologic defects. Conduct results from the activity of emotions and impulses springing as natural growths from the primary instincts. As a result of the organization of these emotions, the sentiments develop—systems of the utmost importance in the formation of character. Consequently the child having epilepsy, whose basic instincts and mechanisms are at fault, is deprived of these organized elements of the affective processes, into whose composition enter the principal emotional dispositions of the instinctive life. The natural result of this defect is an unstable and incomplete social adjustment. He states that in the foregoing analysis an attempt is made to emphasize the importance of the more intensive, biologic examination of children—in this instance, those afflicted with true epilepsy. An explanation of epileptic phenomena is sought in the reactions of noxious stimuli upon the germ cell, whose environmental maladjustment appears to induce abnormal, morphological differentiations in the embryo with the power of hereditary transmission of tendencies toward defect, to succeeding generations. An analysis is made of various phenomena in the social, somatic and psychic behavior of twenty subjects suffering from true epilepsy. Attention is called to these as evidence of instinctive instability. The recognized hypothesis that structural abnormalities are concerned in the production of epileptic seizures is accepted and the unconditional reflex is suggested as an element in their mode of functioning.

New York Medical Journal.

July 28, 1917.

1. The Control of Uterine Hemorrhage. Asa B. Davis.
2. Race Betterment Based Upon Principles of Physical and Mental Prophylaxis. Alfred Gordon.
3. A Simple Aspirating Device. A. L. Benedict.
4. A Discussion of the Cause and Management of Puerperal Eclampsia. R. S. Hill.
5. Acroparesthesia. Hyman Climenko and Robert Bogan.
6. The Clinical Significance of Gastrointestinal Toxemias. E. E. Smith.
7. Operative Treatment of Gunshot Fractures. Joseph Rilus Eastman and Ralph Boerne Bettman.
8. The Bradford Frame in the Treatment of Buttock and Hip Injuries of War. Kellog Speed.
9. Creosote Carbonate and Quinine in Pneumonia. Charles M. Nice.

2. Race Betterment Based upon Principles of Physical and Mental Prophylaxis.—Alfred Gordon in his address at the commencement exercises of the College of Physicians and Surgeons, Boston, June 12, 1917, concluded his address by urging that physicians study the problem of race betterment, that they keep pace with new facts, and that they develop an enlightened interest in ideals of eugenics in every one with whom they came in contact. The task is a difficult one but if at least some people can be convinced that the social evils can be prevented, that the defective intellect, the criminal tendencies, and the degeneracy of the child all originate from a pathological parentage, the physician's contribution to mankind will be of the highest order. The rôle of the physician does not lie exclusively in removing suffering. His mission must be a higher one. Who, if not the physician, can serve as the best guide to an honest man who undertakes to lay the foundation of a family? The physician alone can avert danger by emphasizing to the candidates for marriage the laws of heredity and the consequences of morbid heredity; he alone can make it clear to any man or woman that to read daily on the face of their child the stamp and the reproach of a morbid taint which they tried to conceal is more torturing than the stain of blood of Macbeth. To combat social misery and all its consequences is to combat physical and moral deterioration. Preventing them means to prepare generations better equipped to resist depressive influences in life and therefore more apt to receive an intellectual and moral foundation which will transform them. *Fortes fortibus generantur* is the logical conclusion drawn from the application of biological knowledge to social evolution.

6. The Clinical Significance of Gastrointestinal Toxemias.—E. E. Smith sums up his subject by stating that in his present presentation it has been his purpose at a time when everyone is particularly enthusiastic about another form of toxemia, namely, protein sensitization, to call attention to the condition of intestinal autointoxication, which is apt to be forgotten. The technical difficulty of obtaining adequate data in these cases, the careful study of individual cases necessary to exclude other conditions, and the extravagant and erroneous claims of the Metchnikoff school which overpopularized this subject at the expense of accurate information, should not cause us to overlook this condition as a real factor in many of our cases. It is suggested by the clinical symptoms and is to be further recognized by the intestinal flora and by the products absorbed and eliminated in the urine.

Journal of the American Medical Association.

July 28, 1917.

1. The Influence of War on Medical Science. James Ewing.
2. Gunshot Fractures of the Shaft of the Humerus. Joseph Rilus Eastman.

3. Consideration on Epidermolysis Bullosa. Augustus Ravogli.
4. The Production of Antipoliomyelitis Serum in Horses by Inoculation of the Pleomorphic Streptococcus from Poliomyelitis. Edward C. Rosenow.
5. Prophylactic Use of Vaccines in the Great War. N. E. Wayson.
6. Wax Paraffin Film in the Treatment of Burns. M. L. Emerson.
7. External Urethrotomy and Seminal Vesiculotomy Combined in a Single Operative Procedure. Eugene Fuller.
8. Absorbable Metal Clips as Substitutes for Ligatures and Deep Sutures in Wound Closure. E. Wyllys Andrews.
9. A Study of One Hundred Selected Cases of Pituitary Disease. Isador Abrahamson and Hymen Climenko.

4. The Production of an Antipoliomyelitis Serum in Horses by Inoculation of the Pleomorphic Streptococcus from Poliomyelitis.—Edward C. Rosenow states that a restudy of the bacteriology of poliomyelitis during the past epidemic has emphasized anew the possible rôle which bacteria of ordinary size may play in the etiology of this disease. A pleomorphic streptococcus or micrococcus having elective affinity for the central nervous system in animals has been isolated quite constantly from the atrium of infection and the central nervous system, the brain and cord and the spinal fluid in human poliomyelitis, and from the central nervous system of monkeys paralyzed with virus. Neustaedter and Banzhaf, among others, appear to have developed a neutralizing serum in a horse by injecting large doses of filtrates of active virus. Rosenow records the essential facts in the immunization of horses with cultures of the pleomorphic streptococcus, the results of experiments in neutralizing and protecting against virus with the immune serums thus obtained, and the findings of agglutination and complement-deviation studies, as carried out under his supervision and direction. He says that through this work it has been shown that: (1) The serum of horses immunized with aerobic cultures of the pleomorphic streptococcus from both poliomyelitis in man and experimental poliomyelitis in the monkey developed specific antibodies, agglutinins and complement-deviating properties, the agglutinins appearing to be present in large amount because the serums cross-agglutinate these strains specially in very high dilutions. (2) The serum of patients and monkeys which have recovered from attacks of poliomyelitis cross-agglutinates specifically many, but not all, of these strains in the lower dilutions. (3) What is of greatest significance, the serum of the horse immunized with recently isolated strains from experimental poliomyelitis in the monkey appears to have developed neutralizing, protective and curative power against the virus of poliomyelitis.

The Lancet.

July 7, 1917.

1. An Address on Concussion Injuries of the Visual Apparatus in Warfare, of Central Origin. S. A. Kinnier Wilson.
2. On Skin-grafting: A Plea for Its More Extensive Application. S. R. Douglas, L. Colebrook, and A. Fleming.
3. The Treatment of Wounds of the Knee Joint. T. S. Novis.
4. A New Physical Sign in Pneumothorax and in Pleural Effusion. Oliver K. Williamson.
5. Susceptibility to Cerebrospinal Fever in Relation to Age. Arthur Compton.

2. On Skin-grafting: A Plea for its More Extensive Application.—S. R. Douglas, L. Colebrook, and A. Fleming state that it ought to be possible, in theory at least, to cut short the tedious stage of the healing process of wounds which require assistance in the healing by the application of skin grafts, yet the operation seems to be commonly regarded as a last resort and is comparatively seldom practised; for, since the commencement of the war, only two short contributions to the subject have appeared in the *British Medical Journal*, and in *The Lancet* a single (although very important) letter. In 1869 Reverdin introduced the method of implanting tiny portions of skin upon granulating surfaces to serve as centers of growth. Steele in 1870 improved upon this by cutting the grafts rather larger and thicker in order to obtain stronger and more elastic scars. His grafts varied in size from the diameter of a pea to that of a three-penny piece or even larger. Both of these methods appear to have been widely practised and with considerable success. They were given up, however, in course of time because of the more rapid and striking results sometimes achieved with the method introduced later by Thiersch, which aimed at covering the entire wound surface with grafts at a single operation. The Thiersch method, in turn, was found to have serious disadvantages; in particular, the adhering of the grafts was uncertain, and the scars resulting from it were often unsatisfactory. Recognition of these drawbacks and forgetfulness of the older methods have resulted in the operation of skin-grafting being now seldom practised, in spite of the great opportunity at present afforded to make use of it. The authors have revived the use of Steele's grafts and introduced certain new features into both the grafting operation and the after-treatment, which aim at making the transplantation of skin a simple, reliable procedure. With respect to the grafting operation the chief new, or at least unusual, features are: (1) The use of local anesthesia induced by nerve blocking; (2) the suture of each of the raw surfaces left after removal of the grafts. With regard to aftertreatment the authors have been influenced by the recognition of the important part played by the tryptic action of pus, which recent work has explained and emphasized. There is little doubt that neglect of this factor has been one of the commonest causes of failure of skin-grafting operations; in consequence the aftertreatment advocated has aimed especially at preventing the accumulation of pus while avoiding at the same time any movement of the grafts. The means employed to achieve this were: (1) The employment of a new and suitable material to hold the grafts in position and allow the escape of any discharge from the wound; at the same time it permits the surface to be efficiently cleansed at frequent intervals. (2) The daily change of the outer dressings, which are kept constantly moist with some bland fluid. The advantages claimed for the methods advocated are that: (1) Successful results can be obtained much more constantly. (2) The use of a general anesthetic is dispensed with. (3) The raw surfaces left after the removal of the grafts, being closed with sutures, heal rapidly and certainly. (4) The resulting scars are stronger, more elastic, and less prone to ulceration than those resulting either from Thiersch's grafts or from the natural healing of wounds. In addition, it is probable that by early grafting it will be possible to prevent many of the deformities due to the contraction of scar tissue. The results obtained in 29 transplantations of Steele's grafts are given as follows, 22 of which were autodermic and 7 isodermic; 80 to 100 per cent. of the grafts adhered in 18 out of these 29 cases; 48 to 80 per cent. adhered in 7 of the 29 cases; while 5 to 15 per cent. adhered in 3 out of the 29 cases. Section grafting was employed in four cases, two of which were perfect successes and the remaining two partial successes.

British Medical Journal.

July 7, 1917.

1. A Note on the Treatment of Gunshot Injuries of the Mandible. J. F. Colyer.
2. The Department of Oral Surgery of the Harvard Surgical Unit. V. H. Kasanjian.
3. A Note on Oral Surgery. A. C. Valadier and H. Lawson Whale.
4. Note on Flavine, Sodium Desoxycholate, and Quinine as a Mouth-wash. F. M. Wells.
5. Acriflavine Paste as a Dressing for Infected Wounds. C. J. Bond.
6. Acute Osteomyelitis of the Frontal Bone: Operation: Recovery. Herbery Tilley.
7. A Note on the Association of Herpes Zoster with Arsenic. Hildred Carlill.
8. The Croonian Lectures on Adaptation and Disease (concluded). J. G. Adami.

2. The Department of Oral Surgery of the Harvard Surgical Unit.—V. H. Kasanjian gives a report of some of the advances that have been made by the Department of Oral Surgery of the Harvard Surgical Unit as a result of their work at the war. They are as follows: (1) A realization of the importance of immobilization or reduction of maxillary fractures at the first possible moment along the lines of normal occlusion of the teeth. (2) Early reduction of sepsis by small and timely operations with a local anesthetic. (3) A better understanding of the dangers attending the use of general anesthetics for operations on patients suffering from face and jaw injuries. (4) The control of severe complications, especially of secondary hemorrhage. (5) The modification and simplification of many types of oral

splints. (6) Temporary and permanent oral restorations. (7) The use of local anesthesia for extensive plastic operations about the face, mouth, and neck. This summary of the work has not included an appreciable number of cases which have been treated from necessity in other hospitals, nor a large number of patients who have received attention for dental and oral complications.

3. **A Note on Oral Surgery.**—A. C. Valadier and H. Lawson consider that the advances in the surgery of the jaw and face have been gradual, but as the result of experience a few points have crystallized out with distinctness. These points are: Speaking generally of facial wounds, it is advisable to delay considerably before doing final and finishing operations, but not at all before the primary sewing up. The most common serious sequelæ of war injuries to the jaw have been recurrent and secondary hemorrhages, inhalation pneumonia and gangrene of the lung, and mediastinitis. Down to January, 1917, they had among 1010 cases twenty-seven deaths, seven of these from pneumonia. There were three tracheotomies (including one emergency laryngotomy) and eleven hemorrhages necessitating ligature of the external, and three of the common carotid. These three latter are all living, and apparently not suffering any discomforts as a consequence of this operation.

4. **Nnte on Flavine, Sodium Desoxycholate, and Quinine as a Mouth Wash.**—F. M. Wells reports on his laboratory examination of the effects of the above combination of antiseptics on the mucous membrane of the mouth. The examination was carried out on one mouth, controls were used, and plates were incubated for twenty-four hours, and counts were made. The most favorable results were obtained from a combination of desoxycholate 2 per cent., quinine 0.25 per cent., and flavine 1 in 2000. The quinine desoxycholate solution has a considerable bactericidal effect on bile-soluble cocci, and on other cocci as well, and in the strength used it appeared to have no irritant effect on the mucous membrane. Wells further states that judging from the chemical action of the desoxycholate and quinine tablet, it should be an excellent treatment for infected throats, as in the strength used in these tablets all the pneumococci strains are easily destroyed without causing any irritation on the mucous membrane. This pathogenic group alone is giving more trouble than any other strains to be found in the mouth and throat. Again, amebæ are very easily cleared out of the mouth with sodium desoxycholate and quinine in the strength used in these tablets, as he has found in cases of pyorrhea caused by amebæ. In the solutions containing the above-mentioned antiseptics the bacterial count, even after four hours, was in most cases considerably less than the control before treatment, whereas with the more irritating antiseptic solutions the count rises rapidly after the initial fall until it reaches a figure in excess of the normal. He considers this second rise to be a useful indication of an irritant effect on the mucous membrane. Tablets made of these antiseptics given above should have a stronger antiseptic power when dissolved slowly in the mouth than a mouth wash, as the tablet in dissolving would keep up a continuous action on the mucous membrane of the throat.

La Presse Médicale.

June 21, 1917.

Abortive Treatment of Typhoid Fever.—Mauté of Morocco writes on this subject, and first states that at present we have vaccines to prevent the disease, but as yet no real abortive remedy. He believes, however, that we are to have one in the intravenous injection of certain vaccines. By subcutaneous injections alone the finds are conflicting, while of seven men who have used the intravenous route all are agreed as to the benefits obtained—in fact, the conclusions are absolutely in harmony. The only American mentioned in this connection is Frederic Gay. However, to offset the striking abortion of the disease in certain cases is the violent general reaction which is in contrast with the slow course of the disease proper, and may end in collapse and death. In other words, the collateral results kill the idea of the treatment. Is this reaction controllable? Much or all depends on the dose and how can one so dose a vaccine as to make it safe? There is hardly any margin between a therapeutic and a toxic dose. If the amount injected is too small we get neither action nor reaction. There is clearly a marked personal equation. And how are we to be sure that this curative action is truly specific? A specific action need not be instantaneous—in fact, we know that more or less delay may be inevitable in known specific medication. The sudden, violent reaction is rather anaphylactoid. The author has therefore sought to use some relatively harmless animal protein, and selected a nontoxic saprophyte which he describes accurately but does not identify. He made an emulsion, which, tested in animals by hypodermic and intravenous routes, and parenterally was found to be free from toxic effects. With such an emulsion he treated 22 cases of typhoid by the intravenous method (100 to 500 millions). One patient only was lost, and he died of purulent peritonitis, following perforative cholecystitis. The injections were made in the morning, and in 19 cases there was defervescence to normal or subnormal, irrespective of the stage of the disease. After this act of defervescence the temperature in many cases went up slowly, and several days elapsed before it reached the normal high point, at which juncture a second injection produced a permanent defervescence. According to the accompanying curves, it is seen that in one case an injection (the second) caused permanent defervescence on th 14th day. In a second case an injection on the 10th day, with temperature at 40.5° C., was followed by a gradual defervescence which was complete on the 15th day. In a third case an injection on the 8th day caused complete defervescence. The temperature slowly ascended, and from the 13th to the 22d day of the disease never went over 39° C. A second injection was followed by permanent defervescence. In a fourth case an injection on the 15th day was followed by sudden permanent defervescence. From these few cases it appears that an injection about the 15th day gives the best or most ideal result. With the temperature fall there was invariably a general improvement. The rationale of the efficacy of foreign protein in typhoid is obscure.

La Presse Médicale.

June 28, 1917.

Causes of Chronic Appendicitis.—Faure states that this affection is extremely frequent. He uses the term to embrace a host of conditions, many of which are not inflammatory, although in part of inflammatory origin. Purely noninflammatory are calculous appendixes, some of which show mechanical ulcerations and simple constricted appendixes. All of these kinds of pseudo-appendicitis cause a syndrome like that of the actual disease, and may require operative treatment. Naturally they are much less deadly than the true disease. In the wide sense of the term the "chronic appendix" is of such incidence as to be well nigh universal. This is apparent to every laparotomist, and is perhaps the chief reason for perfunctory or routine extirpation of the organ. It is exceptional for the gynecologist to find a normal appendix in his female patients. Men no doubt suffer equally, although less obviously. Children suffer much less than adults. The appendix is a lymphatic, spongy structure, which can be infected by the blood or lymph route, as well as by the intestine. It is fully as vulnerable as the tonsil. Who has not had one or more attacks of tonsilitis? Yet the tonsil is much more favorably situated than the appendix to escape the consequences of infection. There is no chance for constriction, no nearby peritoneum. Like the tonsil, the appendix participates in many general infections. The author illustrates the following: congestion of appendix, punctiform hemorrhages, insular folliculitis, polypi, ulcerations—all of the lumen; forms of construction by mesoappendix, calculous appendixes, fibrous, or sclerous appendixes of various forms, cystic appendix. But despite the almost universal occurrence of the chronic appendix many escape trouble. In many others the only annoyance is digestive disturbance or pain. The latter, when present, may be due to a subacute exacerbation. Curiously, in the most painful

case the reason for pain is not obvious. Many cases are clearly benign, yet there is no means of discriminating. But appendectomy in benign conditions is a very safe intervention.

Rabies in Man.—Jourdran and Marchand first mention the great difficulty in diagnosis. The history of a bite and fatal termination are the chief evidences in clearing up a case. The authors have recently studied six cases, as follows: (1) Soldier, 32, bitten on wrist 40 days before, Jan. 1, 1917. No antirabic treatment. Locally lymphangitis and lymphademitis which did not persist long. Cerebral excitement first general symptom, followed by fever, vomiting, and dysphagia. When first interned he was exhilarated and anxious by turns. Intelligence was good, speech brief and rapid. Vomiting continuous, no headache, no Kernig. Muscles weak, hypotomi, some agitation. Dysphagia not accompanied by hydrophobia. Reflexes largely abolished. Pupils unequal, reactions sluggish. No hyperesthesia. Blowing on the face, and bright objects to the eye failed to produce spasms, or defense motions. Four days after admission death in syncope. Before this symptom he had called urgently for water. The dog was proved rabid. The second patient had taken antirabic treatment after his bites; nevertheless, in 27 days, he developed rabies. The affection began with fever and insomnia, followed by dysphagia and nuchal pains, sweating, and anxiety. Sudden blowing in the face caused spasm of the larynx, pharynx, diaphragm, and neck muscles. On the third day he began to vomit. With intellect clear, and knowing his end near, he dictated his will, but fell in syncope before he could sign it. The other cases occurred in native boys (Malguches), but apparently agreed in the main with the preceding. Three had received antirabic treatment. Phases of euphoria alternated with periods of anxiety. All but the first named of the six cases appear to have occurred in Madagascar, where for some reason the Pasteur treatment failed.

Correspondenz-Blatt für Schweizer Aerzte.

June 30, 1917.

Dermographism as a Diagnostic Resource.—Schwartz considers this subject exhaustively. Known in the Middle Ages as a witch's mark, urticaria factitia was first mentioned in a medical publication by Rayer in 1840. In 1879 Dujardin-Beaumetz showed an "autographic woman" to the members of the Paris Medical Society. There is no dearth of literature on the subject. In a recently published graduation thesis (1911) Polonsky digested no less than 50 articles, while Barthélemy contributed a monograph of 300 pages in 1893 (*Étude sur le dermographisme*). Because of its artificial character the personal equation of investigator as well as that of the patient leads to great fluctuations in the percentages of frequency obtained. In 200 chiefly healthy subjects the author could not obtain a single positive result. On the other hand, out of 500 dispensary patients Falk obtained 23 pronounced results. If a blunt instrument is pressed upon the skin of a healthy subject and drawn in a line a white streak is produced as a result of mechanical anemia, which at once disappears. Shortly afterward a sense of constriction is felt and on inspection a second white line may be seen of variable breadth. This may persist unchanged for a time, and in any case vanishes by degrees. Is this a practically universal phenomenon? The answer must be doubtful. In a skin already pale it is difficult to produce. Hence the youthful, the brunette, the florid skin favor its production. If the maneuver is made with considerable force there appears at first a red streak—after an instant of initial anemia—which may show an outlying white zone. The latter soon vanishes, while the red streak may remain visible for an hour or more. These white and red streaks belong under dermographism, but not under urticaria proper—nevertheless, there is considerable confusion here, for some "lines" may ever so slightly project above the skin level. The author limits his study to these lines and their possible diagnostic value. He has devised special apparatus for bringing out the lines; he measures the time units, the degree of redness, etc. His results bear out the earlier claims made by Vulpian and Müller, and he has also accumulated a great body of data which are obtainable in normal individuals by varying external and internal conditions. He is disappointed in the negative results obtained in patients and pathological states, and believes that the method will have only physiological significance. In other words, in connection with various physiological studies of the vasomotor system, this form of dermographism may prove of scientific value.

Finska Läkaresällskapets Handlingar.

May, 1917.

Dependence of Weight Increase on Season of Year.—Gripenberg weighed the patients in the Nummela Sanatorium during the different seasons and climatic variations. Other things equal, the average weight increase fluctuated notably during the course of weeks and months, so that in certain intervals there was loss in weight or weight was above the annual average. Loss in weight occurred chiefly in the winter and spring, gain in the summer and autumn. The average weekly weight increase is about constant in winter and summer; there is an increase in the summer which reaches a maximum in September and declines during the autumn. The curve of average increase of weight is almost the same as the curve of mean temperature, with this difference, that the maximum of the weight curve occurs two months later. The curves for deaths from tuberculosis and for new cases of the same shows the same behavior as the weight and temperature curves but is inverted.

Injury to the Eye from Iron Splinters.—Galetski-Olin reports on 58 of these accidents treated at the Helsingfors eye clinic during 1911-1915, inclusive: Diagnosis was made in 45 cases with the sideroscope alone, and in 28 by the latter and *x*-rays combined. In a few cases the giant magnet was used in diagnosis. In 16 cases removal of foreign bodies was effected with the giant magnet, while in 4 cases the latter failed. In 22 cases the electromagnet was successful alone, and in 7 others both magnets contributed to the positive result. The cornea was perforated in 37 cases, the sclera, while in 2 the junction was the site of the trauma. In the great majority of cases the splinter was found in the vitreous, retina and choroid.

Hygiea.

June 16, 1917.

Case of Idiopathic Choledochus Cyst Treated by Operation.—Waller reports the following: girl, aged 10 years, subject for past 7 years to abdominal pain. Recently acutely ill with pains over gall bladder region, vomiting, subicterus, fever. There was fist-sized resistance in right hypochondrium. Operation showed gallbladder normal, and an elastic mass, retroperitoneal, partly covered by transverse colon and duodenum. Suspicion of hydronephrosis. Tumor ruptured during manipulation, with escape of 200 c.c. clear, dark-green bile. Cyst proved to be a greatly dilated choledochus. A sound introduced into the site of the rupture passed through Vater's papilla into the duodenum. The stump of the cyst was sutured in situ and a choledochoduodenostomy established. Smooth healing. Patient normal one year later. The number of cases of choledochus cyst previously on record was 34. The condition is believed to be congenital.

Optometric Ambulance.—Ginestous gives a description with diagrams of an automobile equipped for testing refraction. It is necessary to test visual acuity at the front. The vehicle contains a dark chamber, test type, glasses, diploscope, perimeter, etc.—*Le Progrès Médical.*

Restrictions in Use of Saccharin.—A commission has reported that the use of saccharin should be absolutely forbidden in children under 15 years of age, the old and invalid. In prescription work and pharmacology it should never be substituted for sugar. It must never replace sugar in foods which depend on the latter for nutritive value.—*Le Progrès Médical.*

Book Reviews.

THE PRACTICAL MEDICAL SERIES. Comprising 10 Volumes in the Year's Progress in Medicine and Surgery. Under the general editorial charge of CHARLES L. MIX, A.M., M.D., Professor of Physical Diagnosis in the Northwestern University Medical School. Vol. I. GENERAL MEDICINE. Edited by FRANK BILLINGS, M.S., M.D., Head of the Medical Department and Dean of the Faculty of Rush Medical College, Chicago, assisted by BURRELL A. RAULSTON, A.B., M.D., Resident Pathologist, Presbyterian Hospital. Series 1917. Price, $1.50 per volume. Chicago: The Year Book Publishers.

THE volume on General Medicine in the Practical Medicine Series covers a great deal of very interesting work. The war reports are most freely quoted on trench fever, its symptoms, possible etiology, bacteriology, renal functions, and on irritable heart. The report from the Military Hospital at Hampstead, England, is very suggestive, not only as a study of diagnosis, but also of treatment by simple, systematic, graded exercises. There is much excellent work on tuberculosis. Among other careful studies is that on fractional gastric analysis, showing a "definite downward progression in both the mobility and the secretory function of the stomach from the very beginning of the disease. That hyperacidity with symptoms occurring in early stage and described by previous writers as common is quite rare. That even hyperacidity without symptoms is rare." This is only one of the places where fractional gastric analysis has proved or will prove helpful in diagnosis and intelligent treatment.

Diabetes and nephritis are both represented by large sections, as work along these lines is very active. The book is an excellent review of the year's progress.

COMPENDIUM FOR MEDICAL OFFICERS. By GILBERT E. SEAMAN, M.D., F.A.C.S., Major and Chief Surgeon Wisconsin National Guard. Madison, Wis.: Cantwell Printing Co., 1917.

THE new members of the Medical Reserve Corps are in need frequently of information with regard to their duties, for many of them have received but little training in the military service. A great many medical officers from the country will soon be going to the front and a book such as the one under notice, which contains the essentials of information required by those serving with troops, particularly in the zone of advance, should be extremely useful. The information given is of an eminently practical nature, and is detailed in concise form.

Among the chapters to be particularly recommended is that on the physical examination of recruits, for as is pointed out, the efficiency of a military force depends upon its "man power," upon the physical and mental make-up of the individual soldier. Consequently, the examination of the recruit should be thorough.

Perhaps, on the whole, the most important part of a medical officer's duty is that of sanitation. He must be acquainted with modern scientific sanitation in all its details. On this matter Dr. Seaman gives definite and valuable information. The duties of medical officers at the front are also well set forth, and a very excellent and full description is given of the most recent treatment of infected wounds.

The book is what its title implies—a compendium for medical officers and, moreover, a very satisfactory compendium.

THE PSYCHOANALYTIC METHOD. By Dr. OSKAR PFISTER, Pastor and Seminary Teacher in Zurich. Authorized translation by Dr. CHARLES ROCKWELL PAYNE. Price, $4.00 net. New York: Moffat, Yard & Co., 1917.

OF all the claims made by the psychoanalytic school, the assertion that the method is of value to pedagogy and theology is perhaps the most worthy of consideration. Some hold that by the proof or lack of proof of this claim psychoanalysis will stand or fall. At any rate this book, written by a teacher and clergyman, presents a very full account of the application of psychoanalysis to the problems of the personality which are brought to the confessor or to the teacher who plays the part of confessor so often. There are brief introductions by Freud and G. Stanley Hall. The author gives an extremely lucid, concise presentation of the theory of psychoanalysis, followed by an exposition of its technique which we do not believe is surpassed in English. Throughout the book Pfister is ever ready with apposite illustrations drawn chiefly from his own experiences; he has the true teacher's gift of presenting theories in a clear manner, elucidating them satisfactorily and then illuminating them by an appropriate example. Dr. Payne's translation is admirable.

THE TREATMENT OF TABETIC ATAXIA BY MEANS OF SYSTEMATIC EXERCISE. By Dr. H. S. FRENKEL, Medical Superintendent of the Sanatorium "Freihof" in Hieden (Switzerland). Second revised and enlarged English edition by L. FREYBERGER, J.P., M.D. (Vienna), M.R.C.P. (Lond.), M.R.C.S. (Eng.), Barrister-at-law of the Middle Temple, etc. With 130 illustrations. Price, $3.00 net. Philadelphia: P. Blakiston's Son & Co., 1917.

DR. FRENKEL'S excellent work on the re-education of tabetics is too well known to require extended mention here. The present handy little volume makes it readily available to American and English readers. The book is divided into three parts, a brief consideration of coordination and ataxia, a description of Frenkel's exercises occupying most of the volume, and a short discussion of the medical treatment. The exercises themselves are invaluable and give worth to the whole book; the illustrations, too, are numerous and complement the text neatly. Unfortunately, although the preface states that the work "is not a translation of Dr. Frenkel's book, but an adaptation of it," and that idiomatic difficulties have made it necessary to translate very freely and the translator's preface states that the text "has been thoroughly revised, redundances removed," and so on, the result has not been a smooth English exposition of the subject, but a text full of grammatical errors, solecisms, improper punctuation and awkward expressions. Many typographical errors which should have been caught up in the proof-reading, obtrude themselves upon the reader, *e.g.* the book begins "In Tabes Corsalis (!)" Another fault is that while the translator's preface practically concedes the fact that recent discoveries have established the syphilitic etiology of tabes, the part of the text dealing with the medical treatment advises finding out whether or not there is an antecedent syphilis before beginning treatment.

We commend this book as a very valuable one to the practitioner and to the neurologist, but we hope that the third edition will be more carefully revised before going to press.

REST, SUGGESTION, AND OTHER THERAPEUTIC MEASURES IN NERVOUS AND MENTAL DISEASES. By FRANCIS X. DERCUM, A.M., M.D., Ph.D., Professor of Nervous and Mental Diseases in the Jefferson Medical College, Philadelphia; ex-President of the American Neurological Association, of the Philadelphia Neurological Society, and of the Philadelphia Psychiatric Society; Foreign Corresponding Member of the Psychiatric and Neurological Society of Vienna; Member of the Royal Medical Society of Budapest; Consulting Neurologist to the Philadelphia General Hospital, etc. Second edition. Price, $3.50 net. Philadelphia: P. Blakiston's Son & Co., 1917.

THE attitude of this book may be typified by quoting a sentence from page 176: "This procedure (sterilization of the insane), to which there seems to be no valid objection, is, however, far from meeting with general approval, and at present there is no other way of dealing with the problem (the prevention of insanity) than that of institutional isolation." Under the general heading, "Suggestion by Magic and Mystic Practices," the author includes psychoanalysis and makes a strong attack on it. The following sentences may be quoted: "Psychoanalysis is an outcome of the general mystic tendency of the modern world." "To the jaded and blasé psychopathic patients . . . psychoanalysis presents something new, something interesting, something pruriently exciting." The book is divided into three parts, Rest, Therapeutics of Mental Diseases, and Suggestion. The first part is given the most space and suggestion is the next in bulk. Under the latter head are discussed such subjects as pythonism, magnetism, mesmerism, etc. The book is a large one, but printed on light paper, so that it is not too bulky. The print is clear and the index very complete.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SURGICAL SECTION

Stated Meeting, Held April 6, 1917.

DR. JOHN DOUGLAS IN THE CHAIR.

Posterior Dislocation of the Second Row of the Carpus.—Dr. RICHARD DERBY presented these cases. He stated that posterior dislocation of the second row of the carpus had been described by Cotton as "Dislocation of the Distal on the Proximal Row" and by Mayersbach as "Intercarpal Dislocation." Dr. Derby stated that he believed, as did Destot, that this form of dislocation was of far commoner occurrence than the literature would lead one to suspect. Besides the authors who he had quoted he could find no other mention of the condition, yet in looking over some *x*-ray plates of dislocations about the wrist he found, in addition to the two cases he was reporting, still another case of a similar dislocation. He believed that the dislocation of the second row upon the first was always posterior. Destot had described an anterior dislocation of the first row, but it occurred in a case of tuberculosis of the carpus. This form of dislocation migh result from severe falls on the hand in extension or, as on one of the cases presented, through forced rotation and hyperflexion of the wrist. A fracture of the scaphoid was often associated. The appearance which such a dislocation gave was a slight backward displacement of the hand, or in other words, a silver fork deformity at a lower level than it usually occurred. The second row of the carpus could be felt beneath the skin of the dorsum of the hand, and anteriorly a depression below the semiolunar made it possible to feel the sharp lower extremity of the palmar surface of this bone.

CASE 1—Dr. Derby stated that this patient, a man 24 years of age, a brakeman, was thrown from the top of a freight car by the sudden jolt of the engine and sustained a fracture of the left clavicle and an injury of the left wrist. At that time he was treated for a fracture of the styloid process of the left radius. The patient came under Dr. Derby's care on January 5th, at which time the appearance of the wrist was as described. No extension was possible and only about 10 degrees flexion. The *x*-ray showed a posterior dislocation of the second row of the carpus and a fracture of the styloid of the radius and of the scaphoid. On January 19th, under ether, all attempts at reduction proving futile, the semilunar, upper portion of the scaphoid and head of the os magnum were removed through a dorsal incision before reduction could be effected. A sugar tongue splint was applied for five days, when it was removed and massage and movement begun. The result at the end of two and one-half months was not good, but, as Cotton pointed out, the results were very tardy in radical wrist excisions.

CASE II.—Dr. Derby presented this patient, a young man, 23 years of age, who while fooling had had his left arm twisted behind his back until he felt something snap. He experienced great pain and had no power in the hand. Dr. Derby stated that he first saw the patient eight days after the injury. Flexion at this time was limited to 45 degrees. There was a prominence on the anterior surface of the wrist and a diagnosis of dislocated semilunar was made. An *x*-ray taken at this time showed that instead of the semilunar being dislocated, the os magnum together with the other bones of the second row were dislocated posteriorly. On December 5th, under ether anesthesia, strong traction on the hand, with pressure upon the dislocated second row, brought about immediate reduction. As soon as the pressure was released the dislocation showed a tendency to recur. A sugar tongue splint was again applied together with a pad over the dorsum of the hand. After ten days this was removed and massage and passive motion were begun. The end result was excellent.

Double Femoral Hernia in a Man.—Dr. SETH M. MILLIKEN presented this patient, a sailor, 34 years of age, who had been operated upon in 1914 for a left inguinal hernia. In December, 1916, he presented himself showing a distinct hernia in the left femoral region. He was operated upon in January, 1917, for what was supposed to be a left femoral hernia, through a left rectus incision. When he got up from this operation it was found that he still had a lump in the left femoral region and also one on the right side. He was operated on in February at which time a straight sac about the length of a finger was found on each side. There were no traumatic adhesions. Suture of Gimbernat's to Cooper's ligament gave a strong closure. The man was now able to perform hard work. The case was reported because double inguinal hernia was considered a rather rare occurrence.

Anterior Dislocation of the Hip.—Dr. SETH M. MILLIKEN presented this patient. He stated that the case was the first anterior dislocation of the hip that he had seen. The dislocation was the result of a collision with a moving truck and the patient had no idea of the direction of the force that produced the injury. He also sustained contusions of both legs and the left side of the abdomen. There was about 70 degrees flexion with eversion. The leg could be brought down to about 60 degrees, but the eversion could not be lessened. A small mass was felt to the left of the perineum. The dislocation was reduced by traction in the line of the femur and then the leg was brought down in extension and the head of the femur slipped easily into its socket. It was now five weeks since the accident and the patient had had no further trouble from the dislocation, though the contusions of the legs were still apparent.

Dr. KENNETH BULKLEY asked Dr. Milliken whether it would not have been better to have converted the anterior dislocation into a posterior one and then to have effected the reduction. Dr. Bulkley said he had three cases of dislocation of the hip, all of which had been easily reduced by Cotton's method of reduction.

Dr. MILLIKEN, in closing, said he thought it was a difficult matter to convert such an anterior dislocation into a posterior dislocation without carrying it through the capsule. He had been unable to get any description of the direction from which the violence causing the injury had come. Cotton said an anterior dislocation ought not to be made posterior before attempting to reduce it.

Perforated Gastric Ulcer.—Dr. JOHN F. CONNORS presented this case. He stated that the patient presented himself on Feb. 28, 1917, with a typical history of gastric ulcer. He did not show the case as an instance of a cure of perforated gastric ulcer, but because in discussing gastric ulcer he had been criticized because he had said it was useless to perform a gastroenterostomy. There was induration for about one and one-half inches about the ulcer and he had never seen a pylorus so thoroughly included as in this case in order to close over the wound. This case proved very conclusively that it was useless to do a gastroenterostomy. A man came under his observation who five or six years ago had had a gastroenterostomy performed. He recently died of nephritis and at post mortem no signs of ulcer could be found.

Sarcoma of Small Intestine.—Dr. CONNORS also presented this patient. He stated that the patient's condition had been diagnosed clinically as appendicitis, but he had been unable to confirm this diagnosis and decided to wait a while before operating. The patient vomited very persistently and he decided that intestinal obstruction was present. At operation he found an intussusception at the middle of the ileum and he also found a mass by the side of the intussusception. He did a resection and an anastomosis. Before entering the hospital the patient's weight had gone down from 135 to 90 pounds. After leaving the hospital his condition improved and he was able to go back to work. In February the patient returned to the hospital complaining of stabbing pains in the abdomen and attacks of vomiting. The speaker at first thought his trouble was caused by adhesions at the site of the former operation. However, the patient's condition became so precarious that it was decided to operate. The adhesions at the site of the old scar were very slight at the upper edge and there was only a very narrow strip that looked like a thin piece of fascia around the old scar. He found round celled sarcoma present and secondary metastases like the growth removed at the former operation.

DISCUSSION OF DR. CONNORS' CASES

Dr. WILLIAM H. LUCKETT said that in connection with Dr. Connors' case of sarcoma he would like to show a specimen of sarcoma of the cecum which had been removed from a little child eleven years of age. The child was operated upon after having given a distinct history of two separate attacks of appendicitis by another doctor. The first attack was accompanied by vomiting and chills, but very little rise in temperature. In a week he had another attack accompanied by abdominal pain and a temperature of 102° F. At operation a distinctly gangrenous appendix was found and the abdomen was full of enlarged mesenteric glands, and it was thought that the patient had tuberculous peritonitis. No attempt was made to remove these glands. About a month later a mass was palpated in the left hypochondrium. At operation the belief was still held that they were dealing with a tuberculous condition and he had been particularly careful to point out the typical small tubercles on the parietal peritoneum. Eight inches of the ascending colon and ileum were resected. The mass removed was found to be a polymorpho-cellular growth. This growth must have been a metastasis from the sarcoma. Several of the mesenteric glands showed the same time of growth as in Dr. Connors' case.

Dr. FENTON B. TURCK said that these cases of perforation in which recovery took place were of special interest. Richardson had pointed out that in a great number of cases perforation of a gastric ulcer took place, a simple suturing of the perforation was done and there was never a return of the ulcer: he concluded from this that immunity had resulted from the expulsion of the stomach contents into the peritoneal cavity. If immunity had occurred in such instances there must be something more involved in the production of ulcer than the mere mechanical factors. Dowden pointed out that in over 40 per cent. of the cases of duodenal ulcer there was a history of previous infection and in over 80 per cent. there was a long history of intestinal stasis and constipation. The speaker's own experiments showed that the intestinal flora played an important part in the production of ulcer. The presence of pepsin or of strong acid gastric juice had but little influence in the production or continuance of ulcer as shown by Mann, who implanted the mucus membrane bearing ulcer into the gastric wall and no injury resulted; the lesions promptly healed bathed in gastric juice. The reason ulcers occur in the pyloric-duodenal region was that the antibody ferments were stronger in this region than in any other segment or level—that was also why death occurred in high loop obstruction. The antibodies being more powerful caused more split products to form. Burge had shown that there was a lack of oxidation of the tissue cells that led to ulcer and that was responsible for the cytolytic action. The empirical facts presented by Dr. Connor that ulcer healed when immunity was established after merely closing the perforation would suggest to the surgical mind the value of producing immunity in ulcer before perforation had taken place in all ulcer cases.

Echinococcus Cyst of the Liver; Complete Excision.—Dr. KENNETH BULKLEY presented this patient, a young man, 21 years of age, who was admitted to the Cornell Division of Bellevue Hospital in January, 1917. The patient gave a history of malaria three years ago, and two years ago had an attack of jaundice at which time a lump was observed in the right epigastrium. This lump had persisted for two years, during which time the patient had suffered with gastric distress after eating and constant pain radiating to the back. He had a pulse of about 40, a negative Wassermann, and a leucocyte count of 16,000. The *x*-ray examination was negative except that the liver seemed to be enlarged downward. The mass extended from the costal margin to the umbilicus and seemed about six inches in width. The diagnosis lay between echinococcus cyst and hydrops of the gallbladder. At operation a cystic tumor was found partially covered by the right lobe of the liver. A complete excision was done. Technically the removal of the cyst was not difficult. The specimen removed proved to be an echinococcus cyst. Dr. Bulkley exhibited lantern slides demonstrating the pathology of the specimen.

Dr. W. H. LUCKETT said he also had a specimen of echinococcus cyst of the liver, which had been removed five years ago and each time he looked at it more of the cysts had ruptured. The patient from whom the cyst had been removed was 19 years of age and gave a distinct history of intermittent jaundice. Before operation the case had been diagnosed as one of hydrops of the bladder; at operation they found this echinococcus cyst of the liver. The presence of an echinococcus cyst had been considered as a possibility. But about two years previously he had had an echinococcus cyst in which fremitus was easily elicited and as they could not hear anything in this instance they had decided that it was not an echinococcus cyst. The cyst was entirely within the liver and they were unable to make a complete enucleation. Enucleation was made excepting at one point at which they sutured together the heads of the mother cyst after making a free incision and scooping out the contents of the cyst. This case had been described before. A writer in Australia had mentioned a typical urticarial rash which should make one suspicious of echinococcus cyst. A most interesting point in connection with those cases was that they all occurred among the very poor. This patient gave a history of having eaten frozen uncooked pork over a considerable period of time. She made a complete recovery.

Dr. WILLY MEYER said he had had a case of echinococcus cyst of the liver which he had operated on three or four years ago. In this instance the cyst was incised and the walls stitched to the peritoneum and for three or four weeks afterward the contents of the cyst were discharged through the wound and then the wound healed up.

Dr. DOUGLAS stated that he had seen a case at Bellevue Hospital last summer in which the patient showed marked jaundice with temperature elevation and it was thought might have cholangitis. Operation showed a very large gallbladder and an enormously distended common duct. There seemed to be nothing the matter with the pancreas and no stones were present. A mass was palpated in the left lobe of the liver beneath the ensiform cartilage which was thought to be an abscess. At operation the gallbladder was drained and a separate incision was made for the purpose of draining the supposed abscess after adhesions had formed. The contents of the cyst that was later evacuated showed hooklets under the microscope and made it evident that he was dealing with an infected echinococcus cyst. This patient made a good recovery. The obstruction of the common duct was due to the pressure of the mass in the left lobe of the liver on the common duct.

Dr. BULKLEY said that Dr. Luckett spoke of fremitus as a sign of diagnostic value in echinococcus cyst. Fremitus was present in only about 50 per cent of the cases. No fremitus could be demonstrated in the case reported. Urticaria had also been mentioned; this occurred only when there was rupture of the cyst. If jaundice was associated with echinococcus cyst it was probably the result of pressure. Echinococcus cyst was not usually due to eating raw pork, it was supposed to be conveyed by the excreta of dogs and had been explained by the fact that vegetables might become contaminated with the excreta.

Thromboangiitis.—Dr. CHARLES GOODMAN presented a report of six cases to show some of the phases of the clinical picture of the later stages of the disease. The first case presented a trophic ulcer between the 4th and 5th toes with occlusion of the tibial arteries. The second patient had been submitted to a series of amputations of the toes and eventually the foot was amputated. His pain, however, had not been relieved. The third case was of interest because the disease began in his right upper extremity with the appearance of trophic ulcer on his index finger. This had healed but he has a very small radial pulse in this extremity. He had his left leg amputated below the knee on account of gangrene, but the wound has failed to heal and an amputation of the thigh would be necessary. The fourth case was one which showed temporary amelioration of the symptoms following the ligation of the femoral vein. Two other cases were shown. One with both lower extremities amputated and the fingers of one hand, while the other had had

all four extremities amputated for this disease. This patient had a very satisfactory prosthetic apparatus which enabled him to become remarkably proficient in writing. Most of the cases proved that the condition was bilateral and progressive. Dr. Goodman expressed the opinion that when amputation became necessary the only logical operation was an amputation at the thigh in order to obviate the pain incident to this condition and to avoid the distress of successive operations.

Thromboangiitis.—Dr. WILLY MEYER presented a number of cases showing the results of arteriovenous anastomosis, ligation, and amputation in thromboangiitis. The first patient was a young man whom Dr Meyer had shown before and he now presented him to show the results of arteriovenous anastomosis at the end of four years. The man was operated upon in May, 1913, when he was 30 years of age. At that time he had gangrene of the big toe and all the typical signs of thromboangiitis. Dr. Meyer said that personally he was in favor of conservative surgery and hesitated to do an amputation at the hip in this case. He therefore made an incision in Scarpa's triangle and did an arteriovenous anastomosis as he had described before. There was no great amount of bleeding. He could feel the thrill in the vein eleven days after the operation. In a short time there was bleeding of the toes and it became necessary to apply a number of ligatures. This patient had been shown before the Surgical Society in 1914 and before this Section in 1915 and it was now interesting to see the results at the end of four years. The patient was now in apparently perfect health. He stated that walking tired him. This was one instance in which arteriovenous anastomosis had given an excellent result but he did not believe that this man was cured of the fundamental cause of his disease. The man, however, had been in a serious condition such as ordinarily demanded amputation and was now able to be about and was apparently well. When operative interference became necessary, the first step was ligation at the point of Scarpa's triangle. If this did not relieve the patient and the disease was progressive, the second procedure was to perform an arteriovenous anastomosis with the best possible technique. If this did not serve to relieve the patient the third step was an amputation, done as conservatively as possible. Dr. Meyer said he did not have a paper but wished to discuss several theories in reference to the etiology of thromboangiitis. He said that "thromboangiitis" was the name given to the condition under discussion by Dr. Leo Buerger who had studied its gross pathology, had made microscopical studies of the occluded vessels, and had shown conclusively that disease of the vessel walls was present and occurred not in the small capillaries but in the small vessels proximal to the capillaries and had many of the characteristics of an infectious disease. In a paper on this subject, read in November, 1915, and published in the Annals of Surgery, he had expressed the opinion that thromboangiitis might be a disease of the blood itself or a combination of blood and blood vessels disease. Today, Dr. Meyer said, he felt convinced that it was a blood disease and that the findings in the blood vessels were secondary, being the result of the changes in the blood. According to his theory thromboangiitis was diametrically opposed to hemophilia. If they thought of the pendulum of a clock swinging from one side of the arc to the other, they might write on one side of this arc hemophilia and on the other thromboangiitis. Indeed, this disease might better be spoken of as "thrombophilia." It was now known that hemophilia was a disease of the blood platelets. It had been shown that in hemophilia there was an insufficiency of thrombokinase as compared with normal blood or else the thrombokinase was combined in such a way that it could not be given off easily. Now he believed that thrombophilia was also a disease of the blood platelets and that here they had the opposite condition, an excess of thrombokinase in the blood, imparting to the blood a tendency to clot more readily. In the next place it had been found that hemophilia was found in the male and not in the female. The female might transmit this condition to male offspring but did not have it herself. In thrombophilia we found this same phenomenon. This brought one to the question of what determined sex in the male and the female and to a consideration of the part played by the ductless glands. It seemed that either the internal secretion of the male was increased or decreased, or there was a change in the quality of the secretions, while the female sex was protected by some secretion which the male did not possess; this was most likely the ovarian secretion. These secretions entered the blood and it seemed quite probable that the diseases under consideration were the result of the reaction of the blood to these secretions. Dr. Meyer stated that when he had tried to find something else besides surgical treatment for this condition and decided to try hyperdermoclysis as a conservative measure. They had made a study of the blood and had tried transfusion in three cases. In one instance they had to examine the blood of 38 persons, in the second case 40 persons, and in the third case 50 persons, before the proper donor could be found. But he found that the blood that fitted one of these patients fitted all three. This was a remarkable observation and it could not be explained except on the theory that the cause of the disease was in the blood proper. Dr. Meyer also advanced a theory to explain why thromboangiitis started in the small vessels and not in the capillaries. He spoke of the prevalence of the disease in Russia, Poland, Galacia, Roumania, Serbia, etc., and of the statement that it affected more particularly Hebrews. We had evidence to show that it had existed for centuries. It was found among people who for generations had been underfed and underclothed and who had for centuries intermarried. It thus seemed that thromboangiitis might be a form of degeneration affecting one or more of the correlated glands of internal secretion. In the elucidation of the problems connected with this disease it was most difficult to find our way, since thromboangiitis could not be produced experimentally thus far in animals. If this were possible they might hope to get knowledge that would enable them to treat this condition so that they would not be confronted with such a spectacle as they had witnessed this evening as a result of surgical interference and successive amputations in these pitiable people. This was far too big a problem for one man or one group of men. Efforts should be made to impress some great philanthropist as to its importance and have him endow a commission and appoint medical men to investigate this problem as had been done in the case of pellagra. Although this disease was not as widespread as pellagra, one would find these victims of successive amputations in all large cities in considerable numbers, so that it was well worth while searching for the cause of this disease.

Dr. CHARLES GOODMAN said there were three points regarding thromboangiitis which he wished to take up for discussion. In the main, he was in accord with the statements made by Dr. Meyer in his masterly presentation. In the light of recent research and conclusions drawn from personal observation of over 300 cases of thromboangiitis during a period of over twenty years he was of the opinion that we had, up to the present time, no known methods that would result in a *permanent* cure of the disease. When the palliative measures enumerated tonight failed to give relief a surgical procedure such as ligation of the femoral vein as described by Oppel or an arteriovenous anastomosis between the femoral artery and vein performed in properly selected cases was more likely to prolong the life of the limb than any other measure at our command. In the presence of gangrene in a case of thromboangiitis he was inclined to recommend to the patient a high amputation as the most logical procedure for his relief. Dr. Goodman said he would like to correct the generally accepted view on the epidemiology. The majority of cases seen in this city had been among the poor Jewish immigrants from Russia and Gallacia and other regions where typhus fever was endemic. Some writers had expressed the belief that the disease was peculiar to the Jewish race, but this was a misconception as was evidenced by the fact that thromboangiitis was seen in countries in which typhus fever was epidemic and endemic irrespective of the ethnic composition of the population. A review of the literature revealed

clearly that presenile gangrene of the extremities was encountered in almost every civilized country but was more prevalent in those countries where typhus fever was epidemic, as in Russia, Austria, Japan, Turkey, and Bulgaria. For a number of years the speaker stated that he was inclined to accept the prevailing opinion that cigarette smoking entered largely into the etiology of the disease, but while a large majority of the patients gave a history of cigarette smoking there were thousands in this country and elsewhere who were inveterate smokers and did not acquire this disease. Moreover, individuals afflicted with arterial disease, the result apparently of chronic alcoholic intoxication, did not manifest this disease. Syphilis as an etiological factor could be excluded by the fact that in the series of cases which he had studied the Wassermann reaction was almost always negative. This was in accord with the results of Buerger and Kaliski. Disturbances of metabolism could likewise be excluded as shown by studies made at Beth Israel Hospital. The etiological relationship of thromboangiitis to typhus fever had been noted as far back as the seventeenth century. Several authors writing in recent times had suggested that thromboangiitis was caused by some pathogenic organism, but they had not brought forth any proofs in substantiation of their contentions. Dr. Goodman said he had been fortunate enough to have presented about a year ago (Meeting of the New York County Medical Society, March, 1916) what appeared to him to be conclusive proof to the effect that the virus instrumental in causing typhus fever was responsible for the morbid condition of the extremities which was called thromboangiitis.

The reports of the Bulgarian campaign bore out his contention that thromboangiitis was of infectious origin. Professor Zinsser of Columbia University had informed the speaker that a number of cases of gangrene of the extremities were seen by him during his recent visit to Serbia. Emil Wiener, after the examination of a considerable amount of postmortem material, stated that the most characteristic pathological evidence of typhus was the extreme fragility of the vessel walls. This might entail thrombotic formation in the vessels of the lower extremities and elsewhere. E. Fraenkel and Jochman supported this evidence with reference to the condition of the walls of the arteries. Dr. Shattuck of Boston, who had just returned from abroad, stated that gangrene of the feet seemed to have been very common during the cold months in the early part of the epidemic of typhus. He mentioned that Drs. Strong, Maitland, and Moore had made similar observations and stated further that Moore was of the opinion that the gangrene was in all probability brought about by arterial thrombosis and agreed with Maitland in considering exposure to cold as being a contributing factor. It was reasonable to presume from the reports and observations cited that typhus virus had a special predilection for the blood vessels, especially of the extremities, and that its activity was followed by an inflammation of the intima with the formation of the thrombi which was frequently followed by gangrene of the affected extremity.

Dr. Leo Buerger said that he was very much interested in Dr. Meyer's new theory, as to the proper genesis of the disease to which he had given the name, thromboangiitis obliterans. However, he did not believe that any definite pathological or experimental evidence had been adduced by the reader of the paper, the conclusions reached being based upon hypothesis and attempts to explain thromboangiitis by analogy. In the disease hemophilia there were no lesions suggestive of an inflammatory process. Before we could come to any reliable conclusions as to the etiology and pathology of thromboangiitis obliterans we must have a clear conception of the pathological lesions that had been already demonstrated both by examination of autopsy specimens, amputated limbs, and the results of biopsies on exsected veins afflicted with the acute phlebitis of the disease. Such studies had been made by Dr. Buerger, who found that not only the superficial veins but also the deep arteries might be demonstrated as the seat of an acute inflammatory process. The lesions of this process presented a specific microscopic picture, which had been regarded by him as a typical reaction on the part of the tissues, to either some toxin or some bacterial agent, neither of which had as yet been disclosed. Thus, in the superficial veins involved in the process of migrating phlebitis—which was but a part of the clinical picture of thromboangiitis obliterans—the so-called acute lesions of the disease had been demonstrated. In this the adventitia and the media were diffusely penetrated by polynuclear leucocytes, the lumen of the vessel being occupied by a mixed, for the most part, red clot. When the region of the clot was examined in given specimens, the various stages of the clot could be demonstrated. Early in the process miliary abscesses were found, usually in the peripheral portions of the clot, the pus cells forming which could be traced to an origin outside of the vessel, having migrated into the lumen of the vessel through the media and adventitia. These miliary abscesses underwent a specific type of organization, in the course of which the typical and characteristic picture of thromboangiitis obliterans was developed, namely, foci that looked to the casual observer very much like miliary tubercles. However, they contained endotheliod cells and giant cells. In his recent studies, however, on the acute lesions of thromboangiitis obliterans, Dr. Buerger had demonstrated that the giant cells were the results of abortive attempts on the part of angioblasts or vessels forming cells, otherwise called endotheliod cells, to vascularize the miliary abscess. Later on the pus cells disappeared and the miliary focus containing endotheliod cells and giant cells became converted into a sort of nodule. Such a picture was characteristic of thromboangiitis obliterans and upon its presence the diagnosis could be made. It was just as peculiar to this disease, as the picture in Hodgkin's or that of tuberculosis. In fact, in all of these diseases, the microscopic alterations were an expression of the peculiar reaction on the part of the tissues to some bacterial agent or some toxin. In short, in the face of these findings, it would be audacious for us to assume that we were dealing with mere thrombosis in thromboangiitis obliterans, as Dr. Meyer would have us believe. It was not merely a thrombophilia, or tendency to clot, that was characteristic of thromboangiitis obliterans, but an inflammatory process as well. Nor must we accept the theory that such lesions occurred as the result of mere clotting of blood, for Dr. Buerger's studies on thrombosis due to other causes had never disclosed the typical picture of thromboangiitis obliterans but had corroborated the findings of others whose descriptions of thrombosis and organization would be read in every text book.

As for Dr. Goodman's suggestion that typhus fever might be an etiological factor in thromboangiitis obliterans, Dr. Buerger's experience in taking histories of many recent cases had not revealed a single instance in which typhus fever had been present to the knowledge of the patient. In conclusion Dr. Buerger wished to point out that not only had their researches on the etiology, but also their experiments with the treatment of the disease, been fruitless for the reason that we were not for the most part recognizing the disease in its incipiency, that was, in its true stage, but were treating it and describing it when it had already reached the chronic or "healed" stage, in which the vascular occlusion had already become extensive, the vessels being filled with more or less organized clot. Under these circumstances, we were dealing with the mechanical disturbances of circulation, the results of a healed process, rather than the true disease itself.

Dr. William C. Lusk said he must take exception to the statement that they had run the whole gamut in the treatment of thromboangiitis, for in his experience there was one mode of treatment that had been effectual that had not been mentioned and that was electric baths. He had found electric baths had a very definite effect in relieving pain and improving the lesion when the process was not far advanced. The question of syphilis had not been brought out in connection with this disease. It was had disappeared as though by magic and had not reof particular interest that in six cases coming under his observation four gave a positive Wassermann.

In such cases antisyphilitic treatment was an important factor.

Dr. Henry W. Frauenthal said that since September, 1915, he had seen 171 cases of obliterating endarteritis at the Hospital for Deformities and Joint Diseases. Of this number, only eseven gave a Wassermann positive, while the other cases examined at the institution gave a Wassermann positive in from 15 to 20 per cent. of the cases. In the treatment of these cases no anodyne seemed to relieve the pain. Heat with a Tyrnauer baker gave little relief, while exposing them to the heat and light of electric light bath seemed to give a remarkable relief of pain which continued for some period of time. He had read a paper at the Budapest Congress in 1910 on the use of the electric light bath for the relief of pain and the arrest of the gangrene. That in one of the cases reported at that time who had not slept in bed for one year, and who was unable to sleep for more than one hour in the chair, having had the beginning of gangrene of the little toe: the gangrene had been arrested, the toenail had returned, and for the past seven years the patient had remained well. The patient's younger brother at the age of twenty-one had both his legs amputated above the knee for obliterating endarteritis. This patient had kept up treatment by the electric light bath and by exposing his feet to sunlight during the summer, which had prevented the progress of the disease. Only eight cases reported were not Russians. One patient seen in consultation with Dr. Willy Meyer, a gentleman associated with the Hospital for Deformities and Joint Diseases, had a beginning gangrene of his right toe, later of his left big toe, and under the electric light treatment, these had both healed up and remained well for a period of two years. A large number of these cases had been materially benefited by this treatment, although some had gone on to gangrene and required amputation. The conservative treatment by white light which had been used for over 500 patients had seemed the most efficient and lasting method.

Dr. J. Gottlieb said that in Dr. J. Shelton Horsley's paper, read before the American Medical Association at Detroit he expressed the same ideas that Dr. Buerger had expressed, that thromboangiitis was due to an irritability of the blood vessels and not a disease of the blood; that there might be a condition of the blood vessels similar to that in latent arteriosclerosis. We knew that arteriosclerosis might develop in individuals between the ages of 35 and 40 years and that there was not an actual inflammatory process present. He could not believe that the disease was of infectious origin, because he could not be convinced that there could be an infectious disease to which the female would be immune. He had not had experience with the ligation of the femoral vein but he could not understand how it could improve the condition.

As to amputation, Dr. Goodman had recommended high amputation; he had seen very excellent results from low amputation and also had seen some very good stumps and knew of cases going about in which good results had been obtained. He had been making studies along the same line as Dr. Horsley in order to determine whether the arterial blood when directed into the veins really reached the tissues for which it was intended. Dr. Horsley had shown that they did not get a permanent reversal of the circulation and that in no instance did the reversed circulation reach the foot. Dr. Gottlieb described experiments which he had made and illustrated them with *x*-ray plates, which showed that in no instance did ligation of the femoral vein force the circulation to a point anywhere near the foot; the peripheral circulation seldom went much below the knee and never anywhere near the foot. If, however, one ligated the superior femoral vein the circulation went to the tip of the toe.

Dr. S. J. Sinkowitz said that they had been trying Bier's suction hyperemia at Mount Sinai Hospital in the treatment of thromboangiitis and while they did not claim that it was curative it certainly relieved most of the symptoms. In some of the cases the pain had disappeared as though by magic and had not returned later, while in the majority of the cases the greater number of the other symptoms were very decidedly improved.

Books Received.

The Medical Record *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading, but it must be with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

Pulmonary Tuberculosis. Its Diagnosis, Prevention, and Treatment. By W. M. Crofton, M.D. With colored frontispiece and twenty illustrations. 122 pages. Price, $1.50 net. Published by P. Blakiston's Son & Co., Philadelphia, Pa.

The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the general editorial charge of Charles L. Mix, A.M., M.D. Vol. II. General Surgery. Edited by Albert J. Ochsner, M.D., F.R.M.S., LL.D., F.A.C.S. Series 1917. Published by the Year Book Publishers, Chicago, Ill. Price, $2.00 per vol. Price of a series of 10 volumes, $10.00.

Mortality Statistics, 1915. 16th Annual Report. Department of Commerce, Bureau of the Census. By Sam. L. Rogers, Director. 707 pages. Published by the Government Printing Office, Washington, D. C., 1917.

Impotency, Sterility and Artificial Impregnation. By Frank P. Davis, M.D. 138 pages. Published by C. V. Mosby Co., St. Louis, Mo., 1917.

The Secretion of the Urine. By Arthur R. Cushny, M.A., M.D., LL.D., F.R.S. 241 pages. Illustrated. Published by Longmans, Green & Co., London, New York, Bombay, Calcutta, and Madras. $3.00 net.

Erfahrungen uber Diagnostik und Klinik per Herzklappenfehler. Von Prof. Dr. S. E. Henschen. Mit 271 Kurven. 355 Pages. Price, $15.60. Published by Verlag von Julius Springer, Berlin, Germany. 1916.

Rational Sex Ethics. A Physiological and Psychological Study of the Sex Lives of Normal Men and Women, with suggestions for a Rational Sex Hygiene. By W. F. Robie, A.B., M.D. $3.50 net. Published by Richard G. Badger, Boston, Mass. Toronto: The Copp Clark Co., Ltd.

Some Personal Recollections of Dr. Janeway. By James Bayard Clark. 36 Pages. Price, $1.00. Published by G. P. Putnam's Sons, New York & London. The Knickerbocker Press. 1917.

The Treatment of Emergencies. By Hubley R. Owen, M.D. 12mo volume of 350 pages with 249 illustrations. Cloth, $2.00 net. Published by W. B. Saunders Co., Philadelphia and London.

Obstetrics and Gynecologic Nursing. By Edward P. Davis, A.M., M.D. 12mo. volume of 489 pages, 104 illustrations. Fifth edition, thoroughly revised. Buckram, $2.00 net. Published by W. B. Saunders Co., Philadelphia and London. 1917.

Diagnostic Symptoms in Nervous Diseases. By Edward L. Hunt, M.D. Second edition, revised. 12mo of 292 pages, illustrated. $2.00 net. Published by W. B. Saunders Co., Philadelphia and London. 1917.

1916 Collected Papers of the Mayo Clinic, Rochester, Minn. Octavo of 1014 pages. 411 illustrations. Published by W. B. Saunders Co., Philadelphia and London. 1917. Cloth, $6.50 net. Half Morocco, $8.50 net. Edited by Mrs. M. H. Mellish. Vol. VIII. 1916.

Glaucoma—A Handbook for the General Practitioner. By Robert Henry Elliot, M.D., B.S., Lond.; Sc.D., Edin.; F.R.C.S., Eng., etc. Illustrated. 60 Pages. Price, $1.50 net. Published by Paul B. Hoeber, New York.

Notes on Galvanism and Faradism. By E. M. Magill, M.B., B.S., Lond., D.P.H., R.C.S.I. (Hons.). With 67 illustrations. 220 Pages. Price, $1.50 net. Published by Paul B. Hoeber, New York. 1916.

Operative Surgery of the Nose, Throat, and Ear. By Hanau W. Loeb, A.M., M.D. In two volumes. Vol. II. 476 Illustrations. 427 Pages. Published by C. V. Mosby Co., St. Louis, Mo.

Experimental Pharmacology. By Dennis E. Jackson, Ph.D., M.D. With 390 original illustrations including 24 full-page color plates, and 535 pages. Published by C. V. Mosby Co., St. Louis, Mo. 1917.

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Original Articles.

THE U. S. PHARMACOPŒIA, IX.*

By HORATIO C. WOOD, JR., M.D.,

PHILADELPHIA.

JUST one hundred years ago last January, Dr. Spalding submitted to the Medical Society of the County of New York, a project for the formation of a National Pharmacopœia, as the result of which proposition a general convention was held in Washington in 1820 and the first U. S. P. was published in that year. This work was merely a list of the drugs which were deemed of sufficient importance, with directions for the manufacture of certain preparations made from them, and was the work solely of physicians. In 1840 the cooperation of colleges of pharmacy was requested and since then the apothecaries' share in the revision of the work has become so important that one often hears physicians declaiming that the Pharmacopœia is of no use to the doctor. Such a statement always makes me suspect that the speaker does not possess a copy of the Pharmacopœia and has never carefully perused it. While in modern commercial conditions the doctor is not directly interested in the details of methods of assay and tests of identity and purity, there is much matter in the Pharmacopœia with which he is immediately concerned. For myself I can only say that the Pharmacopœia is one of the most frequently consulted books of reference and always, I believe, with advantage to my patients.

To the up-to-date physician the appearance of a new revision of our national standard is an event of real importance. I am glad, therefore, of an opportunity to say a few words of some of the more striking changes in the latest edition which is deserving of commendation for its virtues both of omission and commission.

Let me briefly speak first of the things which have been left out. Most important among these are a lot of worthless herbs such as camomile, boneset, horehound, burdock, cypripedium, scutellaria, sage, pennyroyal, marigold, and other similar truck which has littered up our national standard for many years. There are a few of this class of drugs still retained as a sop to the superstition of a diminishing number of practitioners. While I shall be glad to see the last of them I am gratified to see that the present revision committee has succeeded in evicting so large a number.

Similarly pleasing, especially to those of us who have had to teach materia medica, is the fact that nine salts of iron have been dismissed. One could not say that these were worthless for they possess the therapeutic virtue of iron in general, but they were certainly quite needless as we still have ten preparations of this metal available. If perchance any of you have lost a pet form of iron you can find it by applying to the National Formulary.

An omission about which there has raged, and still is raging, an acrimonious discussion is that of the alcoholic beverages, wine and whiskey. Personally, I am convinced that, under certain circumstances, alcohol is a valuable therapeutic remedy but my belief in the medicinal usefulness of alcohol does not necessarily imply the necessity of a Pharmacopœial standard for whiskey. There were strong arguments brought forward in the discussion of this question in the committee on revision by both sides, but I think the reasons which finally resulted in its deletion were, first the divergence of opinion as to the reliability of certain tests for differentiating artificial from natural whiskey; secondly the fact that the U. S. Government has a standard for labeling whiskies and their imitations independent of that of the Pharmacopœia, and that if the Pharmacopœial standard differed from that of the Department of Agriculture it would be commercially unenforceable. I was much struck by the remarks of Dr. Osborne in this connection, who said that if we wanted to obtain the therapeutic action of alcohol and stick to pharmacopœial preparations, we had such a whole host of available substitutes in such mixtures as tincture of gentian, compound tincture of cardamon, aromatic elixir, etc. We are sometimes prone to forget that we can obtain all the action of alcohol by administering alcohol. It is not necessary to drink whiskey to become intoxicated.

More interesting than the deletions, however, are the innovations. Perhaps the most important of these is the official recognition—for the first time, I believe, in the history of the world, certainly in the history of this country—of physiological standards for such drugs as digitalis, cannabis indica, hypophysis, and suprarenal. In the cases of aconite, digitalis, strophanthus, squill, and suprarenal the biological standard is advised, but is made compulsory only in the cases of cannabis and solution of hypophysis. Some may question what is the advantage of a standard which is not compulsory. The advantage lies in the fact that manufacturers can no longer advertise their compounds as biologically assayed unless they conform to the Pharmacopœial requirements as to potency. Hitherto certain manufacturers have put upon the market preparations of digitalis or other drugs which were claimed to be physiologically standardized but the standard for whose activity was any indefinite

*Read at a meeting of the American Therapeutic Society, June 1 and 2, 1917.

degree of potency that happened to suit their whims. Now a preparation which is physiologically standardized must conform to the requirements of the Pharmacopœia.

Among the newer synthetics which have won for themselves an important place in our armamentarium several have achieved official recognition, although, regrettably, some have been omitted through fear of legal complications on account of protecting patents. Of those which have been admitted I may mention first two morphine derivatives, ethyl-morphine, and diacetyl-morphine. Let me beg of you to forget the trademark names for these two popular and valuable drugs. Of the value of these drugs and the range of their usefulness it is hardly necessary for me to speak. I might, however, point out that they differ considerably from each other and from their common ancestor morphine. The diacetyl-morphine is, both relatively and absolutely, much more actively depressant to the respiratory center than is morphine. Because of its absolutely greater power it must be given in much smaller dose and because of its relatively greater sedative effect upon respiration it is of much less value as an analgesic than morphine. In cases where an effect upon respiratory function is desired, as in excessive cough, or especially in bronchial asthma. I think the diacetyl ester is generally to be preferred to morphine as being not only more certain but, in the doses required, less disturbing to the alimentary canal. Ethyl-morphine, on the other hand, is distinctly less active than morphine and more closely resembles codeine, which is a methyl-morphine, than it does the mother alkaloid. In my own experience it has seemed to possess greater anodyne properties than either codeine or acetyl-morphine, although of course greatly inferior to morphine. It has the very great advantage, however, that there is much less danger of habit formation from its use; in fact I have never heard of a case of habit from either ethyl-morphine or codeine.

A much less widely known novelty is sodium perborate. This superoxygenated compound in aqueous solution yields up an atom of oxygen which unites with the elements of water to form hydrogen dioxide, and leaving behind the alkaline sodium pyroborate, not the sodium borate of the Pharmacopœia, commonly called borax. Because of the alkalinity of the solution formed the hydrogen dioxide is rapidly decomposed with the evolution of oxygen. This salt offers a means of preparing extemporaneous solutions of peroxide of hydrogen. Seventy grains of sodium perborate to an ounce of water gives a solution about equivalent in antibacterial properties to the official solution of hydrogen dioxide; for convenience of remembering we may say to use from one-half to one drachm per ounce. The solution must be freshly prepared immediately before use.

Solomon is supposed to have remarked that there was nothing new under the sun, and the present fashion in laxatives is an illustration of his perspicacity. Some thirty years ago Dr. Randolph of Philadelphia recommended the use of petrolatum in the treatment of chronic constipation. He had quite a number of followers in this use and for a short time the drug enjoyed considerable popularity, and then we all forgot about it until Sir Arbuthnot Lane introduced the use of the liquid petrolatum, or as it is popularly called, mineral oil, for the same purpose. The effects of petrolatum, whether in the liquid or semisolid state, are essentially identical. Namely, it gives a soft, indigestible, but inoffensive material to lend bulk to the passages and perhaps may have some lubricating effect. There is a common belief that the more viscid mineral oils are less prone to ooze out through the sphincter ani, and the Pharmacopœia has therefore recognized two forms of liquid petrolatum, a light one intended for use in atomizers, and a heavy viscid oil for internal use. If there be any truth in this idea that the more viscid oils are to be preferred for this purpose it would seem rational to go back to Dr. Randolph's custom and use the semisolid rather than the liquid petrolatum.

Incidentally it is interesting to note how fashions in laxatives, as in clothes, change for no apparent reason except the whims of the medical public. When the committee on revision began its work agar-agar was enjoying its brief period of reclame as the *ne plus ultra* for the mitigation of sluggish colons, just as to-day does liquid petrolatum. This cellulose-like extract of Japanese sea weeds acts because, like petrolatum, it is entirely unaffected by the digestive juices and passes through the intestinal tract unabsorbed. By virtue of its own bulk, but especially because of its power of holding water, it gives mass to the contents of the colon. So fleeting are fashions, however, that this drug, which was in the zenith of its popularity at the beginning of the work of revision, had almost passed from notice before the Pharmacopœia appeared. While speaking on the subject of laxatives I may call your attention to the fact that phenolphthalein, which had long been considered in the appendix of the Pharmacopœia only as a test for alkalies, has now been moved to the body of the book because of its popularity as a cathartic.

A very interesting addition is phenylcinchonic acid which was introduced some years ago as the result of the studies of Nicolaier. He found that the administration of this agent greatly increased the amount of uric acid in the urine—sometimes as much as 200 or 300 per cent.—without a corresponding increase in the other nitrogenous bodies. This fact has been abundantly confirmed and holds true in both gouty and normal men and for all sorts of diets. The theory which has been advanced that the increase in the output of uric acid was due to an increased formation of this substance in the body is no longer tenable because the observations of Folin and Lyman have shown that there is accompanying the increased output a diminution in the amount of uric acid in the blood. We must concede, therefore, that the drug in some way raises the permeability of the kidney for uric acid. Because of this effect it was argued that it would prove a useful remedy in gout. The chain of reasoning is weak, however, in one link, namely that at present we have no definite knowledge of the relation between gout and uric acid, although the disease seems in some way to be associated with disturbances of purin metabolism. Nevertheless there is a certain amount of clinical testimony of the value of the drug in gouty conditions. Phenylcinchonic acid appears also to possess some analgesic powers apart from its influence upon uric

acid secretion and has been used in other forms of arthritis.

Another substance originally introduced as a proprietary, which has received official recognition, is cotarnine, of which the hydrochloride is official. This alkaloid, which is manufactured from narcotin, has been used under the trade names of stypticin and of styptol. Its most important physiological action is a stimulating influence upon the unstriped muscles, especially of the uterus. By virtue of this effect it is a valuable remedy in various forms of uterine hemorrhage. Just as in the case of ergot, the effect of cotarnine in uterine bleeding has led to its employment in other forms of internal hemorrhages. There is, however, no rational explanation of any styptic action and in the absence of any scientific reason I am constrained to be skeptical of its real value in these conditions, despite a considerable number of clinical reports which are apparently favorable.

Among the drugs of non-proprietary character which have won their way into the Pharmacopœia I might mention sodium cacodylate, calcium and sodium glycerophosphates, emetine hydrochloride, quinine and urea hydrochloride, and trinitrophenol. The cacodylates were so clearly and conclusively presented to this society some years ago by Dr. Dawes that it does not seem necessary to say anything more about them, except to warn against their administration by mouth which frequently gives rise to an almost unendurable garlicky taste and odor.

The question of the effects of the glycerophosphates upon bodily nutrition, especially of the nervous system, is as yet *sub judice*. The experiments bearing on its utilization by the tissues have been so extraordinarily contradictory that it is impossible to draw final conclusions. The mass of evidence, however, seems to me to strongly indicate that they are little, if at all, more easily metabolized than the inorganic phosphates. But even if it were finally determined that the glycerophosphates were of no value from the nutritive standpoint that does not necessarily preclude their therapeutic usefulness. It is pretty well established that elemental phosphorus stimulates the growth of bone, but in view of the infinitesimal doses employed it is absurd to imagine that it supplies the needed element for the synthesis of bony tissue. Its action is much more rationally attributed to some stimulating influence upon anabolism of the same nature as that caused by arsenic or quinine or various other drugs. While not as yet demonstrated it is not unreasonable to consider the possibility that the glycerophosphates may exercise a similar stimulant effect upon the vital chemistry.

Trinitrophenol, more familiarly known as picric acid, has for many years been highly esteemed by a small group of surgeons, especially in the treatment of burns. The recent investigations of Schamberg and Kolmer have established that it is a very much more potent germicide than carbolic acid; they give its phenol coefficient as between 4 and 5. It differs from phenol in being actively astringent as well as germicidal. It is likely to become of increasing importance in certain skin diseases as well as in burns and other open ulcers. It has two disadvantages which militate against its greater popularity, first its powerful staining properties and secondly the occasional occurrence of dermatitis from its use. A most extraordinary dermatitis occurs among the workers in munition factories who come in contact with picric acid.

As there have been nearly forty drugs, not including new preparations, which have received official recognition for the first time it is manifestly impossible to consider them all in detail.

Besides those already considered may be mentioned betaeucaine hydrochloride, creosote carbonate, bismuth betnaphtholate, quinine and urea hydrochloride, emetine hydrochloride, and a number of others. An entirely new departure has been made in the recognition of compressed gases, of which nitrogen monoxide and oxygen have been admitted.

Of the new pharmaceuticals attention may be called in the first place to the powdered extracts, which are for the first time official. The majority of the extracts of the U. S.P. IX are now in the form of powder, although cannabis indica, ergot, hyocyamus, sumbul, gentian, and one or two others less important are still directed to be of pillular consistence. Among the extracts is found the Extractum fellis bovis which replaces the old purified ox-gall. This extract of ox-gall is practically the same as the compound commonly called sodium cholate and is practically a mixture of the glycocholate and taurocholate with small quantities of organic impurities plus the addition of sufficient starch to make one part represent eight parts of ox-gall.

Another interesting type of pharmaceuticals are the magmæ of which two have been admitted, Magma bismuthi, or milk of bismuth, and Magna magnesiæ, or milk of magnesia. These are suspensions respectively of bismuth and magnesium hydroxides without the intervention of any mucilaginous vehicle, and offer a convenient way of administering these drugs. One fluidrachm of the milk of bismuth corresponds approximately to 4½ grains of bismuth subnitrate. Each fluidrachm of the milk of magnesia represents about 3 grains of magnesium oxide.

A novel departure of great interest to the physician is an article in the appendix on diagnostical reagents and clinical tests. This includes formulæ for the preparation of various solutions used in the clinical examination of urine, of blood, gastric contents, and sputum, as well as directions for the preparation of the various culture media and stains frequently used in bacteriology. If you have ever wanted to have a druggist make up a small quantity of Toisson's solution in a hurry or wanted to know the proportion of citric acid in Esbach's reagent, you will not have to be shown the practical utility of this collection of formulæ.

I have trespassed already too much on your patience although I have only touched on some of the more salient features of the Ninth Revision of the United States Pharmacopœia. In conclusion I would say to you, Get a copy and study it and you too will become boosters.

1905 Chestnut Street.

Sloughing Erythema Following Injection of Adrenalin.—Merklen and Lioust have seen four cases of this sequence at the site of injection. The probable mechanism was overaction of the vasoconstrictor property of the drug and suggests that the dosage used may be too high.—*La Presse Médicale.*

RATIONALE, INDICATIONS, AND CONTRAINDICATIONS OF THE NAUHEIM BATH.

By CLARENCE W. LIEB, A.M., M.D.,

WATKINS, N. Y.

THERE seems to be a general misconception among medical men concerning the therapeutic value of the Nauheim bath in diseases of the circulation. This therapeutic procedure is at present suffering from the unmerited neglect which inevitably supervenes when a method is used as a panacea. It has been only within recent years that the method has been critically studied. Yet even with all our refined instrumental methods of investigation and with the vast array of clinical evidence available we find many eminent authorities differing radically in their conception of the rationale and indications of the carbonated brine bath. This divergence of opinion varies from Mackenzie's rather satirical deprecation of the method to the Schott brothers' almost fanatical belief in it. This unfortunate discrepancy is due largely to the following reasons: (1) Lack of standardization of the chemistry and modus operandi of the bath. (2) Misapplication of the method due to divergent conceptions of its rationale, indications, and contraindications. (3) Commercialization of the method with the resulting tendency to prejudice the profession against its use.

With reference to the first reason above mentioned we find that clinical statistics include results obtained with both the natural and artificial Nauheim baths only too often influenced by the prejudices of overenthusiastic observers. Likewise this or that component of the bath is emphasized as the *pièce de résistance* of the therapeutic action according to its predominance in the waters of the Spa whose healing powers are being vaunted.

Then when one considers the frequent slipshod methods of prescribing a course of baths, the variations in the technique of administering the baths, and the different environments in which they are given is it any wonder that the method produces such variable and often disappointing results! Passing to the second reason we are dealing with a method which unfortunately has attached to it the opprobrium of being used as a cardiopathic "cure-all." Since the beginning of the present war the writer has had the opportunity of studying the cases of a large number of Nauheim devotees whose circulatory derangements have run the entire gamut of diagnostic possibilities. All had received a course of Nauheim baths and all with a few exceptions felt that the baths had either cured their particular cardiac difficulty or had checked its progress. The bath records which a large number of these patients carried with them were practically identical. Very little prescription individualizing was noted. We are forced to the conclusion that a large part of the benefit derived from a trip to Nauheim is due to the ocean voyage en route, the hope of a cure engendered by the advising physician at home, and the careful regimen as to diet, rest, exercise, and medication. Undoubtedly these benefits often neutralize in many instances the otherwise baneful effects of the baths which so general a method must necessarily produce. But in spite of all the negative evidence which we can collect deprecating the Nauheim methods no other proof of its value in cardiopathic treatment is needed than to note the success which the method has met during the most progressive and conservative period of medical history. The testimonies of many thousands of grateful patients and the recommendations of scores of eminent heart specialists give us an array of evidence which cannot be easily gainsaid. Hence it is not additional proof as to the value of the method that we need so much as it is a clearer understanding among the profession of the physiological action and therapeutic indications for the carbonated brine bath to which is attributed so large a part of the benefits of the Nauheim method. In this article the writer will attempt to sum up our present knowledge of carbonated brine therapy. The writings of Winternitz, Mueller, Schott, Grödel, and Baruch have been freely consulted and supplemented by the writer's own observations and experiments.

The principal agents entering into the composition of the Nauheim bath are the carbon dioxide gas and the salines, chief of which are calcium chloride and sodium chloride. Most of the natural waters used in giving the baths contain other mineral salts in addition to the above. They also show varying degrees of radioactivity. It is not the purpose of this paper to discuss the relative merits of the natural and artificial Nauheims. Suffice it to quote Schott on this point who says, "Clinically, highly gratifying results may be obtained in cases of heart disease by the use of such (artificial) baths, but their action is decidedly not identical with that of the natural water." It seems to be the opinion of those who have had a large experience with both kinds of baths that the maximum good can be obtained only by the use of the natural waters.

Physiological Action.—Carbon dioxide gas when in solution in water shows a faintly acid reaction and is supposed to contain carbonic acid in solution. In the Nauheim bath it adheres to the surface of the body in small bubbles, thus insulating the skin from the water and protecting the surface of the body from loss of heat. The gas being above the indifferent temperature gives the skin a stimulus of warmth since the indifferent point of carbon dioxide gas is much lower than that of air. This sensation of warmth permits of baths of otherwise prohibitive temperatures to be taken with the advantage thereby of obtaining the maximum of effects of thermal stimuli. Müller states that the action of the carbon dioxide bath upon the circulation has the paradoxical effect of a warm and cold bath given simultaneously. The action of the carbon dioxide upon the skin is to produce a marked hyperemia. According to Baruch this is due to a specific mechanicochemical irritation by the gas and not to a reflex action upon the vasomotor system. This author also has shown that the gas produces a constringing action upon the unstriated muscular structures of the skin.

Filehne and H. Wintermitz have shown that the carbon dioxide gas is absorbed through the skin and thus activates the respiration.

Baruch is of the opinion that the heart muscle is also stimulated by the direct action of the gas upon it. In some unpublished experiments of the writer it has been found that during and after a Nauheim bath the carbon dioxide tension of the

alveolar air has been greatly increased and that this increase varies directly as the concentration of the gas in the water and that which escapes into the air. The amount of gas absorbed through the skin, as shown by this method, is almost negligible as compared to that which is inhaled. This knowledge has been put to a practical application in prescribing the baths in view of the fact that carbon dioxide inhalation increases blood pressure. Patients in whom increase in blood pressure is contraindicated are prevented from inhaling the gas by placing a gas-proof canopy over the bath tub and fastening it about the patient's neck. And conversely in low tension cases, unless otherwise contraindicated, the inhalation of the escaping gas is encouraged by arranging the canopy in such a way as to increase its concentration in the inspired air.

Wieland and Veiel by careful plethysmographic studies have shown that the hyperemia of the skin produced by the carbon dioxide bath is not due to a vasodilatation. The caliber of the capillaries is diminished. The hyperemia is due to an accelerated circulation, the blood being driven with more energy to all parts as a result of increased ventricular action. This positive resistance to the flow of blood in turn results in enhancing cardiac energy since it promotes cardiac effort.

Salts.—We have no evidence to show that the saline elements of the bath are absorbed through the unbroken skin. They act simply by imbibition, penetrating to the peripheral nerve endings of the integument and stimulating them. The salines after drying remain deposited on the skin and produce a powerful rubifacient action. The calcium chloride being hygroscopic keeps the skin moist, thus producing a peripheral hyperemia which tends to give the heart a physiological rest. The Chloride of sodium has been shown to promote the penetration of gas through the skin and its entrance into the blood. The salines assist in retaining the gas in the bath, thus preventing its escape and thereby improving the supersaturation.

Radium.—That radium has a physiological rôle in the Nauheim baths as given at Nauheim, Saratoga Springs, and the Glen Springs is quite certain. The almost fabulous cures frequently reported at many foreign and native spas cannot be accounted for by the mineral content of the waters alone. Their radioactivity, in the light of our present knowledge of its action on the human organism, is undoubtedly an important contributing factor in the curative process. It has been proven experimentally that radium emanation is absorbed through the skin according to the law of gas absorption. Regardless of the method of administration, the physiological effect is the same. It is a powerful metabolic stimulant, probably due to its ability to activate the endocrine glands. It tends to lower blood pressure and has a markedly diuretic action. Its effect upon the blood is to increase the red cells of the body and their hemoglobin content. So potent a physiological agent must obviously be a factor in producing the favorable results attending the use of the Nauheim baths and may account for the superiority of the natural over the artificial baths.

Thermic Effects.—That the temperature of the Nauheim bath determines to a large degree its physiological response is unquestioned. Plain brine baths between 92° and 98° F. produce first a short rise of blood pressure and a slight slowing of pulse rate. Below 92° F. they produce an increase of blood pressure throughout the bath and a decrease in pulse rate. The lower the temperature the more marked is the blood pressure increase and pulse decrease. The thermic excitation of the cold produces a reflex vasomotor effect by stimulating the peripheral nerve endings. The constriction of the superficial vessels promotes cardiac gymnastics, thereby increasing the heart's efficiency.

Temporal and Pressure Effects.—The duration of the bath naturally influences its reaction. This and the frequency of the baths are determined according to the needs of the individual case. The pressure of the water on the body while in the bath should be considered, although its influence is a minor one. The greater the concentration of the brine the greater the pressure on the body, resulting in increased cardiac effort. So evident is this in certain cardiopaths that it is necessary to keep the precordium above the water level to prevent palpitation or dyspnea.

To summarize, it may be said that no one element in the bath is wholly responsible for its physiological reaction. This is due to a sum total of its constituent parts, each being a contributing factor. Failure to recognize this fact accounts for the wide discrepancy in the results obtained by different observers.

Specific Cardiovascular Action.—Heart Muscle: The special properties of the heart muscle influenced by the carbonated brine baths are those of tonicity and contractility. When these functions are below normal the ventricular walls are dilated and weak. As a result the heart's contraction is feeble and in diastole the venous inflow stretches the ventricular chamber abnormally. The carbon dioxide absorbed into the circulation while in the Nauheim bath through the skin and respiratory apparatus increases the heart's tone and contractile power, thus promoting the force of systole and prolonging diastole. Owing to an absence of an excessive amount of venous blood in its cavity the heart becomes reduced in size and the heart by having more room for contraction, contracts more vigorously and takes a longer time, thereby increasing its muscular strength. As with digitalis the action of the Nauheim baths on the normal heart is not very great, hence deductions made from experiments on normal subjects are fallacious.

Systemic Arteries: Plethysmographic studies have shown that contrary to what was formerly believed the Nauheim bath produces a constriction of the peripheral arteries. The hyperemic skin following the bath is due to an increased peripheral blood supply rather than to a dilatation of the vessels. It is possible that the carbon dioxide may act by stimulating the arterial muscle coats and vasoconstrictor center in addition to a primary effect upon the heart. The increased peripheral resistance is in itself a resistance stimulus to the heart. Like digitalis the carbonated bath increases the output of blood from the heart, increases peripheral resistance, and increases the quantity of blood in the arteries at the expense of that in the veins.

An absence of slowing of the pulse during the bath must be taken as evidence of the inefficiency of the bath in producing the desired effect unless the heart's irritability is increased by toxic processes. In functionally efficient hearts a rise in blood pressure is produced with baths given below the neutral zone of temperature.

Coronary Vessels: The increased force of systole produced by the carbonated brine bath by enabling the coronary veins to empty more completely produces a greater supply of arterial blood to the heart, thus promoting its nutrition. The increased pressure in the aorta and ventricle also accelerates the blood supply of the heart through the coronaries, which, together with the prolongation of diastole, produces a more efficient metabolic change in the myocardium.

Kidneys: The factors affecting the flow of blood through the kidneys are the degree of arterial pressure and contraction of the renal arteries and the freedom of the venous outflow. When there is venous back pressure, a contraction of the kidney arterioles or a lowered blood pressure there is a lessening of urinary excretion with its coincident results. The carbonated brine bath by promoting cardiac activity increases the blood flow through the kidneys, resulting in diuresis and the removal of venous stagnation.

Veins: The action of the Nauheim bath upon the venous system is an indirect one. Increased venous pressure (as roughly judged by the height above the angle of Louis at which the veins collapse) due to engorgement of the right heart falls gradually as the number and strength of the baths increase. Varicose veins and hemorrhoids often show very noticeable diminution in size during a course of baths. Though this is affected largely as the result of an accelerated arteriovenous exchange we are led to believe that local nutritional changes in the vessel walls, with increased tonicity, are in part responsible for the frequently observed improvements.

Respiratory System.—During the Nauheim bath the respiration becomes stronger, deeper and slower. This is due to the direct action of the carbon dioxide upon the respiratory center. Respiratory embarrassment in cardiac disease is improved by the baths owing to the removal of pulmonary edema and congestion.

Nervous System.—The carbonated brine baths were originally given for neurological affections. Improvement in these conditions was undoubtedly due largely to circulatroy influences hastening the repair of degenerative processes and functional disturbances. The increased blood supply to the brain quickens mental processes. The vagus and vasoconstrictor nerves are influenced by the baths and accounts for the often observed improvement in vagotonic conditions during and after a course of the carbonated brine baths.

Endocrine System.—Unfortunately we have no clinical methods of measuring glandular activity. We are dependent entirely upon symptoms and signs, thus limiting the conclusiveness of case reports. Judging from the remedial effects of the carbonated brine baths in many cases of myxedema and in climacteric disturbances we are forced to the conclusion that these baths must in some way influence glandular activity. Though this deduction is only empirical, it is nevertheless well worth our serious consideration, even if we cannot scientifically explain it. The radioactivity of the water may in part or wholly account for the effect. On the other hand, the improved circulation induced by the bath may affect the secretory activity of the gland, or again this may be influenced by a specific action of the carbon dioxide on the glandular elements. In exophthalmic goiter the benefits derived may be primarily circulatory, or in the light of some recent observations may be the result of nerve blocking. We must admit that we are still groping in the dark when it comes to a rational understanding of the interrelation of the endocrine glands and the processes which occasion their hypo- or hyperactivity.

The rational prescribing of a course of carbonated brine baths presupposes a careful diagnosis of the condition to be treated. This is as important, if not more, than when contemplating digitalis medication, because the treatment is more drastic and involves specific gymnastic exercise in which the heart bears the brunt of the burden. While an anatomical diagnosis is very important the information thus obtained is not the final word in deciding the question of Nauheim treatment. A functional estimation of the cardiovascular apparatus gives us a more accurate valuation of the heart's efficiency, and therefore of the heart's response to the baths. It enables us to weed out cases to which the baths are either unnecessary or unsuited. For example, hearts with valvular lesions which are well compensated subjectively and objectively are neither materially benefited by a course of baths nor injured. On the other hand, functional diagnosis helps us to reject cases which are not able to tolerate the baths and thereby offsetting possible untoward effects and preventing disappointment to both patient and physician. Information is obtained which often indicates that with continued digitalis medication and rest the baths may be resorted to, subsequently, with safety when the heart has developed some reserve strength. Any of the functional tests may be advantageously used in which the response of the blood pressure, pulse rate, and subjective sensations to exercise are studied. The writer finds that a patient's response to a test Nauheim bath often settles the question in the more doubtful cases. Such a test bath should be at the neutral zone of temperature, *i.e.* 92°, and mildly carbonated and given for a period of at least five minutes. Obviously, even though a patient's condition does not warrant such fine distinctions his response to the increasing strength of baths should be watched and the strength never increased without a renewed estimation of his circulatory efficiency.

In considering (*infra*) the application of the carbonated brine baths to the various specific circulatory disturbances the writer merely attempts to record the gleanings of his experience in giving the baths to a large number of cases. It is not possible to give clear cut indications and contraindications in diagnostic terms for the carbonated brine bath regimen, since, as above emphasized, a functional diagnosis is the only logical and scientific way to determine this.

Arteriosclerosis.—The majority of patients taking the Nauheim treatment have passed the meridian of life. A big percentage of these show marked degenerative changes of the cardiovascular system. The arteriosclerotic group, frightened by the dramatic articles in the lay press and the tragic statements of the medical alarmist regarding the imminent peril in which their condition places them, rush to the geriatrist and down the line of "ists" for relief from their malady. The hydrotherapeutist gets more than his share and too often prescribes for his patient without being cognizant of the limitations of his armamentarium. The Nauheim treatment has erroneously been considered among most patients and many physicians as a specific for arteriosclerosis, but in point of fact the Nauheim bath has a very limited application in this condition. It should be remembered that the younger the subject and the less impaired at any age are the cordiovascular tissues, the more certain will be the normal physiological response to the Nauheim bath. A high blood pressure with marked evidence of arteriosclerosis is a definite contraindication to the treatment. We should not overlook the fact that high blood pressure is not synonymous with arterial hardening and vice versa. We often observe cases with normal blood pressure readings who show generalized sclerosis; obviously such cases should, if given the Nauheim baths at all, be watched with fear and trepidation. Cases showing a high diastolic pressure contraindicate the treatment.

The writer wishes to emphasize the evidence given by a careful ophthalmoscopic examination as one of the best guides to hydriatic treatment. Fine tortuous vessels seen near the macula or near the disk, tortuous retinal arteries and veins showing white streaks along their sides, veins which are indented or dilated beyond the point where an artery crosses, arteries showing white and red patches over their course, hemorrhages and exudates on the retina augur strongly against the expediency of a course of carbonated brine baths. If, however, the above abnormalities are slight in degree and no other clinical contraindication is present the baths may at least be given a trial. When the eye grounds show marked tortuosity, thickening, etc. (ruling out congenital lesions), even though there are no other objective signs of arterial degeneration, the Nauheim baths are contraindicated. Cases giving a history of recent cerebral irritation (vascular spasm) or apoplexy, emaciated patients with tortuous and sclerotic systemic arteries should not risk the baths. The physician should be on the lookout for evidence of local arterial degenerations when contemplating Nauheim therapy. The expedient of making arterial readings on both arms, as pointed out by Hoover, helps us in this direction. The evidence given by functional tests contrary to the general rule as a guide to hydriatic treatment is of less value in arteriosclerosis than is a careful anatomical diagnosis.

The writer has found that baths above 98° F. and below 92° F. by increasing cardiac load are not indicated in even the milder cases of arterial degeneration. Patients do better in baths between 96° and 92° F. from 5 to 20 minutes' duration and noncarbonated. The effect of even such mild baths on the patient should be carefully watched. Patients in whom the peripheral circulation is not enhanced, as evidenced by failure to show a reddened skin reaction after the bath, and particularly after a brisk rub, are usually poor subjects for the bath.

Hypertonia.—Treatment aimed at reducing a high blood pressure should not be attempted without first determining the pathology of the hypertension. This is essential, no matter what line of treatment we are instituting, whether medical or physiotherapeutic. The latter treatment is usually the more intensive, hence the chance for untoward effects are correspondingly greater. This should occasion special diligence in ascertaining the causative factor present in a given case. For convenience we may classify high blood pressure as follows:

1. Cardiac Failure High Blood Pressure: In this condition the carbonated brine bath should never be given until the pressure has first been lowered by rest, bleeding, catharsis, or sweating. The baths are then given primarily to increase cardiac efficiency, for by so doing the pressure is kept down, promoting elimination and improving the capillary return.

2. Nephritic High Blood Pressure: This type of hypertension, when uncomplicated, at least, warrants a trial with the carbonated brine baths, but in no case should the baths be given below the neutral zone of temperature; these cases often do best in plain brine baths without the carbonization.

3. Essential High Blood Pressure: This heading comprises the cases which have no urinary evidence of nephritis. These cases usually show good response to the Nauheim treatment.

4. Symptomatic High Blood Pressure: By this is meant that in aortic insufficiency, lues, diabetes, asthma, and hyperthyroidism. Only in the latter two conditions are we justified in holding out a promise of lowering the tension. However, by promoting the general metabolism the bath can be advantageously used as an adjunct to the orthodox treatment of lues or diabetes. Relative insufficiency due to the relaxed aortic ring is usually benefited, the improved tonicity of the heart muscle resulting in a narrowing of the aortic orifice. When the dilatation is due to an aneurysm or marked atheroma just above the aortic ring the baths are contraindicated.

5. Neurogenic High Blood Pressure, such as that accompanying nervous strain, the climacterium, or due to persistent insomnia, is as a rule greatly reduced by a course of carbonated brine baths. In point of fact there is no better method of treatment for the symptoms attendant upon the menopause than a judicious course of Nauheim baths. The effect of the baths is often very striking. It is possible that the rationale of the cure is due to the stimulation of the hormonopoietic system.

Obviously when a high blood pressure is the result of compensatory influences it should not be reduced unless it is so high that arterial rupture is threatened. In our experience a blood pressure above two hundred is presumptive evidence that the carbonated brine baths are contraindicated. When treating high blood pressure by means of the Nauheim regimen we should attack the problem from all sides, using every possible weapon we have.

Better results are often obtained in reducing a high blood pressure when autocondensation electricity is used in conjunction with the baths. Just what the physiology of this is the writer is not able to say, although the influence is unmistakable.

Hypotonia.—Low tension cases are the ones which usually make the best response to the treatment herein discussed. This is true whether the low pressure is due to a weak heart muscle or to a systemic vasodilatation. The latter condition, according to Romberg and Passler, is the cause of hypotonia following the acute infections. The heart in these postinfectious cases practically always shows evidence of a weakened myocardium. The Nauheim baths therefore have a dual influence in these conditions, namely, by their vasoconstrictor action on atonic blood vessels and by their specific effect upon the heart muscle itself. Their indication, consequently, in the residual circulatory weaknesses attendant upon such diseases as typhoid, diphtheria, polyneuritis, influenzā, etc., is apparent. The low tension of adrenal insufficiency is often favorably influenced by the baths, both by their vascular stimulation and through their action on the gland itself. The hypotension of splanchnic neurasthenia, vagotonia, and conditions showing more than a local relaxation of the walls of the veins is often benefited. Venous atonia suggests a condition which might be termed a chronic low grade acapnia, in which the carbon dioxide, or "vasomotor hormone," as it is termed by Henderson, is deficient. The Nauheim bath furnishes a method by which the gas is absorbed through the skin and lungs, thereby stimulating the vasomotor center and restoring the normal physiological balance.

Myocardial Insufficiency.—As regards the treatment of this condition by means of the carbonated brine baths, a division of the subject into three groups of cases is in order: (1) Cases showing symptoms of incipient decompensation as evidenced by slight dyspnea on exertion, easily induced fatigue, and objectively by a slightly tender liver and a few basal râles. (2) Moderately advanced cases showing considerable dyspnea, cardiac dilatation, enlarged and tender liver, pendent edema, and a diminished urinary output. (3) Severe cases with life in jeopardy who are orthopneic and have developed anasarca and serous effusions, marked cardiac dilatation, static albuminuria, and oliguria.

It should be set down as a hydriatic law that the carbonated brine baths should never be given to cases in which the heart does not possess a degree of reserve power sufficient to meet the increased demands placed upon it by the bath. Carefully conducted and repeated functional tests, noting pulse, blood pressure, and subjective reactions before and after the tests will give the requisite information as to the myocardial reserve. Distention of the right heart, let it be remembered, dictates special precautions with regard to measures which accelerate the return of venous blood.

Regarding the first type of case above mentioned, we know that when dyspnea and hepatic tenderness have ensued decompensation is threatening. When this condition has developed slowly and there are no other untoward signs threatening it invites the application of the Nauheim bath and gives promise of good results. Even in those early cases we should proceed with extreme caution. The patient should be kept in bed during the half day in which the bath is taken (preferably in the morning) until the dyspnea has disappeared. Then he may advantageously be given the Schott resistance exercises and later allowed to take the gradually increased grades of the Oertel terrain paths. The fact must not be overlooked, when increasing a patient's cardiac load, that increased breathlessness spells decreasing circulatory efficiency. The degree of breathlessness may be taken as an index of the amount of cardiac subefficiency.

It is interesting and instructive to note the number of patients returning, yearly or biyearly, for a Nauheim cure with signs of threatening decompensation who, during their course of cardiac efficiency upbuilding, acquire enough myocardial reserve to meet the exigencies of their environment for several months and stave off the incidence of cardiac collapse.

The second type of case noted above is the one which more often than any other goes to pieces on its hydriatic Charybdis. These are the cases frequently referred to Spas for treatment in the anxiety to effect a speedy check or cure of an obviously progressive condition. These are the cases which by all means should be spared the strain of travel and should receive the orthodox medical care preparatory to the Nauheim routine. Should institutional treatment seem indicated it should be impressed upon the patient by his physician that before having recourse to the Nauheim routine he must undergo a preparatory treatment. The patient, accordingly, should be kept in bed on a strict diet with full doses of digitalis or the precordial coil (called by Baruch our hydritic digitalis) may be used and the emunctories kept freely open. Not until a week after the signs of decompensation have disappeared should the Nauheim baths be instituted, and only then with such careful adaptation and modification as may be indicated in that particular case.

The third type of case, or those with signs of absolute decompensation, emphatically contraindicate the treatment under consideration.*

It should be remembered that recovery from an advanced state of myocardial insufficiency is only to be expected when the heart muscle still has a fair amount of residual strength, such as is noted within the first five decades of life in patients recovering from infections, toxic myocardias, in those with valvular lesions and those in which signs of insufficiency have set in as the result of excessive physical strain. If the insufficiency is due to senile changes accompanying advanced arteriosclerosis or is a terminal stage of a contracted kidney but very little can be done, no matter what kind of treatment is given. In relative insufficiency of the heart muscle treated by means of the Nauheim baths murmurs often disappear, and that as a consequence of a stronger and slower heart action the weak heart sounds often become louder and tachycardia and arrhythmia often disappear.

*To subject patients of this type to the ordeal of Nauheim bath therapy is committing an unpardonable therapeutic crime!

Valvular Lesions.—The adaptability of cases to the Nauheim treatment will depend, as above indicated, upon the responsive power of the myocardium rather than on the nature of the valvular lesion. This latter condition even at the present time is emphasized out of all proportion to its importance even to point of minimizing the more common and serious types of heart affections unassociated with valvular defects. The degree of the valvular inefficiency is unimportant if the cardiac muscle has escaped degenerative changes. However, if the muscle is damaged a slight valvular defect may be enough to precipitate cardiac failure.

Romberg has shown that in normal hearts in which valve lesions have been experimentally produced the reserve power has been but slightly modified. Before considering the applicability of the carbonated brine baths in valvular lesions it should be borne in mind that where compensation is good in a heart with no other defect than that of a valvular lesion any attempt to increase the reserve power of that heart by measures aiming at a greater cardiac hypertrophy is unjustified.

Mitral Insufficiency: Experience has demonstrated that in relative or muscular insufficiency of the mitral ring and with the condition otherwise uncomplicated excellent results may be expected by the use of the carbonated brine baths. There is nothing to be gained in giving a course of Nauheim baths to a patient with mitral insufficiency due to valvulitis with a heart which is otherwise normal.

Aortic Insufficiency: In general the Nauheim baths are not conducive to improving hearts with this type of valvular defect. Here, of course, we must be guided by the condition of the heart muscle. Those cases due to luetic aortitis, to arteriosclerosis, or to endocarditis lesions are obviously not improved by the treatment. The Nauheim bath, by prolonging diastole, tends to further distend the left ventricle, thus increasing its hypertrophy or dilatation. Relative aortic insufficiency due to a relaxed aortic ring is worth a trial with the Nauheim baths when other methods fail. They, however, should be given with the greatest watchfulness.

Mitral Stenosis: Slightly decompensated hearts with a mild degree of mitral narrowing respond very satisfactorily to the Nauheim baths. However, when the condition has progressed to the point where the left ventricle becomes atrophied and merely an appendage, as it were, of the hypertrophied right ventricle, the baths are not only valueless, but may do positive harm. Patients with a small left ventricle are usually poorly developed and badly nourished. When they are given the baths the peripheral circulation being poor and slow to respond to stimulation, there is a chilling of the body, with the resulting depression instead of stimulation of the circulation.

Aortic Stenosis: The carbonated brine baths are, as a rule, inappropriate in cases of aortic stenosis. This condition being usually met with at a more advanced period of life than aortic insufficiency is generally associated with extensive calcareous changes in the arterial system, which by continuity frequently involves the coronary arteries. Systole is already prolonged, often as much as twenty-five per cent., and the ventricle greatly hypertrophied. The peripheral resistance produced by the bath, added to the impeded blood flow due to the stenosis, puts too great a strain on the myocardium and may lead to dilatation. The writer has never seen a frank case of aortic stenosis benefited by a course of baths.

Cardiac Hypertrophy.—The process of hypertrophy, from whatever cause, consists, histologically, of an enlargement of the individual muscle fibers. The absolute power of the heart is not increased, the heart simply being enabled to use its remaining power to better advantage. The degree of hypertrophy is an essential factor in determining the indications for the Nauheim baths. Obviously, if the heart has hypertrophied to its limit any treatment based upon the principle of cardiac hypertrophy is illogical. The Nauheim baths are valueless in well compensated hearts, a fact not to be forgotten. Hearts in which the hypertrophy is due to stenotic factors and showing signs of collapse do not do so well on the Nauheim therapy as those in which the hypertrophy is due to an increase in the amount of blood conveyed to the heart during diastole necessitating an increased volume of blood to be moved at the next systole.

Angina Pectoris.—Any consideration of the physiological treatment of this condition must naturally concern itself with the underlying morbid anatomy. In cases of true angina associated with sclerosis of the coronary arteries or the aorta, the principles of treatment enunciated under the caption arteriosclerosis are applicable. The baths should never be given when the signs and symptoms of the disease are marked. Unfortunately, however, these are just the cases which are prone to resort to drastic treatment without proper medical advice, resulting only too often in irreparable harm or fatal consequences. In questionable cases the baths should never be given below the neutral zone of temperature. If anginal symptoms, no matter how mild, are produced by the bath, this form of treatment should be discontinued. Some authors hold that the Nauheim baths are contraindicated if the paroxysm of pain is not relieved by nitroglycerin. In the milder cases of true angina the baths often do an immense amount of good. Their antispastic action on mildly sclerotic coronaries, by relieving the resulting ischemia, improves cardiac nutrition. The vasomotor anginas associated with the abuse of tobacco, tea, coffee, and in highly neurotic individuals respond very satisfactorily to carbonated brine baths. Too many cases, however, with precordial pain are regarded as vasomotor in origin and risks taken which should be avoided.

The Heart in Obesity.—Obese individuals may have hearts which apparently functionate normally. In other words, obesity *per se* does not necessarily produce cardiac inefficiency. The attendant inactivity produced by corpulency tends, however, toward the development of myocardial weakness more quickly than the same amount of inactivity in individuals of normal weight. This is due to the disproportion between the size of the heart and body weight, fatty infiltration of the heart muscle, and pericardial incumbrance of fat. In the treatment of the insufficient heart of obesity with the Nauheim baths we should, naturally, be guided by the degree of decompensation. In Spa treatment,

owing to the limited time which we have for treating these patients, treatment must often be directed toward both the obesity and heart simultaneously. The most logical procedure is, of course, to direct one's attention to the heart's deficiency before attempting reduction, but experience has amply shown that these patients can be safely reduced providing the circulatory mechanism is reinforced by the carbonated brine baths. As a consequence these baths may be prescribed routinely in treating obesity providing the heart's reserve is sufficient to stand the increased work placed upon it by the baths. We know from autopsy evidence that in reducing body weight the fat about the heart is the last to be diminished by the treatment. The Nauheim bath in these cases whips up the sluggish, obese heart, and thus assists in reducing the pericardial and myocardial fat, at the same time increasing the heart's tonicity. If in the treatment of general obesity the heart is guarded by the Nauheim baths the reduction treatment can be made more intensive and the chance of finishing an obesity cure with cardiac impairment is reduced to the minimum.

Heart Block.—In this condition due to a disturbance of conduction in the bundle of His, the Nauheim baths, as a rule, are contraindicated. One case observed by the writer showed an unmistakable increase in objective signs and subjective symptoms while taking the baths, even though atropine was given simultaneously. Cases in which the myocardial element is conspicuously associated with faulty conductivity may be given the baths with some assurance of accruing benefit.

The writer has had under his care for a month each year during the past three years a patient, 60 years of age, leading an active life as superintendent of a factory, who has a 2 to 1 heart block with a pulse of 40. On each occasion this patient has come under treatment with definite signs of early decompensation and has taken 18 to 20 baths. The baths had no appreciable effect on his pulse, excepting a lowered rate while in the bath. There was noted on all three occasions, however, a very evident disappearance of subjective symptoms of cardiac overload. The patient reports that for several months subsequent to his Spa treatment there has been a marked improvement in his circulatory efficiency as attested by his repeated return.

Tachycardia.—The rapid heart which is frequently associated with the menopause is generally decreased in rate by the baths. This is only one phase of the improvement of climacteric symptoms noted as the result of the Nauheim baths. Just what the physiology of this reaction, whether endocrine or purely circulatory in origin, it is difficult to say. In the tachycardias which are, in so far as can be determined, purely neurotic in origin, much benefit is derived from carbonated brine therapy. It is quite generally agreed that the Nauheim baths are particularly indicated in cardiac neurosis. With respect to paroxysmal tachycardia the Nauheim baths may be advantageously given between attacks, but in no case should they be given during an attack for fear of increasing the already existing dilatation. In the four cases with this affection treated by the writer there was noted, subsequently, in two of the cases a longer period between attacks and a diminution in their intensity and duration. Obviously, when the condition is associated with marked arterial degeneration the Nauheim baths should not be given.

Hyperthyroidism.—Owing to the frequent remissions and self-limited nature of Graves' disease it is very easy to fall into the error of giving undue credit to the rôle played by the Nauheim treatment if this happened to be the last therapeutic weapon used. In the writer's limited experience in treating these cases with Nauheim baths conflicting successes and failures have attended their use. The hydriatic treatment of the condition is that of myocardial insufficiency and the stage of decompensation determines the indications for the baths. In cases with marked thyroidosis with a fibrillating and dilated heart no hydriatic treatment other than the use of the precordial coil should be instituted. Where the heart symptoms are in abeyance and there is sufficient reserve strength to bear the increased load produced by the carbonated baths these may be used cautiously and with good hope of success. Especially so when nervousness is the presenting symptom and the heart's rate is not above 120. The baths have a very sedative effect subjectively and as a result a rapid, turbulent, or intermitting heart may show a striking improvement. These patients often fall asleep after the bath and the quieting effect of the bath may last for several hours. One patient with drenching sweats as part of the symptom-complex of her condition after but a few baths showed a complete amelioration of this annoying symptom. It is difficult to understand just how the Nauheim baths act in this condition. Besides their circulatory effect they undoubtedly have some influence upon the autonomic nervous system or endocrine glands. Their beneficial effect when given for the glandular unbalance of the climacterium may be accounted for in the same way.

As previously emphasized in this paper, an estimation of the heart's functional capacity should be a prerequisite to a determination of the heart's fitness for the Nauheim baths. When we consider the contraindications for the treatment, however, anatomical morbidity is largely the determining factor. When after a comprehensive clinical and pathological survey of a patient, objections to the baths have been ruled out, we may proceed with the treatment with greater assurance of success. While it is impossible to make a cut and dried list of contraindications to the Nauheim baths, yet the writer's experience has amply demonstrated, to him at least, that the following conditions are inapplicable to the method: cardiac insufficiency with marked edema, dyspnea, or Cheyne-Stokes breathing; tenderness of the liver or effusion into the serous cavities; cases in which cardiac failure is progressing with great rapidity; severe cases of angina pectoris; all extended degenerations of the heart muscle and arterial system; blood pressure over 200 with high diastolic; aneurysm; recent cerebral hemorrhage; aortitis; all but the milder cases of aortic stenosis and insufficiency; the advanced stage of mitral stenosis; all inflammatory diseases of the heart associated with fever, such as myocarditis, endocarditis, and pericarditis. If in this latter condition adhesions have

formed, no good can come from the treatment except by combating the functional disturbance present. If fresh endocardial changes are present the Nauheim baths should not be given. Of especial danger in old valvular lesions is the frequency of recurrent attacks of endocarditis following the acute infections. Care should be taken that the baths are not given at such a time. Congenital and well compensated valvular lesions, though not contraindicating the baths, are not benefited by them.

The success of the carbonated brine bath in the treatment of circulatory affections varies in the hands of different practitioners like that of any other therapeutic procedure. Its scope of application is bounded by sharp limitations, which, if ignored, lead to disappointing and even disastrous results. Administered rationally as to duration, strength, and individualization it ranks as one of our most efficient cardiac upbuilders. In some cases it may be used as the sheet anchor of treatment, in others simply as an adjunct. The method does not preclude the simultaneous use of drug therapy. In fact, the error is too often made of discontinuing digitalis medication directly the carbonated brine therapy is instituted. Not until the effect of the baths has been determined should digitalis be withdrawn, and then only gradually. In consequence of inattention to such details and the frequent haphazard methods of application the carbonated brine cardiotherapy is suffering from cold medical indifference. This is entirely unwarranted, as evidenced by the success with which the method has been attended when scientifically applied.

THE GLEN SPRINGS.

PRESENILE GANGRENE.

THROMBOANGIITIS OBLITERANS—FURTHER CONFIRMATION OF ITS RELATION TO TYPHUS FEVER.

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As a conclusion drawn from a personal study of thromboangiitis during the past twenty years, I may say that I doubt the existence of any method which might result in a permanent cure of the disease.

Before gangrene has set in, the various palliative measures such as hypodermoclysis of Ringer's solution, recommended by Koge, the incandescent lamp heat-radiations, the high frequency current, baking, and diathermia may afford a temporary alleviation of the symptoms. If they should fail to give relief to the torturing pain, I believe that a surgical procedure such as the ligation of the femoral vein, as described by Oppel, or an arteriovenous anastomosis between the femoral artery and vein, is indicated. Confronted by a case of thromboangiitis with the presence of gangrene, I recommend to the patient a high amputation as best adapted to put an end to the excruciating pain.

At a meeting of the New York County Medical Society in March, 1916, I presented a preliminary report of a serological study of the possible etiological relationship of typhus fever to presenile gangrene.

While reviewing the literature of typhus fever I noted the fact that presenile gangrene of the extremities is found in almost every country, but is more prevalent in those countries where typhus fever is endemic, as in Russia, Austria, Japan, Turkey, and Bulgaria. This would disprove the common misconception that the condition is one peculiar to the Jewish race —a misconception clearly due to the circumstance that the majority of the cases seen in this city have been poor Jewish immigrants from Russia and Galicia and other countries where typhus is endemic.

Nicotine and alcohol may be dismissed as causative factors; syphilis can be excluded, as Buerger and Kaliski agree with the reports of my cases that the Wassermann reaction has been almost invariably negative. That the disease is a result of disturbances of metabolism is unlikely, as may be seen from the studies in the laboratory of Physiological Chemistry of the Beth Israel Hospital by M. Kahn. As early as the seventeenth century, Jordanus enumerates among the cardinal symptoms of typhus, gangrene of the extremities. Cassirer collects the cases in which symmetrical gangrene was described after typhus exanthematicus by Estländer and Fischer. Jochman comments on the frequency of spontaneous gangrene of the extremities observed in typhus, and attributes this frequency to "an inflammation of the intima of the arteries and subsequent thrombosis which are probably caused by the pathogenic factor of typhus."

Saltikow, Buerger, and others have suggested that thromboangiitis might be caused by some microorganism. Buerger, in a stuly of 50 amputated legs of thromboangiitis patients, observed histological changes in the vessels resembling miliary giant-cell foci which aroused the suspicion of some microbial process. Buerger then looked carefully for spirochetæ, tubercle bacilli, and the ordinary pyogenic agents in cultures and microscopic sections and by the inoculation method, but without result.

In reference to the conclusions of a somewhat tentative nature which I drew from the serological tests with the Plotz bacillus a year ago, the reports of the Bulgarian campaign preceding the European war have confirmed my contention that thromboangiitis is of infectious origin.

Professor Zinsser of Columbia told me in a personal interview that he saw a number of cases of gangrene of the extremities during his recent visit to Serbia.

Emil Wiener, after performing a number of post mortems on typhus subjects, states that the most characteristic pathological evidence of typhus is the extreme fragility of the vessel walls. This may entail thrombotic formation in the vessels of the lower extremities and elsewhere. Eugen Fraenkel concludes that the areas of necrosis shown in the walls of the arteries after typhus must be considered pathognomonic of the disease. That these arterial changes can be seen only with extremely delicate coloring and fixation methods accounts, in Fraenkel's opinion, for the fact that so frequently typhus exanthematicus has escaped observation in post mortem reports.

Dr. George Cheever Shattuck of Boston sent me on December 25, 1916, an abstract of an article he

is writing on the Serbian typhus epidemic in which he states: "Gangrene of the feet seems to have been very common during the cold months in the early part of the epidemic. Dr. Strong said that he saw many cases of it and that in some of them the nose and ears were affected. Maitland made some interesting observations on it. He says that before it appeared, the hands and feet were blue and cold and the pulse thready, that red patches of hyperemia then appeared on the feet, and that gangrene developed in the areas which had been thus congested. Starting from the fact that a frost-bitten part remains for some time afterward sensitive to exposure he presumes that frostbite or exposure in the trenches may have played a predisposing part by injuring the vessels.

"That this form of gangrene is not embolic is evidenced by its frequent symmetry. Moore says that it is probably brought about by artificial thrombosis and it seems likely that Maitland is right in supposing that exposure may be a contributing factor.

"Gangrene heals very slowly, and seems to appear most often in the later stages of typhus or during convalescence. Consequently there were many cases of it in the wards when we began work and others were brought in showing no typhus rash."

Professor Bruno Wolff wrote in September, 1916, that gangrene of the extremities was among the frequent clinical manifestations of typhus, and quotes Professor Brauer of Hamburg as ascribing this gangrene to the specific inflammation of the arterial intima. Wolff cites the report of E. R. Granz, the chief surgeon of the prisoners' camp at Gross Magendorf and that of Schürer von Waldheim as testimonies given lately to the frequent occurrence of gangrene after typhus, and concludes with Fraenkel, Brauer, and Jochman, that the secondary gangrene was due to a vascular lesion produced by the typhus infection. Of these cases Professor E. Schwalbe made histological studies of the post-mortem material and reported that the vascular alterations found in the cutaneous connective tissue corresponded in part to those described by Fraenkel, and in other cases they differed somewhat. Wolff gives beautiful illustrations of cases of gangrene which are identical with those we see here in the cases of thromboangiitis.

It seems more than ever reasonable in the light of the foregoing reports to conclude that the typhus virus has a predilection for the blood vessels, especially of the extremities, that its activity is followed by an inflammation of the intima with the formation of the thrombi with frequent subsequent gangrene of the foot or leg.

I am firmly of the conviction that further studies I have undertaken will bring additional proof to my argument that thromboangiitis is a later manifestation of a previous typhus infection.

BIBLIOGRAPHY.

1. Brauer, A. L.: Verhandl. d. deutscher Kong. f. innere Med., Wiesb., 1916, pp. 83, 101.

2. Brauer, L.: Klinische Beobachtungen bei Typhus exanthematicus, Beitrag z. Klinik der Infektionskr. u. zur Immunitatsf., Würzburg, 1914, Vol. III, pp. 215-233.

3. Cassirer: Die Vasomotorische-Tropischen Neurosen, Zweite Auflage. Verlag von S. Karger, Berlin, 1912, p. 292.

4. Fraenkel, Eugen: "Zur Fleckfieber Diagnose," *Münch. med. Wochenschrift*, June 15, 1915, pp. 805-808.

5. *Idem.:* "Ueber Fleckfieber Roseola," *Ibid.*, 1914, No. 2.

6. Jochman, Prof. Dr. G.: Lehrbuch der Infektionskrankheiten. Berlin, Verlag von Julius Springer, 1914, p. 757.

7. Wiener, Emil: *Wiener klin. Wochenschrift*, 1916, p. 117.

8. Wolff, Bruno: Klinische u. pathologisch-anatomische Beobachtungen beim Fleckfieber, Beiträge z. Klin. der Infektionsk. u. zur Immunitatsforsch. September 15, 1916, Band V, Hft. 1.

969 Madison Avenue.

THE BALANCED DIET ANALYZED.

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It is important for physicians to fix in mind what constitutes a balanced diet. Therefore the writer presents the accompanying sample diet together with a discussion of its salient features. The present war has served to emphasize the economic phase of scientific dietetics. Other phases, relating to health and efficiency, are of high importance at all times. The following points will be discussed: (1) A classification of foods facilitating computation of proteins, fats, and carbohydrates. (2) The amount of protein and meat required daily. (3) Why a large luncheon and dinner usually furnish an excessive amount of protein. (4) Fat and carbohydrate requirements are easily exceeded. (5) How to increase or decrease the caloric content of one's dietary for weight control or for varying degrees of activity.

Food Classification.—The basic feature of the writer's classification of foods is its utility. Articles which might be placed in more than one group are assigned to that one which experience has shown to be the more useful.

Foods are classified as follows:

Proteins: Meats (including chicken and fish), eggs, milk, and cheese.

Fats: Butter, cream, olive oil, and bacon.

The carbohydrates are divided into two groups.

High-Content Carbohydrates	Per Cent of Sugar and Starch	Low-Content Carbohydrates	Per Cent of Sugar and Starch
Sugar	100	Bananas	22
Honey	80	Apples	14
Cereals (dry)	80	Pears	14
Dried figs, dates, and raisins	76	Peas	14
Crackers	71	Lima beans	14
Jelly	70	Parsoips	13
Sponge cake	65	Oranges	11
Bread (all kinds)	50	Squash	10
Apple sauce	34	Peaches	10
Puddings	29	Gooseberries	10
Ice cream	27	Carrots	8
Almonds	25	Beets	7.4
Custard	22	Strawberries	7
Potato	21	Cabbage	5
Corn (canned)	18	Caulitlower	5
Cereals (moist)	17	Onions	5
Macaroni	16	Celery	3.3
Soup (thickened)	10	Lettuce	3
		Spinach	2.6
		Asparagus	2.2
		String beans	1.9
		Clear soops	1.1

Some articles in the second group of the above classification have a higher percentage of carbohydrates than a few in the first. They are so placed because the helpings served do not average as many calories as those of the first group. For instance,

thickened soup, which has been placed in the first group, contains only 10 per cent. carbohydrates, while banana, of the second group, contains 22 per cent. But this grouping is practical because a helping of thickened soup is 160 calories or more, while a banana, when eaten without sugar and cream, is 100 calories.

Minerals are contained principally in fruits, vegetables and the outer coating of cereals.

SAMPLE MAINTENANCE DIET

	Grams Protein	Grams Fat	Grams Carbohydrates		Calories
			High	Low	
BREAKFAST:					
Fats:					
Butter (1 ball=⅓ oz.)	. .	8.5	...	.	80
Cream, thin, 4 tablespoons	2	12 .	...	2	120
Sub-total fats	...	*20.5*	...	...	...
High-content carbohydrates:					
Cereal	2.5	...	20	. .	100
Bread, 2 slices, 4x4x2 in	4.6	1	26	...	140
Sugar, 2 teaspoons	...	...	16	...	66
Sub-total high-content carbohydrates	...	...	*62*	...	...
Low-content carbohydrates:					
Orange	1	...	...	15	70
Sub-total low-content carbohydrates	. .	...	...	*15*	...
Coffee			No value		
Sub-total protein fats, etc., acquired incidentally	*10.1*	*1*	..	*2*	
BREAKFAST TOTAL	10.1	21.5	62	17	576
LUNCHEON:					
Proteins:					
Eggs, 2	13	10	...	.	160
Sub-total proteins	13	...	. .	. .	. .
Fats:					
Olive oil (2 teaspoons)	...	8	...	..	74
Butter (1 ball)	...	8.5	...	..	80
Sub-total fats	...	*16.5*	. .	..	..
High-content carbohydrates:					
Bread (2 slices)	4.6	1	26	. .	140
Macaroni, 2 tablespoons	2.0	1	8	. .	50
Sugar, 2 teaspoons	...	...	16	.	65
Sub-total high-content carbohydrates	...	...	*50*	. .	...
Low-content carbohydrates:					
Lettuce, ½ head	1	...	...	2.8	18
Fruit: apple	1	...	...	17	75
Sub-total low-content carbohydrates	...	...	...	*19.8*	...
Sub-total protein fats, etc., acquired incidentally	*8.6*	*12*	...	. .	. .
LUNCHEON TOTAL	21.6	28.5	50	19 8	663
DINNER:					
Proteins:					
Meat, 3-10 lb., 5x3x¾ in	34.5	27	...	...	450
Sub-total proteins	*34.5*	...	...	...	...
Fats:					
Butter, ⅙ ball	. .	4.25	...	...	40
Cream, 2 tablespoons	1	6	...	1	60
Sub-total fats	...	*10.25*	...	...	.
High-content carbohydrates:					
Soup, thickened	5 5	4.5	24	...	160
Bread, 1 slice	2.3	.5	13	...	70
Potato, medium size	2 0	...	20	..	80
Sugar, 1 teaspoon	. .	...	8	...	33
Sub-total high-content carbohydrates	...	...	*65*	...	...
Low-content carbohydrates:					
Squash, 2 tablespoons	1	...	...	7	40
Peas, 2 tablespoons	5	2	...	10	80
Apple, one	.5	.5	...	17	75
Sub-total low-content carbohydrates	...	...	...	*34*	...
Sub-total protein fats, etc., acquired incidentally	*17.3*	*34.5*	..	*1*	...
DINNER TOTAL	51 8	44 75	65	35	1098
Days total protein fats, etc., acquired incidentally	36	47.5	...	3	...
Days total protein fats, etc., acquired intentionally	47.5	47.25	177	68 8	.
TOTAL FOR DAY	83.5	94.75	177	71.8	2337

Amount of Protein and Meat Required Daily.—Protein is the tissue-building element in food, constituting the major portion of muscle and of the body's general framework. Professor Chittenden proved experimentally that man can live in health on 1 3 of a gram of protein for each pound of body weight. The Voit standard, which for many years was considered correct, is a little more than 2/3 of a gram for each pound. To be conservative, while allowing time for ascertaining any possible ultimate ill effect from a standard as low as that of Chittenden, I will place the requisite amount at ½ gram. From our present evidence, the chief danger of the low protein standard lies in the possibility of the diet chosen being wanting in some essential amino-acid. (The amino-acids are smaller divisions of the proteins.)

The ½ gram per pound standard, *i. e.* 75 grams for the average man, is perfectly safe if a fair variety of food is taken. Many persons in every country are not ingesting more than this amount. An individual who is taking a moderate amount of meat once daily seldom exceeds this quantity of protein.

The above diet will serve to show averages in the various food elements. It shows the amount of protein food derived from the articles here classed as proteins and, separately, from articles not here classed as proteins; 47.5 grams are derived from the former and 36 grams from the latter. The average diet, which might be arranged to contain approximately 75 grams of protein, would furnish from 25 to 35 grams from foods not here classed as proteins.

Protein Content of Protein Foods.—100 grams of meat (0.2 lb.) = 23 grams of protein. (100 grams of beef = 5 x 3 x 0.5 inches.) 2 eggs = 13 grams of protein. American cheese (3 x 1 x 1 inches) = 12 grams of protein. Milk (2 glasses) = 17.5 grams of protein. The approximate amount of protein can be obtained by adding thirty grams to the amount chosen from the above list of protein foods. The accompanying diet draws from the protein class 2 eggs, or 13 grams, and a piece of meat 5 x 3 x 0.75 inches, or 34.5 grams. Adding 36 grams drawn from the non-protein articles, we obtain 83.5 grams of protein for the day. Hence it is seen that a good helping of meat once a day furnishes a sufficient amount of protein, although the only other article drawn from the protein class is 2 eggs.

It is apparent that adding cheese and milk or taking a larger amount of meat exceeds the daily protein requirements. Again, it is evident that those who do not take milk or cheese, or much meat, keep within 75 or 80 grams of protein daily.

Why a Large Luncheon and Dinner Usually Furnish an Excessive Amount of Protein.—The average luncheon includes eggs or meat, sometimes both, sometimes more than one variety of meat. The average large dinner includes two or more varieties of meat. This necessarily furnishes an excessive amount of protein, from 150 to 200 grams, exceeding even the Voit standard. Such a dietary necessitates excessive work on the part of the kidneys, liver, and heart. Even a moderately excessive protein ingestion favors protein fermentation with the development of poisonous protein by-products eventuating in the weakening of the three organs mentioned. This moderate excess, if continued over a long period of time, will have a deleterious effect which, though not so apparent, is none the less certain.

Fat and Carbohydrate Requirements are Easily Exceeded.—Fats: Three balls of butter (one ounce) = 240 calories. Six tablespoons of cream (medium grade) = 180 calories. In our sample diet, 440 calories are drawn from fats not here classed as such. Most of this comes from the meat. This totals 848 calories, supplying ⅜ of the day's requirements for one who is living a sedentary life, and is all that

he should take. He will exceed his requirements by taking breakfast bacon, two balls of butter at a meal, and a large amount of cream. On the other hand, if activity is great, or increase of weight desirable, the latter amount of fats should be taken.

Carbohydrates: In the accompanying diet table 1007 calories are derived from the carbohydrates, of which 725 come from the high-content carbohydrates and 282 calories from the low-content carbohydrates. To increase the diet for one of great activity the high-content carbohydrate group may be increased by 50 to 100 per cent. Reference to the diet will show that this refers to sugar, cereals, bread stuffs, macaroni, and potatoes. Other similar articles which may be used are pancakes, mush, honey, jam, muffins, cake, and starchy desserts. It is well to remember that many desserts are rich in fats as well as in carbohydrates.

By referring to the maintenance diet here given, it will be seen that 5 teaspoons of sugar are used daily; that two other articles of high-content carbohydrates, cereal and bread, are taken for breakfast; two for luncheon, bread and macaroni; and three for dinner, thickened soup, bread, and potatoes. A dinner with five or six high-content carbohydrates, as thickened soup, bread, sweet and Irish potatoes, macaroni, and a starchy dessert is too rich in carbohydrates. To reduce the number of calories obtained from carbohydrates as given in this maintenance diet, the amount of bread may be reduced, macaroni withdrawn from luncheon, and the thickened soup from dinner.

We know of no method for accurately measuring the mineral content of a dietary, but are assured of a sufficient amount when whole-grain products and a variety of vegetables are eaten.

40 East Forty-first Street.

NOTE ON THE STAGES OF TABES DORSALIS.

BASED ON THE STUDY OF 240 CASES.

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THE conclusions drawn in this note are based on the study of 240 cases of undoubted tabes, taken from my private practice, and the services of Dr. B. Sachs, neurologist to the Mount Sinai Hospital, Dr. S. Wachsman, director of the Montefiore Home and Hospital, and Dr. W. J. M. A. Maloney, neurologist to the Central and Neurological Hospital, to all of whom I am greatly indebted for the privilege of using the material from those institutions.

Preataxic Period.—The preataxic period is that period which occurs between the onset of the first symptom of tabes and the appearance of ataxia. There is no agreement as to the minimum essential to constitute a diagnosis of tabes, and because the development of the ataxia in tabes usually is insidious, and many of the patients do not consider themselves ataxic until they must use a stick to enable them to walk, the preataxic period is extremely difficult to determine precisely.

In a group of 65 cases analyzed and reported by Fournier, the preataxic period in 19 cases was two years or less; in 23 cases, more than two years but less than five years; and from five to fourteen years in 23 cases. In 54 per cent. of Fournier's cases the preataxic period was three years or less.

In my group of 240 cases there were 42 who had no determinable preataxic period. In these patients ataxia came, so far as is recorded, synchronously with, or was, itself, the first symptom of, tabes. The oldest patient in this group was seventy-three years; the youngest was thirty-six; the average age of the group was thirty-nine years. The average age of onset of tabes in this group of 42 cases was forty-four and one-half years.

There were 46 cases that were still preataxic, in whom no ataxia had appeared up to the time they came under observation. The oldest patient in this group was sixty-eight years of age; the youngest was twenty-nine years; the average age for the 46 was forty-two and one-half years. One was still preataxic after 15 years; the average duration of tabes without ataxia in the entire group was 4.39 years. No conclusions regarding the length of the preataxic period should be based on any cases not yet ataxic.

Of the remaining 152 cases 7 could not be estimated, leaving 145. The preataxic period was 2 years or less in 63 (43.3 per cent.) of these 145 cases; in 38 (26.2 per cent.) of the cases, it was more than 2 but less than 5 years, and in 44 (30.3 per cent.) of the cases it varied from 5 to 27 years. In 78 (53.8 per cent.) of the cases the preataxic period was 3 years or less. The average duration of the preataxic period in these 145 cases was 4.14 years.

The following table shows the duration of the preataxic period in the different age groups at which the first symptom of tabes made its appearance:

Age Group of Onset of Tabes.	No. of Cases in the Group.	Average Preataxic Period, Years.
Under 20	2	17.5
21 to 30	26	4.75
31 to 40	57	3.81
41 to 50	48	3.90
51 to 60	12	3.75

In studying the figures in the above table, one sees that the length of the preataxic period diminishes as the age of onset of tabes advances to 40 years and that thereafter it remains fairly constant. The average decrease from the thirtieth to the sixtieth year was 1 year. More data are obviously needed to establish the influence of the age on the preataxic period.

The age of the host does not influence the virulence of the spirochete. Therefore, the shortness of the preataxic period must be determined either by the resistance of the host, varying with age or other factors. From my previous paper, "Statistical Study of Tabes Dorsalis," which appeared in the *New York Medical Journal*, it is evident that the resistance of the nervous system of the host is measured by the pretabetic period, and that this is a factor which may be influenced by age.

Taking these 145 cases I arranged them in sequence, from the shortest preataxic period to the longest the seventy-third case gives the probable

average preataxic period (wahrscheinliche Mittel) of this group; this was 3 years. The arithmetical mean of this group was 4.14 years. In dealing with figures so variable, I believe the probable mean (wahrscheinliche Mittel) gives a more accurate approximation to the true average.

To determine the influence of sex on the duration of the preataxic period was difficult because there were so few female cases in any one group. In 22 ataxic cases, among the females, where the preataxic period was determinable, the average preataxic period, determined by the probable mean, was 2.6 years. The arithmetical mean of the preataxic period in these 22 cases was 3.24 years. In the age group from 41 to 45 years were 21 males and 5 females; the average preataxic period for the males was 2 years by the probable mean method; the arithmetical mean for these 21 cases was 3.73 years. The average preataxic period for the 5 females was 2.8 years, determined by the probable mean method, and 3.34 years by the arithmetical method. Hence the cases indicate, although their number is not sufficient to prove, that women have a shorter preataxic period than men.

The marked variation in the duration of the preataxic period in the same age groups, the difference in the preataxic period in the males and females, suggest that the determining factor may be a psychic one, a mental deterioration that varies in each individual.

Ataxic Period.—Some tabetics long remain ataxic; others have little or no ataxia yet soon become bedridden; and others again perpetuate the ataxic stage. Only in tabetics who become bed or chair ridden on account of ataxia alone may a completed ataxic period be distinguished. Death, joint changes, and injuries must be looked upon as accidental terminations of ataxia.

In this series of 240 cases there were 36 (15 per cent.) who became bed or chair ridden; of these 6 cases have been immobile for one year or less; 6 for more than one year but less than three; 12 for from three to four years; 4 for more than four years but less than eight years; 4 from eight to twelve years. Twenty of these cases have been immobile from three to twelve years, yet two to four years is commonly alleged to be the life expectancy of the bedridden tabetic.

The remaining 4 of these immobilized patients died; one at the age of 39 after 3 months of immobilization; one at the age of 30 after being bedridden 4 years; another at the age of 50 who had been bedridden 12 years, and the fourth at the age of 49 after being immobilized 7 months. Maloney points out that the duration of the bedridden period is mainly determined, not by the disease, but by the nurse.

Among these immobilized tabetics are three main groups. The first comprises 16 cases immobilized by ataxia complicated by injury, resulting in fractures or Charcot joints. The second group consists of 5 cases of optic atrophy, resulting in almost complete blindness, with or without injuries. The third group includes 15 cases immobilized by ataxia alone.

Among the 16 ataxics forming the first group immobilization followed in 5 cases the occurrence of blindness and ataxia; in 5 others, the appearance of Charcot joints; immobilization was twice attributed to fracture and Charcot joints; once to fracture without joint trouble; once to intraspinal medication; once to perforating ulcer of the foot, and once to muscular atrophy complicating ataxia. Only in the case which was bedridden because of muscular atrophy could a real paralytic stage be distinguished.

Of the 5 cases in the second group, none have had ataxia. Three took to bed and remained there after injury to their lower limbs, and two after the onset of blindness.

Of the 15 cases immobilized because of ataxia alone, one retired to bed immediately ataxia appeared; 7 became bedridden within 4 years, two cases within 6 months, one 12 months, one 18 months, one 24 months, and two 42 months after the appearance of uncomplicated ataxia; in the remaining 7 cases the duration of the ataxia varied between 6 and 15 years.

The average age of these immobilized patients was 53 years.

It is useless to discuss the duration of the ataxic periods in those who from Charcot joints, injury, blindness, or other accidents became bedridden. One might as well discuss the average duration of active life from a series of cases immobilized by street accidents. The only cases upon which any conclusions may be based are those fifteen which became immobilized on account of uncomplicated ataxia.

The following is a table of the 15 cases, bedridden from uncomplicated ataxia, showing the duration of the preataxic period, ataxic period, bedridden stage, and the age of onset of tabes in these cases:

Age of Onset of Tabes, Years.	Duration of the Preataxic Period, Months.	Ataxic Period Before Immobilization, Months.	Bedridden Period, Months.
41	None	77	7
52	None	180	60
29	None	84	48
39	None	117	3
52	3	6	18
24	6	18	48
33	12	None	72
48	30	6	12
33	30	24	18
45	48	42	30
36	48	72	1
40	60	132	36
30	60	144	132
49	72	66	66
30	84	12	144

From this table it is obvious that in these cases there is a conspicuous tendency to a short preataxic period; seven of the fifteen cases became ataxic within one year after the onset of tabes. The probable average preataxic period determined above was 3 years; therefore 46.6 per cent. (7 out of 15) had one-third the normal preataxic period or less, and 60 per cent. (9 out of 15) had less than the probable average normal.

Five of the 15 patients became bedridden within 18 months of the onset of ataxia; indeed, one retired to bed immediately the ataxia appeared. The average duration of the ataxic period in this group of 15 cases, the only cases from which the ataxic period can be correctly estimated, was 4.11 years.

The usual conception of a bedridden stage, habit-

ually occurring 10 to 20 years after ataxia has appeared, is therefore erroneous. Only 3 (20 per cent.) of the 15 bedridden cases, due to ataxia alone, occurred later than 10 years after ataxia appeared.

Maloney has divided the ataxic period into four stages: the biped stage, when locomotion is still unaided; the tripod stage, where only one stick is used; the quadruped stage, where two sticks are necessary for locomotion; the chairridden stage and the bedridden stage, which is the final stage of deterioration of attitude. This subdivision represents deterioration of attitude without regard to the extent or severity of the tabetic lesions.

The average preataxic period of these 15 cases was 2.53 years. It is remarkable that of 6 cases who became bedridden within 2 years of the onset of ataxia the preataxic period in 5 of these cases was 1.5 years, half of the probable average 3 years (as determined above); in only one of these 6 cases did the preataxic period exceed this average.

Maloney contends that the deterioration of attitude is mainly a mental and not a structural deterioration. The short ataxic period in these bedridden cases, according to Maloney, is due to the same mental inferiority which conduced to the short preataxic stage. Further support for this contention is obtained by the examination of the individual cases in this group. Thus Case 177, an ambulant ataxic, through the shock of the death of her daughter took to bed and has never walked since, a period of 6 years. Case 108 had been ataxic for 18 years; 7 years ago he had a perforating ulcer of the sole of his foot; he took to his chair, and although the ulcer has been healed for almost 7 years he has never again attempted to walk. Case 88 had a sudden giving of the knees 6 years ago and has never walked since. I could cite other analogous cases from this group, but I think these three adequately illustrate the mental influence in the deterioration of attitude among tabetics.

The exclusively ataxic cases seldom became bedridden, but they tended to perpetuate their ataxia. If added to ataxia, there was trauma, either simple, or resulting in fracture, joint trouble, shock, or despair, deterioration of attitude was likely to occur. The psychic influence of blindness was also a prominent factor in reducing these patients to hopelessness and helplessness; indeed, in 5 of the cases, blindness in itself was sufficient to cause immobilization when there was no existing ataxia.

Conclusions.—1. The duration of the preataxic period may be influenced by age.

2. The probable average preataxic period is three years.

3. Women seem to have a shorter preataxic period than men.

4. The average life expectancy of the bedridden tabetic is very much longer than that usually taught.

5. The average age of the immobilized tabetic is 53 years.

6. Most tabetics usually perpetuate the ataxic stage; in the small percentage of cases which become bedridden, owing to uncomplicated ataxia, the average duration of the ataxic period is 4.11 years.

7. Among those who become bedridden a short ataxic period usually follows a short preataxic period. This substantiates Maloney's contention that the deterioration of attitude is mainly mental and not structural deterioration. The short ataxic period in these bedridden cases is due to the same mental inferiority as is conducive to the short preataxic stage.

1 West Eighty-fifth Street.

SOME POSSIBILITIES IN THE TREATMENT OF THE TUBERCULOUS INSANE.*

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In electing to discuss the subject proposed in the title of this paper, I find that I have rushed in where men of greater experience hesitate to tread, but if the proposed possibilities appear too fanciful or impractical for adaptation to the management of the insane, I trust that it will be understood that the suggestions arise wholly in my enthusiasm for the principles of Sanatorium Treatment of Tuberculosis.

First to be considered is the *detection* of tuberculous disease among insane. On admission, the patient's history, of antecedents and of past and present illness supplemented by information from friends and relatives, should disclose facts pointing to tuberculosis, *if such exists.* Physicians admitting patients are apt to follow their respective hospital inquiries too closely, neglecting a wider range of possibilities in the patient's previous illnesses. It is important to know about his general state of health for *some time before* he was sent to the hospital, if we are going to look for tuberculosis in this newly admitted patient.

It has been estimated[1] that one-quarter of the tuberculosis which appeared in patients in a group of hospitals for the insane over a given period of time, was present at the time of admission. The three-quarter portion was contracted within the institutions. The history is especially important, then, for in a large number of cases very little cooperation may be expected from the insane patient in the physical examination. There is, then, a large field for the use of diagnostic methods of which tuberculin is notable, as well as the *x*-ray. Wherever evidence of possible active tuberculosis needs confirmation, the use of tuberculin subcutaneously is valuable. Some skill is necessary in applying this diagnostic method, without which skill, disappointing and disastrous results have occurred. Rapid loss of weight and vesperal fever are sometimes late symptoms, and too much reliance upon their absence would allow a tuberculous patient to go unnoticed for some time.

All cases of diarrhea which persist over the winter are to be regarded as suspicious of tuberculosis, and if afebrile should receive diagnostic injections of tuberculin.

A course of tuberculin for diagnostic purpose.[2] It is best in adults to give an initial dose of 1/10 of a milligram, take the temperature every two hours for a period of two days, and if the patient fails to react, to follow this injection with successive

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doses of 1, 3, 5, and 7 or 10 milligrams, similar observations on the temperature being made for an equal period between each injection. An initial dose of 10 milligrams may be followed by dangerous and even fatal consequences.

Another method, together with certain deductions and limitations of the tuberculin test for diagnosis, may be found in Park & Williams.[10]

The contraindications to the subcutaneous test are, certainty of diagnosis, fever, recent hemoptysis, advanced heart or renal disease, epilepsy, diabetes, and convalescence from a severe infection.

In a certain large, well-managed public institution, 60 per cent. of the deaths for a period of twenty-one years came to autopsy. The autopsies numbered 2102 and in 20 per cent. there was found active tuberculosis.[6] Latent tuberculous lesions were found in still larger number. In an unpublished report by Southard of the autopsied cases in certain of the State Hospitals in Massachusetts, there were 149 unknown cases of tuberculosis in a total number of 3831 autopsies. Therefore, it is advisable to add the constitutional reaction of old tuberculin.

There seems to be a high correlation between dementia præcox and tuberculosis. Forty-two per cent. of the deaths from tuberculosis in all the Massachusetts State Insane Hospitals in 1905 were dementia præcox cases.[2] There is an *age of onset* coincidence in the two diseases, and furthermore, such demented and untidy patients with the nutritive disorders associated with dementia præcox and allied mental disorders probably are more susceptible to infection. This group of insane patients would bear closer scrutiny. More trustworthy patients are able to obtain daily out-of-door exercise, which appears to be the best prevention against tuberculosis among the insane. If there were opportunities for open-air exercise for female patients to the same extent as for male patients, the female tuberculosis mortality rate would probably be less. It is now far in excess of the rate for males.

The Section on Psychiatry at the 13th International Medical Congress, Paris, 1900, voted a measure favoring the isolation of the tuberculous insane and their treatment in special pavilions. It was brought out by Marie that German institutions had already established this practice, following the decision of the Congress of Berlin in 1899, and that for the purpose a so-called asylum-sanatorium type was set up at Lauenbourg. In Italy[4] all admissions were subjected to diagnostic tuberculin and suspicious cases isolated in a distinct pavilion. Marie[3] calls attention to the necessity of examinations of military strictness for all employees of institutions for the insane in the work of thoroughly eliminating all possible sources of tuberculous infection.

In 1908, Dr. H. Declerc[5] stated, "Since tuberculosis, now a contagious malady, has so powerful an effect on certain psychoses it is necessary to isolate at first for the treatment of the individual patient, and furthermore to avoid its dispersion; this will be the work of sanatoria." This author devotes his paper in the main to discussing the means of diagnosing tuberculosis upon the insane wards and recommends tuberculin as a precise means, finding that the physical examination often fails to show up this disease.

In America, Hutchings,[6] Carrington,[7] and other authors, have discussed the need for isolation. Dr. A. E. McDonald, director of the Manhattan State Hospital, speaking of his own experience in this practice, stated, "The isolation of the tuberculous patients has reduced to a minimum the danger of infection of other patients, *and of employees*. The patients themselves have suffered no injury or hardship but have, on the contrary, been unmistakably benefited."[11] A segregation unit is possible in Massachusetts with a transfer arrangement of tuberculous patients. With some definite system in operation, isolation should be as utterly complete as is possible. Under the present circumstances we hear that segregation "was more or less completely accomplished." The present-day need is to eliminate the words "more or less" and to make segregation as absolute as human means can devise.

A classic example of what segregation[12] can accomplish appears in the the experience of the State of Alabama in 1895-1902. Mortality from tuberculosis among the insane negroes in custody reached 51 per cent. Segregation in a special unit at Mount Vernon reduced this rate to 22 per cent. and kept it down. The rate for whites dropped from 39 to 9 per cent., due to the relief from overcrowding and to the isolation of the tuberculous insane.

Lately there were developed special units for the tuberculous insane in Florida, Kentucky, Wisconsin,[9] and Iowa.[8] Some New York institutions for a number of years have maintained tuberculosis pavilions to which other hospitals transfer patients for treatment. These institutions have almost uniformly reported a decrease in the prevalence of tuberculosis, some characterizing it as a remarkable decrease. The smaller cottage types of open wards with spacious verandas are preferred to the larger ward buildings. An abundance of fresh air, sunlight and absolute cleanliness must be remembered in planning construction, not only to protect the attendants but to aid in the recovery of the sick.[10] In the long run, tents are too costly and unsatisfactory, and should not be considered for more than temporary housing. This is our experience at North Reading.

The practice of New York in transferring their patients from one hospital to another, as mentioned in the foregoing, affords some explanation for the baffling nature of statistics concerning the tuberculosis mortality rate among the various institutions. Comparisons based upon this data are unfair, either in New York State or Massachusetts.

The record of the Bureau of the Census published in 1914 dealing with "The Insane and Feeble Minded in Institutions" for 1910, reports: "The proportion of deaths caused by tuberculosis of the lungs is almost the same for the insane as it is for the total adult population, 12.9 per cent. of the total deaths in one case and 12.5 per cent. in the other." Analysis of this report adds very little of importance to this discussion, and the only fact of interest is that the mortality rates for tuberculosis among the insane vary widely. The probable responsible causes in those instances of variance into which inquiry was made, are not those expected, and so afford very little explanation why there should be more tuberculosis in one division of hospitals than in another. Such explanation, if af-

forded, would perhaps suggest remedies. Therefore, what seems necessary in the published reports is a *tuberculosis morbidity rate.* This would indicate how much tuberculosis was developing in each hospital and would obviate misleading conclusions, such as are now apt to be formed. A problem could then be worked out as to how many patients, who are discharged yearly from state hospitals for the insane, contracted tuberculosis in these hospitals; or perhaps took the disease home and out into the community.

In 1911 a canvass[15] of the State hospitals for the insane in the United States showed that 28 States were then making provisions for their tuberculous insane in special wards, tents, pavilions, or by some form of isolation. The total capacity for this purpose amounted to 3492 beds. The total number of the insane in custody of State institutions in 1910 was 187,791.[16]

Massachusetts' special provisions for the isolation, actual and partial, of the tuberculous insane consisted in 1911 of 180 beds, or for 1.5 per cent. of total patients, 11,601. (1910).[15] Corresponding figures for the State of New York were 1020, or 3.2 per cent. of total patients, 31,280.

At the international congress in 1899 in Berlin Dr. F. Liemens in discussing the care of the tuberculous insane, described the arrangements at the Asylum-Sanatorium in Lauenbourg.[17] Two wards, or barracks, for men and women respectively, were constructed in 1896, each of 25 bed capacity, for sums equivalent to $5,000 each.

They were sitated in open spaces amidst pine woods at a considerable elevation. The open wards were not unlike the usual sanatorium construction of to-day, but the rooms for the disturbed tuberculous patients were uniquely planned. That is, there were many windows of thick glass placed high up on the walls; sanitary bases, terrazzo floors, and smooth enamelled walls; the construction being so planned as to obtain a maximum of sunlight, of fresh air and of scrubbing brush opportunities.

Finally, since the business of segregating and caring for tuberculous patients of any sort, presents difficult problems in itself, how is it fair to expect much if the management of the insane is to be handicapped by this added responsibility? Segregation in separate units is one idea for consideration among the possibilities of solution of this practical problem.

BIBLIOGRAPHY.

1. Locke, Edwin A.: Tuberculosis in Massachusetts, 1908, p. 89.
2. Massachusetts Board of Insanity Report, 1905, Tables XIII, XV.
3. Marie M.: De l'Isolément des Tuberculeux dans les Asiles d'Aliénés, XIIIth Cong. Intern. de Méd., Section de Psychiatrie, 1900, p. 534.
4. Scabia, Luigi: La circolave di S. E. L'on. Pellous circa l'Isolamento dei Tuberculosi negli Ospedeli Sua Importanze pei Manicomii. *Annali di Freniatria,* Vol. IX 1899, p. 206.
5. Declerc, Dr. H.: Oculo-réaction, cutiréaction et sous- cutiréaction en psychiatrie, *Archives de Neurologie* I, 1908.
6. Hutchings, Richard H.: Tuberculosis in Hospitals for the Insane. *American Journal of Insanity,* Vol. 65, 1908-1909, pp. 752-3.
7. Carrington: *Journal Outdoor Life,* N. Y., 1910, VII, p. 295.
8. Massachusetts State Board of Insanity, Bulletin No. 4, 1914.
9. Massachusetts State Board of Insanity, 16th Annual Report, p. 65.
10. Park & Williams: Pathogenic Microorganisms, 1914, p. 654.
11. Klebs, Arnold C.: Tuberculosis, 1909, p. 463.
12. Hutchings, Richard H.: Tuberculosis in Hospitals for the Insane, *American Journal of Insanity,* Vol. 65, 1908-09, p. 756.
13. Brown, L.: Diagn. Theses in Pulmonary Tuberculosis. *Journal Am. Med. Assoc.,* 1915, LXIV, 1917.
14. Lord, F. T.: *Bost. Med. & Surg. Journal,* Vol. CLXXIII, No. 18, p. 659.
15. National Assoc. Study & Prev. Tuberculosis, Tuberculosis Directory 1911, p. 69.
16. Bureau of Census U. S. A. 1914—"The Insane and Feeble-Minded in Institutions," pp. 62-63.
17. Psych. Wochenschr. 1899, Halle No. 1799, p. 160.

Medicolegal Notes.

Malpractice—Insufficient Evidence of Negligence.—In an action for malpractice consisting of performing an operation for appendicitis and diseased ovary while the plaintiff was pregnant there was no evidence that the defendants were incompetent or unskillful surgeons, nor was there any claim that the operation itself was not performed in a skillful and proper manner. The charge was that the defendants negligently advised an operation. In this kind of a case the plaintiff must not only prove that the operation was unnecessary, but also that it was so palpably unnecessary that a surgeon of ordinary care and skill would not have advised it. If conditions were such as to lead surgeons of ordinary care and skill to think an operation was necessary, and the defendants, in the honest exercise of their best judgment, thought an operation was proper, then the defendants would not be liable even if it turned out afterwards that they were mistaken in their diagnosis. The burden was on the plaintiff to establish the negligence charged; hence it devolved upon her to show that the operation was one which surgeons of ordinary care and skill in the honest exercise of their best judgment would not have advised.

All the doctors who had seen the appendix and ovary which had been removed from the plaintiff united in saying that both were diseased, and all of them, some half a dozen or more, pronounced an operation upon a pregnant woman for their removal to be advisable and proper. The plaintiff introduced no testimony to show that conditions were not as the defendants said they were, and she did not deny that she told the defendants she had had several miscarriages. The evidence was held insufficient to take to the jury the question whether her condition was such that an ordinarily skillful surgeon would have known that an operation was not necessary.—Fausette v. Grim (Mo.), 186 S. W. 1177.

Qualification of Applicant for Examination for Certificate.—The Rhode Island Supreme Court holds that one who does not claim to be qualified to pass an examination by the state board of health as to his fitness to practice medicine, but claims the right to practice a new system of healing originated by himself (the defendant styled himself a Neuzopath), cannot question the constitutionality of the Rhode Island statute of 1909, which requires an applicant for examination to be a graduate of a medical school, on the ground that such provision excludes persons qualified in other respects to pass an examination. While the practice of medicine was in the beginning empirical, and while different schools still differ as to proper treatment for diseases, the profession has in the course of its years of practice acquired a large fund of exact knowledge on the subject of the human body and of healing agencies, so that it is so improbable that one who is not a graduate of a medical college could discover an entirely new system of healing unknown to any student that the provision of the statute, which impliedly excludes the practice of a system of medicine not taught in any medical school, cannot be held contrary to the constitution that a person shall not be deprived of his liberty or property without due process of law, on the ground that it is not reasonable to require such qualification for applicants.—State v. Heffernan (R. I.), 100 Atl. 55.

Military Medicine.

SOME REFLECTIONS ON THE SURGERY OF WAR, VIEWED AFTER THREE YEARS.

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THE following desultory remarks are offered to the men who are to take the field and have so far remained in the United States, far from the centers of action. It will be evident that what is to follow is merely a very incomplete summary of the present surgical situation, but it may in a few words give a general idea of practice at the front.

The surgery of warfare so greatly differs from what surgeons have been used to that it was at first a surprise to all to encounter so great a number of cases that civil practice had insufficiently known. Unquestionably the great surgical principles remain unchanged, but the very nature of the wounds of warfare, the reactions of the injured, and the surroundings in general, created absolutely new conditions for which adaptation was necessary. But this requisite adaptation rapidly took place, and a new war surgery has resulted, doing away with all the theories of gunshot wounds formulated as a consequence of the Russo-Japanese and Balkan wars.

The first fact which has been acquired is that most wounds or injuries are due to rifle bullets, grenades, bursting shell, etc., and that bayonet wounds are very rare. In some of my lecture notes, published in the *Boston Medical and Surgical Journal* and in the *New York Medical Journal* at the beginning of the war, I at the time prognosticated that such would be the case, because fighting with bayonets in hand-to-hand struggles would be limited in extent, and also because a bayonet wound would be more likely to be driven home in the abdomen or thorax, thus wounding the important structures and blood vessels particularly, with instantly fatal results, and such has been the case, with, of course, some few exceptions, particularly so far as the limbs are concerned.

Another point to which attention should be called is the almost invariable infection of wounds. *Every wound, with the exception of a "seton shot," must be looked upon as infected from the start.* A rise in temperature will be present within a few hours after the injury, the index of a commencing septic process. The etiological factors of wound infection in war are legion, but injuries resulting from a spent bullet or bursting shell are invariably soiled with earth and bits of clothing, the latter containing in its meshes numbers of anaerobic bacteria, the former containing the tetanus bacillus.

Very frequently the medical post on the firing line is so encumbered during action that only summary attention can be given to many injuries, while the transport of the injured in such great numbers, often under the most adverse conditions, is among the multiple but unfortunately unavoidable causes favoring infection.

Within a few days, not infrequently within twenty-four hours of proper treatment at a hospital or ambulance at the rear, a rapid improvement becomes visible in many severely injured. After a few days of rest and calm the temperature reaches the normal, and for this reason it is incumbent for the surgeons at the front to get their wounded to the rear in all cases where the patient will be able to bear the transportation.

It may be said in a general way that wounds in warfare suppurate until their complete cicatrization, regardless of the most minute aseptic and antiseptic treatment. The causes are the very nature of the injury, in the first place. The entrance and exit openings of a bullet which has gone through a limb have a decided tendency to close, often within a day or two after receipt of the injury, while the tract still contains foreign bodies of all sorts, particularly bits of clothing. If the bone has been injured, splinters will be present in the traumatic focus, and those detached from the periosteum will act as foreign bodies and increase the progress of infection.

Bullets and pieces of shell or shrapnel shot frequently become encysted without producing any disorders if they do not involve a nerve trunk or large blood-vessel. But with the exception of bullets these foreign bodies practically always carry dirt and bits of clothing into the wound, and these cannot be diagnosed, but it must be taken for granted that they are there. Therefore, *every* wound must be freely opened, exposed, and all foreign bodies removed.

Besides projectiles, one often finds other foreign bodies in the wound, such as buttons; and I know of a case of a large abscess on the thigh from which, after incision, the remains of the soldier's watch were removed.

Given these septic lesions, it is evident that antisepsis is to be relied upon much more than in civil practice. Carbolic acid is an excellent antiseptic, but has now been given up, very largely on account of poisoning, which was particularly noted by English and Canadian surgeons. Dakin's solution is of value, and should be employed in spite of much adverse criticism to which it has, and I think most unjustly, been subjected.

I am of the opinion that ether is a very superior antiseptic, and its use in peritonitis and large injuries to the joints and limbs, I can confidently recommend. It is indicated in vast cavities which are not easily drained, such, for example, as compound fractures of the thigh. Space does not permit me to consider many other excellent antiseptics, but I would particularly mention irrigation with a 1:200,000 silver nitrate solution according to the method of Denyze, when disinfection combined with stimulating action is required.

Correct statistics can only be made after the war is over, but certain facts are nevertheless striking. Unquestionably vast fracture wounds are the most common, and it is also evident that since the use of Adrien's metal helmet injuries of the skull and brain have decreased quite notably.

In order of frequency, fractures of the thigh come first, after which come those of the leg and humerus. I am also of the opinion that fractures of the leg more frequently escape the effects of conservative treatment and necessitate amputation,

and after them come fractures of the thigh. Fractures of the humerus seem generally to consolidate quickly after proper immobilization has been obtained.

Open fractures of the femur always seem the most serious at first, because the vast wound is usually accompanied by a focus difficult to drain, but if muscular contraction is overcome, and carefully guarded against, the prognoses in many cases will not prove to be as bad as when the case was first seen. On the whole, amputations of the thigh have not been considerable during the war.

After free exposure of the wound focus and removal of the bone splinters and foreign bodies, if the suppuration is free and the fracture easy to keep reduced, some simple splint may be all that is required in *some* cases, but the best results are unquestionably obtained by extension apparatuses. Of course, when the wound needs frequent daily dressing. the plaster-of-Paris collar splints, with galvanized-tin joining brackets, are the only type to be employed.

When the suppuration continues, and shows no inclination to diminish in infected cases, with a progressive decline of the patient's general health from the sepsis, the question of amputation comes up for consideration. It is better to be conservative in regard to removing a limb, and it is better to temporize within the limits of safety, because we have all seen cases in which amputation was judged necessary by some, but the patients recovered with their limbs, although not in perfect condition, still with a consolidation that was quite acceptable.

Wounds of the thorax and abdomen, naturally penetrating ones, require more space than I can give, but I may say that, contrary to what was thought at the beginning of this war, most surgeons are now convinced that when one can operate in proper surroundings a laparotomy should be done at once, even in an ambulance behind the line, and results have justified this conclusion. Penetrating wounds of the thorax involving the heart or lung constitute a subject too long to be discussed, but I would say that at the ambulance, after cleaning the surrounding skin, a very tight binder should be applied, morphine given to ease the dyspnea, and the case then watched for further developments.

It is astonishing how well a large percentage of thoracic wounds do. Empyema is very prone to occur, but resection of one or two ribs and pleurotomy have usually mastered the situation, even when it appeared desperate.

3, Rue Belot.

PARATYPHOID AT THE FRONT.

Since 1896, when Achard and Bensaude described a case of clinical enteric fever which showed an organism other than typhoid in the urine, paratyphoid fever, the name they gave to this new clinical entity, has been the subject of considerable study. Before the war, it has been estimated that it occurred in about three per cent. of all cases of the kind which were formerly diagnosed as typhoid. During the first part of the war, there were a large number of cases of paratyphoid B in Belgium and Northern France, later on the A type also became prevalent. The health reports from the Gallipoli campaign show a large prevalence of paratyphoid, also. The reports available from the German army and navy do not report paratyphoid separately, but give an incidence of typhoid fever in the army of 5.6 per 1,000 and in the navy of 0.17 per 1,000.

The importance then of a complete knowledge of this disease can hardly be questioned. The Goulstonian lectures, delivered before the Royal College of Physicians of London by Dr. C. H. Miller (the *Lancet*, May 19 and June 2, 1917) are singularly appropriate, giving as they do an elaborate survey of this disease. Dr. Miller describes eight types of it: (1) the typhoid type, which is the most common; (2) the dysenteric type; (3) the biliary type; (4) the nephritic type; (5) the "rheumatic" type; (6) the respiratory type; (7) the influenzal type, and (8) the septicemic type. It seems probable that, as in so many other instances in the early history of a disease, we have here too great a tendency to classification; probably the future will see described only one kind of paratyphoid with a various symptomatology and numerous complications.

We can, of course, touch only upon the high lights of Dr. Miller's treatise. He considers the subject quite exhaustively, not from a didactic standpoint, but in the light of clinical experience obtained at the front, having been a Major in the Royal Army Medical Corps. His observations were made at the British Red Cross Hospital, Netley, where patients are received from every front. An interesting fact was that seldom were they admitted with a diagnosis of enteric; their symptoms began either a few days before or a few days after admission. "Men who have been buried, or gassed, or who had trench feet or wounds of the chest seemed particularly liable to contract the infection."

Miller not only describes eight varieties of the disease himself, but he expressly states that there are probably other kinds which other observers have seen and says that these must be added to his account before we have anything like a complete description of the disease. Paratyphoid fever is a great imitator of other diseases and it also seems to have the faculty of rendering active in an individual other diseases which had been for the time being latent, such as rheumatism, tuberculosis, and the like.

In conclusion, Miller gives it as his opinion that paratyphoid fever, frequent as it has been, is going to increase, and, therefore, inoculation against it is imperative. A strictly hygienic handling of the cases themselves is taken for granted. There is a tendency at the front at present to regard every case of unexplained pyrexia as paratyphoid; that is an extreme state of affairs, but, on the other hand, undoubtedly many cases in the so-called epidemics of influenza or gastric catarrh should be carefully scrutinized lest they should prove to be paratyphoid.

LETTERS FROM AN M. M. R. C.

It is somewhat a shock for a man who has been brought up in polite surroundings to have his first introduction to regimental life made at noontime mess—or any other for that matter. His mind gropes for something to liken it to, and the nearest approach would be the remembrance of witnessing convicts eating in prison or perhaps a badly run boarding school with the masters out of the room. The utensils used at table consist of a large enamel

cup which is used for either lemonade, coffee, or iced tea as the case may be; then there is an enameled pie plate on which your food is dished in the kitchen and placed before you, and the drink, whatever it is, is placed in large enamel pitchers on each table, and those in between find their time kept busy passing such things that are yelled for in every form of military intonation. Quite a number of those in camp are doctors who served recently on the Mexican border attached to some State militia. Being on the Medical Reserve Corps, they are obliged to go through the same training as the rest. Among the others we find the doctors we are most interested in—those who have just come from private practice for whose instruction these letters are particularly written. These men represent the elderly men of the barracks. Their ages run from forty to fifty-five years. To them this is all new life and experience. They are the ones who for the most part answered the call for purely patriotic reasons. There are a good many stories of more or less pathos of these doctors who have come together to help their country. Many have left behind motherless children of tender years and no relatives to look after them. As a whole these men are giving their entire careers freely to the Government to do as it sees fit with.

As to habits, there is no attempt made to evade the letter of the law, and I doubt that a single officer can be found who has had a single drink of alcohol since he entered training camp. The subject is not mentioned. In the middle of a long hike or drill, no one says: "Oh, how I'd like a rickey," but instead, "I could drink a bucket of lemonade!" This is not the exceptional case in one barrack. It is the rule of all. To those doctors who are accustomed to daily tippling I should without hesitation recommend them to join at once. It need not be called "swearing off." It's an impossibility to get it as long as you wear the uniform and you have to wear the uniform if you are in service.

The uniform and equipment kit will cost nearer three hundred dollars than two hundred. This must come out of one's own pocket and must be bought before one goes on active service. The regulation equipment would be considerably cheaper if one could buy these things from the commissary department, but it is impossible, for this department has run out of many of its supplies. This drives the officer to purchase elsewhere, paying three times what it would cost if purchased from the Government. For instance, woolen socks which the quartermaster sells at thirteen cents a pair are often out of stock and the soldier has to pay fifty cents for socks at the post canteen. Regulation shirts should be about $2.50 at quartermaster's. The same are $4.50 when bought at canteen.

To go back to the new arrival in the medical officers training camp. You will see in your pamphlet that you should appear before the adjutant with "side arms." Don't do it unless you wish to cause a burst of unrestrained merriment among your future messmates. Given a hot day (and every day is a sweltering one now in army encampments), the officer's uniform blouse buttoned tightly up to neck and a heavy handbag that you have to tote—now add to this a sword which is doing its best to trip you up and an army revolver. Among the thirty thousand in camp you will be the only "real guy" and it will never be forgotten! You will notice as soon as you arrive that no one except yourself wears the regulation army coat or blouse that is worn in the cities. In camp you can wear only the regulation army cotton shirt. You do not wear the insignia of your rank. On the collar of the shirt the only thing necessary is the caduceus and the U.S.R.—the caduceus on left lapel and U. S. R. on right. The cap with visor worn in city is never used in camp, but always the felt hat. Get this the regulation shade of brown—not a green or pearl gray as you may be shown. The necessary equipment will be taken up in another letter.

As to the rule of not wearing your insignia of rank while in training camp, although there is no law against it, it is considered very poor form. To all intents and purposes while you are in training camp you are all of the same rank. The lieutenant gets as much consideration as the major who sleeps in the cot alongside of him. If the major snores too loudly at night the lieutenant alongside is quite within his rights if he shakes him. The captain of your company may only be rated as lieutenant in the army. He, nevertheless, is your captain and you have to obey him as he does his major. Do not think that exalted rank will give you any leeway. Every man is judged on his own merits of the present. No one discusses his practice or what an important person he was in his own home town. No one is pointed to as "There is so and so, the well known surgeon of so and so." The men all address each other as "Doctor" even when their military title is known. The war as it progresses in Europe is hardly ever spoken of by the men. They all look confidently forward to taking active part in either France or Russia. The idea of being stationed at home or sent to the Philippines to relieve others from duty is loathsome and is at once dismissed as an impossibility of injustice at the hand of the Government. Many men who were connected with hospital units before they came to training camp now regret the step and are doing their best to free themselves. They rightly feel that they would rather work directly under the War Department of the United States Army than indirectly through a hospital unit. There is no doubt but this is the best thing to do for the man wishing for advancement.

Good Health of United States Troops in France.—A cablegram from the American Training Camp in France to the Associated Press states that the hard training work for the trenches is proving a veritable tonic to the American expeditionary force. The percentage of illness for the entire force is only 2½ per cent. as against an average of 5 per cent. in army posts in the United States. Nearly all sickness is made up of light cases of mumps, measles, and colds. This is very gratifying in view of the fact that the medical staff is shorthanded at the present time. It is stated that the American army has only one doctor and eleven medical corps men to each 800 soldiers. The French have two doctors and thirty-seven medical corps men to the same number of soldiers and find this staff none too large.

French Hospitals Turned Over to Americans.—

The French authorities have turned over two large military hospitals and a large medical depot to the Medical Corps of the United States Army. American base hospital units are maintaining these institutions. The entire American expeditionary force has been inoculated against typhoid and paratyphoid. A large field laboratory is in the process of construction near the American training camp.

Air Raid on French Hospital.—During a German air raid recently four bombs were dropped on a Red Cross Hospital, killing two doctors, a chemist, and a male nurse. A third doctor and several patients were injured. Two women were also injured in this raid. It is said that the airplanes were flying so low that the pilots could not possibly fail to distinguish the red cross painted on the roof of the hospital.

Changes in Defense Council's Medical Board.—The Council of National Defense announces that more than one-half of the original membership of the general medical board of the Council of National Defense have entered the service of the Army or Navy, and are now engaged in active work for one of the military departments, either abroad or in the United States. This has resulted in a number of changes in the membership of the board. The members who have been called to active duty in the offices of the Surgeon Generals of the Army and Navy include: Drs. William J. Mayo, Rochester; Victor C. Vaughan, Ann Arbor; William H. Welch, Baltimore; Theodore C. Janeway, Baltimore; W. H. G. Logan, Washington; Edward Martin, Philadelphia; Charles H. Mayo, Rochester; William F. Snow, New York; Stuart McGuire, Richmond; Winford Smith, Baltimore; William C. Woodward, Washington. The following are in service in France or elsewhere: Drs. Frederic A. Besley, Chicago; George E. Brewer, New York City; George W. Crile, Cleveland; John M. T. Finney, Baltimore; Joseph Marshall Flint, New Haven; Charles H. Peck, New York City; Richard P. Strong, Boston; William S. Thayer, Baltimore; George Walker, Baltimore.

Reorganization of the Medical Service in the Cuban Army.—Owing to the declaration of war against Germany, Cuba has decided to increase her army to 17,000 men. The medical service is being reorganized, and one colonel and twenty more officers of lesser rank will be commissioned.

New Bureau of Sanitary Service.—The War Council of the American Red Cross has established a Bureau of Sanitary Service under the direction of Dr. W. H. Frost. An appropriation of $800,000 has been made for the use of the bureau. This step has been taken in order to meet the new conditions which will arise as a consequence of bringing together so many men as will be mobilized throughout the country. The Bureau of Sanitary Service will supervise and aid in such operations as will tend to make health conditions about the camps as nearly ideal as possible. Increased forces will be provided for milk inspection, war will be made on malaria-carrying mosquitos, and a radius of from fifteen to sixty square miles outside of camps will be policed for the protection of the health of the men. Sanitary units will be furnished to the areas upon the request of the civil authorities.

Canadian Hospital Ship on Rocks.—A Canadian hospital ship with 546 wounded soldiers on board was stranded during a fog in the harbor mouth off Halifax. All the wounded soldiers were safely transferred to the Pier Hospital in Halifax Harbor.

National Surgical Dressings Committee Becomes Auxiliary of American Red Cross.—The Red Cross War Council announces that the National Surgical Dressings Committee has become an auxiliary of the American Red Cross. This arrangement has been perfected after protracted negotiations between Mrs. Mary Hatch Willard, the organizer and chairman of the Surgical Dressings Committee, and Judge Robert S. Lovett, chairman of the Red Cross Committee on Co-operation. It is believed that this is the precursor whereby other war relief organizations may become allies of the Red Cross. The arrangement with the Red Cross provides that the Surgical Dressings Committee shall retain its name and organization and carry on its present work in the United States as a national auxiliary of the Red Cross organization.

Committee of Women Physicians to Assist in War Work.—The Council of National Defense has added to the general medical board a committee of women physicians. It is felt that women physicians can accomplish much in the way of anesthesia, laboratory work, and sanitation. Plans are now being formulated under which the new committee is to act. The committee appointed consists of Dr. Rosalie Slaughter Morton of New York, chairman, and Drs. Caroline M. Purnell of Philadelphia, Caroline Towles of Baltimore, Florence N. Ward of San Francisco, Mary Lapham of Highlands, N. C., Cornelia C. Brant of Brooklyn, and Marion Craig Potter of Rochester, N. Y.

Red Cross Hospital for Navy.—The American Red Cross has established at Philadelphia, for the use of the Navy at the present time, the first general Red Cross Hospital in this country. Philadelphia has offered the Medico-Chirurgical Hospital to the Red Cross for an indefinite length of time without rental. The Red Cross has undertaken to alter and reconstruct the building and has appropriated $20,000 for its current expenses and maintenance. The institution contains about 250 beds, and will be known as Red Cross General Hospital, No. 1.

Rockefeller War Hospital Opened.—The Rockefeller Institute made an official visit of the Surgeon General and the head of the Medical Bureau of the Council of National Defense, on August 12, the occasion for the formal announcement of the opening of the institute's war demonstration hospital. In addition to Surgeon-General Gorgas and Dr. Martin and their staffs, a large number of army and medical reserve officers, Colonel Goodwin, medical member of the British War Mission, and representatives of the French Medical Service were present. Dr. Flexner told what the institute hoped to contribute to the American Service and other experts gave demonstrations in the treatment of wounds by the Carrel-Dakin method and the methods of treating "gassed" soldiers. On this occasion it was also stated that the serum for gas gangrene, the discovery of which was announced some time ago, had reached a stage of development where it was considered safe to use it on humans. The visiting surgeons also inspected the Columbia War Hospital.

APPLICATION FOR APPOINTMENT IN THE MEDICAL RESERVE CORPS, UNITED STATES ARMY

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....., 191

To the Surgeon General, U. S. Army,
Washington, D. C.

Sir:

I hereby make application to be examined for appointment in the Medical Reserve Corps, U. S. Army, and inclose testimonials as to my character and habits.

I certify that to the best of my knowledge and belief I am laboring under no mental or physical infirmity or disability which can interfere with the efficient discharge of any duty which may be required of me if appointed in the Medical Reserve Corps, U. S. Army, and that the answers given to the interrogatories below are true and correct in every respect.

I furthermore state my willingness to proceed to such point for examination as may be designated by the Surgeon General, with the understanding that the journey entailed thereby must be made at my own expense.

INTERROGATORIES

Where were you born? (Give State and city or county; if foreign born, give country.).....

.....

What is your name *in full* (including your full middle name):.....

What was the date of your birth?.....

When and where were you naturalized? (For applicants of alien birth only).....

Are you married or single?.....Have you any minor children; if so, how many?.....

What is your height in inches?.....Your weight, in pounds?.....

Give the nature and dates of all serious sicknesses and injuries which you have suffered:.....

.....

If either parent, or brother, or sister has died, state cause and age in each case:.....

Do you use intoxicating liquors or narcotics; if so, to what extent?.....

Have you found your health or habits to interfere with your success in civil life?.....

What academy, high school, college, or university have you attended? State periods of attendance from year to year, and whether you were graduated, giving date or dates of graduation:.....

.....

Name any other educational advantage you have had, such as private tuition, foreign travel, etc.:.....

.....

Give all literary or scientific degrees you have taken, if any, names of institutions granting them, and dates:.....

With what ancient or modern languages or branches of science are you acquainted?.....

How many courses of lectures have you attended? Names of colleges and dates:.....

.....

When and where were you graduated in medicine?.....

(Fill this out and send it to the Surgeon General, U. S. Army, Washington, D. C.)

Have you been before a State Examining Board? If so, state when, where, and with what result:*.....

.....

Are you a member of any State medical society? If so, give its name.....

Have you had service in a hospital? If so, state where and in what capacity, giving inclusive dates of each kind of service: .....

What clinical experience have you had in dispensary or private practice?.....

.....

Have you paid particular attention to any specialty in medicine; if so, what branch?.....

What opportunities for instruction or practice in operative surgery have you had?.....

.....

Have you previously been an applicant for entry into the United States service? If so, state when, where, and with what result (if rejected, state why).....

Are you a member of the organized militia? If so, state with what organization and in what capacity:

.....

Have you been in the military or naval service of the United States as cadet or otherwise? If so, give inclusive dates of service with each organization, designating it.....

What occupation, if any, have you followed other than that of student or practitioner? .....

What is your present post-office address?.....

What is your permanent residence?.....

Signature.....

The correctness of all the statements made above was subscribed and sworn to by the applicant before me this.....day of.....A.D. 191

[SEAL] .....

*This application must be accompanied by a certificate from the proper official that the applicant is duly registered to practise medicine in the State in which he resides.

Form 149
W. D. S. G. O.
(Revised May 3, 1917)

.....*M.D.*

OF

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.....*191*

APPLICATION FOR APPOINTMENT

IN THE

MEDICAL RESERVE CORPS,
U. S. ARMY

.....*Inclosures*

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

PUBLISHERS

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See fourth page following reading matter for Rates of Subscription and Information for Contributors and Subscribers.

New York, August 18, 1917.

THE CALL OF DUTY.

THE United States Army is still in great need of volunteers for the medical corps, not more than half of the number that will eventually be required having yet offered their services. This is no reproach to the medical profession of America, for it has already given of itself to our country in greater proportion than any other professional body; fully 10 per cent. of the practising physicians of service age have joined the forces, and are hard at work in the training camps or are even now on active service in France or helping to supply the deficiency in the military hospitals in England and other of the allied countries.

But of us much more than our share is demanded. The country needs 20 per cent. of its doctors between the ages of 25 and 55 years, and it must have them, at whatever sacrifice to their practice and their comfort. It will get them, and without the conscription which has been suggested as a possible eventuality, but naturally the process is a slow one. Domestic and social obligations cannot be put aside at a day's notice, and the man with a family must see to their provision before he can give himself to the cause. It is getting near the time, however, when this step must be taken, and the sooner now it is done the better. The process is a simple one; it is only necessary to fill out the application blank to be found on pages 287 and 288 of this issue of the MEDICAL RECORD and to send it to the Surgeon General, U. S. Army, Washington, D. C. The reply from the Surgeon General, with full directions regarding the next thing to be done, will be received in due time. Send in the application at the earliest possible moment, and when once it is sent be ready to accept your commission and act upon your orders as soon as they are received.

THE "PARESIS" OF GUY DE MAUPASSANT.

THE virus of syphilis is one poison which is not known to possess the power of stimulating vital processes in minute quantities. This should be due to the fact that it acts rather on the more primitive tissues than on the highly differentiated elements. In the cortical lesions of paresis there are plenty of evidences of cerebral excitation, euphoria, etc., but nothing which corresponds to a genuine increase of nervous force. Many writers, artists, and others possessing creative faculty, have become paretics, but so far as we know none ever did better work, or even average work, after the début of his disease.

In *L'Union Médicale du Canada* for July 1, Professor Le Sage endeavors to prove that Guy de Maupassant, born in 1850, was already in the grip of paresis in 1880, and that after this period he produced his masterpieces. For the next ten years his work showed a comparatively sane mind corresponding with his excellent physique. His heredity was poor, and as a young man he was neurasthenic, but served for a time in the Franco-German war. During the period 1871-1880 he wrote himself into success, artistic and personal. He was compared in love affairs to Don Juan. He abused eating and drinking, although his resort to narcotics seems to have been due at first to migraine. For this he tried everything—ether, morphine, chloral, etc. Later he did some of his work on these stimulants. Yet during this period he was, as a rule, happy in comparison with the succeeding decade. He had always shown a cyclothymic tendency, and as years advanced his periods of depression increased in frequency and duration. During these periods he felt a sense of helplessness and adverse fate. His sadness seems to have come to dominate his personality. He appears to have become obsessed by death, fear, and other painful concepts, much as was Poe.

Le Sage bases his paresis theory on pupillary anomalies, speech disturbances, and amnesia which developed midway in the 80's. A study of the evidence shows that this is scanty and inconclusive. He suffered severely from migraine, as did his mother, and these symptoms stood doubtless in relation to his migrainous periods. This affection became interwoven with his personality. When suffering he would answer queries as to his trouble by saying, "It is nothing; it is migraine." He, however, left some vivid accounts of his sufferings. At the close of this period—the 80's—he developed a spirit of litigation and marked hypochondria. His solicitude about the state of his various organs, his so-called autoscopic tendency, is certainly very unlike paresis. Hallucinations of special sense also developed. A paresis of the levator palpebrarum of the right side, a weakness of the writing arm, are regarded as suspicious by Le Sage, but these often go with severe migraine. Attacks of transient amaurosis were probably due to the teichopsia so often seen with migraine. De Maupassant himself blamed many of his symptoms on large doses of antipyrin taken for the head pains. Before his death, in 1893, he suffered a physical breakdown. His handwriting became much altered, showing the presence of language disturbances. He tried suicide, and, when interrupted, his strength was so great that three men were needed to hold him.

Death occurred in a sanatorium after a series of apoplectiform attacks.

Le Sage, by a somewhat artificial grouping of the symptoms, seeks to demonstrate that the case was from first to last paresis. Even the migraine was of specific origin. He infers that the victim wrote 27 volumes, including his masterpieces, while in the grip of paresis; and even that the very excellence and quality of the work were due to the disease. He believes that in the absence of his disease and of his abuse of alcohol, drugs, etc., his literary productions would have shown a marked contrast; that he would have shown optimism, different motivations, and greater delicacy.

We hardly think that any alienist would agree with this diagnosis of paresis, but the subject is of great interest because it could lead to some light on the possibility that in incipient paresis there is a period of actual increase of mental activity due to the stimulus of disease toxins. So far as we know, such a phase has never been recognized.

MORTALITY IN THE CITY OF LAS PALMAS.

An editorial notice which covered the presence of alcoholism and syphilis in Grand Canary Island was published recently in the Medical Record. In the same survey, which appeared serially in the *Gaceta Médica Catalana*, we read in the issue of May 31 an account of the mortality of Las Palmas during the period 1908-1911 inclusive. An opportunity is thereby afforded for a study of the probable influence of these race poisons on the Canarians. The population of the city is placed at about 64,000, and the death rate is seen to be between 17 and 18 per 1000 inhabitants, which is very favorable. The chief item of mortality is in the first two years of life. Deaths from congenital debility and vices of conformation number 299, while bowel troubles reach the sum of 543. Adding these figures, we obtain a total of 842 for four years, or 210 annually, from 5 to 6 per cent. of all deaths. Still births are not mentioned. In general, there is no means for computing the influence of the race poisons on infantile mortality. Pneumonia claims 111 victims annually, and pulmonary tuberculosis 93. Deaths from malignant tumors average about 30 annually, while 79 die every year from organic heart disease and 73 from "congestion, hemorrhage, and softening of the brain." Not readily intelligible are 68 annual deaths from "simple meningitis." Whether these figures affecting the heart and brain are high for a syphilitic and alcohol-ridden city must be left to the expert. Not a single death is set down outright to alcoholism, although 12 or 13 annual victims of syphilis are recognized. Aortitis, aneurysm, etc., may be concealed among "deaths from other causes," which in 1910 and 1911 averaged 75 a year.

There can be no doubt concerning the infrequency of certain organic diseases attributed to racial poisons, for cirrhosis of the liver claims but 7 or 8 victims annually, and nephritis in all its forms but 21. In the years 1910-1911 there were but 6 suicides, and during the same period 26 "violent deaths." As no fatal accidents are mentioned, we infer that such items are placed under the latter heading. The low incidence of infectious diseases is worthy of mention. Typhoid claims about 21 victims annually and diphtheria 16 to 17. Pertussis occurs apparently only in epidemics—in 3 of the 4 years there were no deaths from this cause. Grippe and malaria are almost unknown as causes of death, and there was no smallpox during this period. In 1911 there were 23 deaths from puerperal sepsis.

All in all, we must conclude that Las Palmas is a fairly healthy city, much more so, in fact, than the majority of towns in its latitude. The figures make us somewhat skeptical as to the ravages of alcohol and syphilis, which no doubt prevail largely among the floating population. In the one item of tuberculosis, especially, the latter must also be borne in mind, to say nothing of other chronic maladies, for Las Palmas has always been known as a health resort.

The Football Problem in Brazil.

In the temperate regions of the North, the football problem deals chiefly with the death and disability which follow in the wake of the game. In Brazil, on the contrary, the problem deals with the possible danger from muscular overstrain in the undeveloped youth (before the age of 18). The medical literature on the subject is extensive, and the doctors take sides on the subject. In the *Brazil-Medico* for April 28, Autran dwells on the rapid generation of fatigue toxins and their possible deleterious action on the growing organism. Metabolism may be greatly disordered, in that excessive combustion deprives the subject of reserve protein, so that he is less able to fight disease. Metabolism in a growing boy differs necessarily from that of the adult. Assimilation is a function superior to disassimilation. That which should serve for growth and nutrition—for assimilation, in other words—is burned up with poisonous by-products and lessened reserves. This special problem does not exist in the North, because football is but one of a number of violent sports, many of which are not played much in Brazil. The same reasoning would apply to cross-country running, lacrosse, rowing, etc. The viewpoint of the author seems entirely theoretical. He uses many neat expressions, such as the "passing of physiological into pathological fatigue," but does not cite a single fact to bear out any of his contentions. He lays down the maxim that from 13 to 18 the boy's exercises should be limited to formal gymnastics. After that period he may engage in football "in moderation" and "within physiological limits."

The Founder of Serotherapy.

The death of Behring appears to have started a mild controversy over the actual founder of serotherapy. It has usually been accepted that Behring had no competitor for this claim, with the possible exception of Roux. But in the *Gaceta Médica Catalana* for May 31 Chabás attempts to show that

Ferrán, the Spanish bacteriologist, is entitled to the honor. As early as 1884 he discovered his anti-cholera serum and began to employ it experimentally and therapeutically. In 1892, considerably in advance of the period of introduction of diphtheria antitoxin, Ferrán received full credit for the paternity of the idea of serotherapy from German authorities. A brief review of that case shows quite clearly that Ferrán worked entirely on prophylactic lines, and that his serum from cholera convalescents was used to immunize healthy subjects. He therefore sought to use only natural immune bodies, which, of course, cannot be prepared at will. According to Chabás, however, Ferrán was active in other directions as a pioneer of serotherapy, so that his claims in that direction are more than justified. Thus he made more or less extensive researches in the production and use of vaccines or serums for the prevention and treatment of diphtheria, bubonic plague, typhoid and typhus fevers, and various other infectious diseases.

Diagnosis of Scabies by the General Practitioner.

Mild and mildest scabies is readily overlooked by the general practitioner. Severe cases, because of the coexistence of itching and contagious pustules, are often recognized, especially as they are apt to occur in certain social strata or groups. The diagnosis, however, is little better than a guess, as actual demonstration of burrows, ova, feces, and the tick itself, does not occur. Sabouraud, the distinguished dermatologist, writing in *La Presse Médicale* for June 21, makes it plain that the non-specialist must unlearn several beliefs or axioms which animate him. Scabies is not a venereal disease *per se*, although it is a "cubiculary" affection, hence incidentally venereal. The reason that it is a disease acquired from sleeping with others in beds is simple—the parasite is a night walker, or perhaps better evening walker. Itching is comparatively mild in the day time, and other methods of contagion, however numerous, are almost negligible in practice. Scabies is a disease of the younger portion of the populace. The infant and child and their elders share beds with others for economic reasons. Another maxim of the general practitioner is that history or evidence of contagion will clear up a diagnosis. So he asks, "Have you slept with some one who scratched?" This is practical, but with limitations. The victim may have contracted the disease by occupying a hotel bed after another guest, the sheets not having been changed in the interim. The general practitioner further believes much in certain localisations as hands and fingers, feet (in infants), penis, and female breast. But this distribution refers really to the draped figure. Strip the patient, and other localities will be not less in evidence, notably the axillæ and buttocks. The general practitioner further looks at the webs and insides of the fingers first, the specialist, on the other hand, guided by experience, first looks on the wrist folds. Hence it is not that the general practitioner must unlearn anything outright; he must only learn that his precepts are incomplete, and may cause him to miss a diagnosis now and then.

News of the Week.

New Hospital Plans.—Plans for a new building for the Knickerbocker Hospital, formerly known as the J. Hood Wright Hospital, have been filed. The new hospital will occupy the entire block front on the west side of Convent Avenue, between One Hundred and Thirtieth and One Hundred and Thirty-first Streets. The main building will be six stories in height and will cost approximately $350,000. It will contain 200 private rooms and ward rooms for the accommodation of an additional 200 patients.

Warning Against Court-Plaster.—The Department of Health of New York City has issued a warning against the use of any but standard grades of court-plaster. The research laboratories of the department have been making examinations of court-plaster, and while they have as yet found no germs of tetanus in most of the specimens, they believe a warning is justified. The public is particularly warned against the purchasing of small packages of court-plaster from street peddlers.

Nutrition Clinics.—The New York Health Department, following the lead of Dr. William P. Emerson of Boston, who has established a clinic for the treatment of cases of defective nutrition at the Massachusetts General Hospital, has established five clinics in New York City, which are intended mainly for the treatment and supervision of the large number of school children who have shown marked evidence of defective nutrition. A large part of the work of these clinics will be educational in nature. It is probable that classes of instruction modeled on the tuberculosis classes will be organized as a part of this work. These clinics will be held at Bellevue, Cornell, and the Post-Graduate hospitals and at Bowling Green, 98 Washington Street, and the Brooklyn Association for Improving the Condition of the Poor, 104 Livingston Street.

Health Department Will Appeal Patent Medicine Case.—In the case of a patent medicine interest against the New York City Health Department, the Appellate Division of the Supreme Court has declared invalid the so-called "formula disclosure ordinance." The principal argument advanced by the patent medicine interests was the claim of "taking private property without due process of law." The Health Department will appeal the case.

Major Joel E. Goldthwaite of Boston, who has been visiting the military hospitals of France and England for the purpose of studying methods of treating wounds, has returned to this country.

Dr. Thomas F. Erdman has tendered his resignation as superintendent of the Norwich (Conn.) Hospital for the Insane.

Memorial Hospital Planned.—Application for a charter is soon to be made for a hospital to be built as a memorial to Carson C. Peck, vice-president of the F. W. Woolworth Company and owner of the Brooklyn *Times*, who died about two years ago. The hospital is to occupy a site bounded by Albany and Troy Avenues and Crown and Montgomery Streets, Brooklyn, and is to be known as the Carson C. Peck Memorial Hospital.

In Honor of Dr. Santos Fernandez.—On July 24, the seventieth birthday of Dr. Juan Santos Fer-

nandez, the Cuban ophthalmologist, there was held in his honor at the Havana Academy of Sciences, a joint meeting of twenty-seven different medical and literary societies. The president of each society made an address eulogizing the life and labor of Dr. Santos Fernandez, and a gold medal and diploma were given to him, the diploma being signed by all the chairmen of the different associations. The presentation was made by Dr. Carlos de la Torre, and Dr. Juan Santos Fernandez made an address of thanks.

The Fourth Cuban Medical Congress.—The Fourth Cuban Medical Congress will be held on December 16-22. The membership of the Congress is over 650 and it is hoped to raise it to more than 1,000. The Congress will have eight sections. The executive committee is composed as follows: *President*, Dr. Aristides Agramonte; *Vice-Presidents*, Drs. José A. Presno, Jorge Le Roy; G. Fernandez Abreu, Francisco Etchegoyen, M. Weiss, José A. Clark, A. Garcia Rivera, Manuel Altuna; *Secretary*, Dr. Francisco M. Fernandez; *Vice-Secretaries*, Drs. Julio Carrerá, Enrique Casuso, Ramiro Carbonell; L. F. Rodriguez Molina; *Treasurer*, Dr. José P. Alacán. The official subjects to be discussed are: "Arterial Tension"; "On Gastro-Intestinal Disturbances of Infancy;" "Gunshot Wounds of the Abdomen;" Gastro-Enterostomy in Gastric Ulcer;" "Obstetric Analgesia;" "School Hygiene in Cuba;" "Statistics on Mortality and Public Health;" "Composition of the Blood, Its Changes in Cuba;" "The Present Status of Cataract Operation;" "Conservative Surgery in Carcinoma of the Larynx;" "Relations Between the Mouth and the General Health;" "Can the Pharmacist Refuse to Dispense Any Prescription?" "Modifications Needed in the Inspection of Meats." Ten prizes are offered for competition on different subjects, pertaining chiefly to tropical matters. The executive committee, through the MEDICAL RECORD, is pleased to extend an invitation to any American doctors who may be able to visit Cuba during the time mentioned, to attend all the sessions and social meetings as guests of the Congress.

Specific Antipoliomyelitis Serum for Clinical Testing.—Dr. Horace Greeley, 140 Clinton Street, Brooklyn, N. Y., offers free of charge to the profession for clinical testing a limited amount of horse-serum from an animal immunized with cultures of five strains of the poliomyelitis organism obtained from the nerve centers of victims of last year's outbreak. The serum has been prepared with the same technique as is employed in the production of anti-meningococcus serum, so successfully used in cases of cerebrospinal meningitis, and it is hoped will prove effective in reducing the mortality and extent of paralysis in poliomyelitis. The serum will be supplied in vials of 25 c.c. and should be used on the day obtained, intraspinally. It is expected that full data regarding the course of a case, in which the serum is used, will be supplied. When desiring serum, a physician should either send a written request or call in person. Information in regard to cultures used in the preparation of the serum will be found in articles by Dr. Greeley published in the MEDICAL RECORD, January 13, 1917; *Journal of Laboratory and Clinical Medicine*, July, 1917; *Boston Medical and Surgical Journal*, April 12, 1917; *Long Island Medical Journal*, April, 1917; *Northwest Medicine*, May, 1917; *Southern Medical Journal*, August, 1917.

Licenses to Practice Medicine in Alabama.—Thirty-two out of forty-four applicants for medical licenses, who recently took the State Board examinations, have received licenses to practise medicine in Alabama.

Dysentery Epidemic in Germany.—A special cablegram to the New York *Sun* is authority for the statement that there is an epidemic of dysentery in Iserlohm, in the Rhenish Westphalian region. Several deaths are reported and many persons are ill. In Duisberg it is said that out of 292 cases there were 20 deaths. Similar reports published in Berlin declare that the dysentery rate in Berlin has reached a figure hitherto unknown. The prevalence of the disease is attributed to the shortage of food which leads people to eat doubtful substances.

Typhoid Among Interned Germans.—Two cases of typhoid fever have been reported among the interned German sailors at Gallop's Island, in Boston Harbor. The affected men have been removed to the marine hospital at Chelsea, 270 other Germans at the island have been inoculated against the disease, and all visiting privileges have been cancelled.

Salvarsan Bill Set Aside.—The Senate Patents Committee has decided to defer action on bills to commandeer German patents for the manufacture in this country of salvarsan.

Obituary Notes.—Dr. MICHAEL R. LADEN of Hartford, Conn., died on August 2, at St. Francis Hospital, as the result of being overcome by the heat. He was 47 years of age and was a graduate of New York University, in 1898.

Dr. HARRY WALLACE HASKELL, a graduate of New York University Medical College, in 1891, for twenty-five years a practising physician of Brooklyn, died at the home of his sister in that city, July 28, aged 52 years.

Dr. ELBERT CLARENCE DRAKE, a retired physician of Brooklyn, died August 2, at the age of 70 years.

Dr. WALTER D. GREENE, a graduate of the University of Buffalo, in 1876, died suddenly in Buffalo, N. Y., August 4, aged 64 years. He was formerly a resident of Starksboro, Vt., and for some years connected with the Board of Health of Buffalo.

Dr. THOMAS W. HANNON, a graduate of Bellevue Hospital Medical College, in 1891, died at his home in Hoosick Falls, Vt., August 1, aged 55 years.

Dr. THOMAS A. CHAPELL, retired, died in Jacksonville, Fla., from apoplexy, on July 29, aged 72 years. He formerly practiced his profession in Macon, Ga.

Dr. WARREN A. MAXFIELD, a graduate of Rush Medical College, in 1897, died at his home in Hudsonville, Mich., on July 31, aged 46 years.

Dr. JOHN B. DONNELLY, of Gardner, Mass., died of acute nephritis after an illness of several years, on August 2, aged 60 years. He was a graduate of Harvard University Medical College, in 1893 and formerly chief surgeon at the Henry Heywood Memorial Hospital.

Dr. CHARLES BOYD KELSEY died at his home in New York City, after a year's illness, on August 4, aged 67 years. He was a graduate of the College of Physicians and Surgeons, in 1873, and a member of the American Academy of Medicine. He was one of the first surgeons in this country to make a

specialty of rectal diseases, and for many years, until his health failed, was a practitioner and authority in proctological affections.

Dr. JAMES HENDERSON died of tuberculosis at the home of his parents in Toronto, Canada, on July 17. He was a graduate of Toronto University, in 1900. He formerly practiced medicine in Sudbury and Regina, Sask., and served in South Africa with the Canadian forces and with the expeditionary force at Kut-el-Amara in the present war.

Dr. HENRY EDWARD WAITE, a graduate of the Eclectic Medical College of the City of New York, a manufacturer of electrical apparatus, died at his summer home in Bethel Park, N. Y., July 26, aged 71 years. Dr. Waite formerly practiced medicine in Bridgeport, Conn., but moved to New York twenty-five years ago.

Dr. WILLIAM IZARD BULL, a graduate of the Medical College of South Carolina, and a surgeon in the Confederate Army during the Civil War, died at his home in Charleston, S. C., on July 29, aged 80 years.

Dr. ROBERT H. CARTER, a graduate of Louisville Medical College, in 1874, died at his home in Lynnville, Tenn., July 29, aged 70 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

THE RED CROSS AND THE ORDER OF ST. JOHN—THE LORD ROBERTS MEMORIAL WORKSHOP—GERMAN LOSSES.

LONDON, July 21, 1917.

THE Red Cross Society's organization is well up to date, as is also that of the Order of St. John. This is clear from a summary of work in Egypt, which has reached the headquarters of the joint war committee. Red Cross stores and comforts are now being delivered by the aerial service. An aeroplane leaves a point in the canal zone daily and carries such Red Cross comforts as fans, fly whisks, chocolate, gramophones, etc., to outlying medical units in the desert.

The memory of Lord Roberts is being appropriately honored to-day. On the suggestion of Lord Cheylesmore, contributions to the Lord Roberts memorial workshops are being added to. They provide training and employment for soldiers and sailors disabled in the war, and are of a scope which is continually extending. The craftsmanship practised in them is of high technical excellence and easily competes with trade productions. It is further of special interest as the production of heroes, many of whom have fallen under almost hopeless disabilities and apart from the assistance thus provided might have sunk into neglect and poverty. Not only do they become self-supporting individually, but the workshops quickly reach the stage when building and equipment suited to the use of maimed workmen are provided. This work well reflects Earl Roberts' practical sympathy with his men by whom he was always idolized.

To-day we are holding a collection in London and emblems are being sold by ladies; the emblems, which number seven millions, are in charge of Lady Warrender and a council. A garden fête is being held in Belgravia to-day in support of the movement, and to-morrow a silent tribute is to be given throughout the nation.

The awful ravages of war are illustrated by a computation of the German losses last year. At the end of 1916 Germany is said to have had a force of five and a half millions of all ranks, but not counting recruits. In the latter part of 1916 the Higher Command formed about 100 new battalions—not altogether fresh troops.

They were raised in different ways; in some districts a company of full war strength was formed of the ersatz (or replacing) battalion, and these were collected together to form new regiments—a regiment representing three battalions equal in full war strength to three thousand men. Some battalions were formed by taking a company from every infantry regiment in a great number of divisions, but these companies were often replaced by drafts from home depots. About thirty new divisions were thus raised by the end of 1916. The German system of recruiting before the war must be considered: By the law every male from 17 to 45 was liable for service in the active army, but his service did not actually begin until he was 20. At that age, if declared fit, he was passed to the depot of the unit to which he had been allotted. Thus a man born in March, 1894, was called a man of the 1914 class. The Germans began the war with their men of the 1913 class, 21 years old. In the years 1911, 1912, and 1913 the classes called up for service in the active army were respectively 563,024, 587,608, 587,888. But these do not represent all that were fit. Fifteen per cent. of the whole were pronounced fit, but were not required, and were posted to the reserve. Twenty-five per cent. were declared temporarily unfit and were put back for reexamination next year. Ten per cent. were said to be totally unfit and were excused from service. Of the three categories, if we take an average of 20 per cent., to represent those who under the stress of war could be called to the colors, it is possible to calculate the number of men who were called in 1914, 1915 and 1916. Allowances must be made for men called back for munitions, railway, and necessary home service work. Since the beginning of the war the Germans have put into the line the 1914, 1915, 1916, 1917, and some portions of 1918 classes, and they have called up a part of the 1919 class to the depots.

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 2, 1917.

1. When Is the Diagnosis of Tuberculosis without Sputum Justified? David R. Lyman.
2. Diagnosis of Tuberculosis in Children. Henry D. Chadwick and Roy Morgan.
3. What Should Constitute Reportable Tuberculosis. Francis George Curtis.
4. Definitions and Diagnostic Standards in the Diagnosis of Pulmonary Tuberculosis in Adults. John B. Hawes, 2nd.
5. Clinical Data of Gallbladder Disease. Ralph W. French.
6. Occupational Diseases in Massachusetts. Thomas F. Harrington.

2. Diagnosis of Tuberculosis in Children.—Henry D. Chadwick and Roy Morgan summarize the essentials for a minimum standard necessary in the diagnosis of tuberculosis in children by emphasizing the importance of symptoms indicating tuberculin absorption, namely: Weakness, undue fatigue, fever, poor appetite, failure to gain, or loss of weight, and nervous irritability. The

local symptoms are cough, hoarseness and occasionally streaked sputum. The usual physical signs are dullness in the interscapular region radiating into the apices at the back, frequently not elicited in front. There may or may not be changes in the respiratory sounds. Râles may or may not be present. Symptoms both constitutional and local, together with a history of exposure, are to be given greater weight in making a diagnosis of active tuberculosis than the presence or absence of physical signs. Percussion is more important than auscultation. It must, however, be borne in mind that a thickened area in the lung or region of the bronchial glands does not in itself mean active tuberculosis. It may be a healed lesion that needs no treatment. Such thickening may also be caused by other diseases than tuberculosis. The child showing constitutional symptoms, even without local signs of disease in the chest, should be considered suspicious, kept under careful observation and hygienic treatment instituted in the home. The case with signs in the chest, without constitutional symptoms, indicates an old inactive infection that needs no treatment. Individualization and common sense must be used to weigh all the factors in the case, and, with experience as a guide, few errors in diagnosis will be made.

New York Medical Journal.

August 4, 1917.

1. The Primitive Medicine Man's Virtues. Jonathan Wright.
2. A Bariumized Test Meal with Combined Fluoroscopic and Chemical Study as a Means of Rapid Preliminary Stomach Diagnosis. G. W. McCaskey.
3. Study of Drug Action. Thomas J. Mays.
4. The Campaign for Pure Food. Harvey W. Wiley.
5. The Control of Nose and Throat Hemorrhage. Lewis A. Coffin.
6. The Ambulatory Treatment of Peptic Ulcers. Henry A. Rafsky.
7. Serum Therapy as Applied to Pneumococcic Infections of the Eye. Louis Lehrfeld.
8. Femina Adomestica. Davina Waterson.

2. A Bariumized Test Meal With Combined Fluoroscopic and Chemical Study as a Means of Rapid Preliminary Stomach Diagnosis.—G. W. McCaskey states that the chemical processes of gastric digestion have been studied very minutely and extensively for a number of years, these studies being largely limited to the phenomena with the Ewald breakfast. This test meal does not call out, and therefore does not measure the reserve powers of gastric digestion, and is consequently of somewhat limited value in the general field of gastric diagnosis. Such an enormous literature has been built upon its widespread clinical use that it must be regarded as of decided value for comparative purposes, while fully realizing its limitations. It is undoubtedly true that an average normal stomach will usually behave in a certain manner under the stimulus of the Ewald test breakfast and important information concerning secretory and even motor conditions may be obtained. McCaskey considered that if a rapid fluoroscopic method could be combined with this test meal much preliminary information could be quickly obtained. Such an examination made under favorable conditions with an empty stomach would in many cases furnish all the *x*-ray data necessary for diagnosis. This could be done in about an hour's time when a rapid survey of the case is desirable. In conjunction with and during the progress of other preliminary investigations, such as the taking of the anamnesis, the physical, blood, and urine examinations, and would rapidly place the clinician in possession of what might be called a skeletal outline of the most important motor secretory and topographical facts. Further fluoroscopic or even radiographic methods will be used when required for the purposes of a satisfactory working diagnosis. The patient is placed behind the fluoroscopic screen and given to drink two ounces of water in which is stirred up ten to twelve grams of barium. The precise topography and position of the stomach can be accurately noted and recorded on tracing paper if desired, as well as any abnormal condition present. Before removing the patient from behind the screen he is made to drink a test meal composed of one and one-half ounces of cream of wheat, boiled in a sufficient amount of water to measure ten ounces when cooked. The movement of the barium in the pyloric antrum shows the amount of depression from the weight of the test meal, which gives some information regarding the mobility and tonicity of the stomach and its supports. Pyloric function, especially patency and peristalsis, can be further studied at this point if the symptoms suggest that this is necessary; if not, the test meal may then be treated in the ordinary manner either by its fractional removal through an Einhorn duodenal tube which has been swallowed with the test meal or by the ordinary stomach tube at the close of the conventional one hour. McCaskey points out that by the fluoroscopic observation of about one-third of an ounce of barium stirred up in two ounces of water in its passage to the pylorus, we can get an absolutely accurate outline of the position of the fasting stomach in a perfectly quiescent state without distortion by the weight of a heavy meal. Muscular tonicity is well indicated by the time that the barium lingers in the magenblase and the rapidity of the canalization of the stomach. The coincidence of a point of tenderness on pressure or a palpable tumor with the pylorus or other part of the stomach can be instantly determined. If chemical study of gastric secretion is desired, large quantities of barium cannot be used, as they inhibit the secretion of hydrochloric acid. The quantity above indicated only slightly interferes with secretion and the turbidity caused by mixing of the barium with the test meal does not substantially interfere with the titration for acidity. The delicacy of the Ufflemann test for lactic acid is diminished by about one-half. The test for occult blood is not perceptibly interfered with. In a very large proportion of cases, this technic with such modifications as the individual case or the judgment of the clinician may indicate is quite sufficient for the purposes of diagnosis and will either exclude serious organic lesions, or taken in conjunction with other available data, especially the anamnesis, indicate further study along the proper lines of clinical investigation. It is only by the routine use of fluoroscopy that the diagnostic aid of röntgenology can obtain that widespread use so desirable in the field of internal diagnosis.

The Lancet.

July 14, 1917.

1. Croonian Lectures on Adaptation and Disease. J. G. Adami.
2. Purulent Bronchitis. J. A. B. Hammond, William Rolland, and T. H. G. Shore.
3. Marching Fractures. A. Howard Pirie.
4. A Universal Extension-splint for Gunshot Fractures of the Upper Limb. Reginald Williams.
5. On the Treatment of Recent Gunshot Wounds with Bismuth-Iodoform-Paraffin Paste. With Special Reference to Compound Fractures. L. Colledge and Hamilton Drummond.
6. The Hemoglobin Value of the Blood in Surgical Work. F. A. Bainbridge and H. B. Bullen.
7. A Device for Insuring Spontaneous Separation of Blood Clot from the Walls of the Containing Vessel. A. D. Gardner.
8. A Sebacious Horn. Oswald Vevers.

2. Purulent Bronchitis.—J. A. B. Hammond, William Rolland, and T. H. G. Shore point out that the numerous cases of purulent bronchitis which have arisen at one of the bases in Northern France during the winter of 1916-17 have presented features of marked clinical and pathological interest. Patients suffering from this unusually fatal disease present a symptom complex so distinctive as to constitute a definite entity. During February and early March, while the outbreak was at its height, 45 per cent. of the necropsies in this area showed the presence of purulent bronchitis. The writers deal with this condition from three standpoints: (1) That of the clinician; (2) that of the bacteriologist, and (3) that of the morbid anatomist. Their conclusions are drawn as follows: (1) They are here dealing with an epidemic of a variety of purulent bronchitis. (2) For the following reasons they consider the cause of the disease to be the influenza bacillus; (*a*) The almost constant occurrence of this organism in the sputum; (*b*) its presence in the pus of the affected bronchioles; (*c*) in some typical cases it occurs apart from the presence of any other organism; (*d*) the outbreak of the disease in epidemic form at the time of year when influenza epidemics are most common and while one was actually in progress; (*e*) the

marked signs of toxic poisoning which are found during life and post mortem. (3) There are well marked clinical features which distinguish these cases from ordinary cases of bronchitis. The most prominent are the characteristic sputum, which is mucopurulent, and of a greenish yellow color, and thick; the extreme tachycardia, the cyanosis, the course of the temperature, which is sustained and high until the ante-mortem fall, and the extremely high mortality. (4) Treatment has so far been unsatisfactory. The most encouraging results have been obtained by use of a steam tent. Vaccines have not yet had a trial, but it is unlikely, in view of the blocked condition of the bronchioles, that they would be of great benefit. (5) The morbid anatomy consists of three groups of changes. (*a*) The lung condition: Marked purulent bronchitis, the smaller bronchi being filled with thick pus, from which air is notably absent. In some cases secondary bronchopneumonia and œdema, pleurisy, and emphysema are common. (*b*) Evidence of toxemia: Especially seen in kidneys, spleen, liver, lymphatic glands, and heart muscle. (*c*) Signs of right side heart failure and passive congestion. Some cases die of the toxemia and others of the cardiac failure. (6) The histological changes are those of an acute purulent bronchitis affecting the smaller bronchi with or without some surrounding catarrhal pneumonia. Degenerative changes are seen in other organs, notably in the kidneys, where the appearances of a toxic nephritis may be found.

Journal of the American Medical Association.

August 4, 1917.

1. Visceral Disturbances in Patients with Cutaneous Lesions of the Erythema Group. Henry A. Christian.
2. The Influence of the High Calory Diet on the Course of Typhoid Fever. Warren Coleman.
3. The Influence of Labor on the Brain Development of the Child. Arthur Stein.
4. The Cutaneous Manifestations of Hodgin's Disease: Lymphogranulomatosis. H. N. Cole.
5. Tumors of the Carotid Body. F. B. Lund.
6. "Soup Bone" Implant for the Correction of Defects of the Skull and Face. W. Wayne Babcock.
7. The Resection of Lobes of the Lung. Samuel Robinson.
8. The Possible Application of the Macroscopic Slide Agglutination in the Search for Meningococcus Carriers. Charles Krumweide, Jr.
9. Sodium Citrate Transfusion: A Comparison. Bertram M. Bernheim.
10. Studies on the Cause and Treatment of Bronchial Asthma. I. Chandler Walker.
11. Anesthesia in Curriculum and Clinic. W. D. Gatch.
12. Shock during General Anesthesia. Frank C. Mann.
13. The Blood Lipoids in Diabetes. E. P. Joslin, W. R. Bloor, and Horace Gray.
14. Standardization of Serums and Vaccines: Some Difficulties and Misunderstandings. G. W. McCoy.
15. Comparison of Methods of Treating Wounds. Kenneth Taylor.

1. Visceral Disturbances in Patients With Cutaneous Lesions of the Erythema Group.—Henry A. Christian. (See MEDICAL RECORD, June 9, 1917, p. 1013.)

2. The Influence of the High Calory Diet on the Course of Typhoid Fever.—Warren Coleman. (See MEDICAL RECORD, June 16, 1917, p. 1077.)

3. The Influence of Labor on the Brain Development of the Child.—Arthur Stein. (See MEDICAL RECORD, June 9, 1917, p. 1017.)

5. Tumors of the Carotid Body.—F. B. Lund. (See MEDICAL RECORD, June 16, 1917, p. 1071.)

7. The Resection of Lobes of the Lung.—Samuel Robinson. (See MEDICAL RECORD, June 16, 1917, p. 1072.)

11. Anesthesia in Curriculum and Clinic.—W. D. Gatch. (See MEDICAL RECORD, June 16, 1917, p. 1073.)

10. Studies on the Cause and the Treatment of Bronchial Asthma.—I. Chandler Walker tells of the investigations carried out for the past two years at the Peter Bent Brigham Hospital, Boston, in the study of the causation and treatment of bronchial asthma. In the report given he has limited his study to the first 150 patients, because all of these were observed during one complete year, from May to May. Of this series of 150 cases, eighty-three, or 55 per cent., were sensitive to some protein. The horse—horse dandruff and hair—was chiefly responsible for bronchial asthma in 20 per cent. of these cases, the wheat proteins, *Staphylococcus pyogenes aureus*, and the early pollens were each responsible for asthma in 15 per cent. of the cases, the late pollens in 10 per cent., the cat in 5 per cent., *Staphylococcus pyogenes albus* in 3 per cent., and in the remaining 10 per cent. of these cases several proteins were the cause of asthma. Many patients were sensitive to more than one protein, thus making the above percentages not absolutely accurate. A few words will dismiss the nonsensitive patients. Of the 150 patients in this series, 45 per cent. failed to react to any protein that was tried. Besides the skin test, other facts would seem to warrant the division of bronchial asthmatics into two groups. No patient that had onset of asthma after the fortieth year of age has given a positive skin test, and one-half of the sensitive patients began to have asthma previous to the age of twenty. Quite opposite to these statements is the fact that 40 per cent. of the nonsensitive patients had onset of asthma after the fortieth year of age and only 15 per cent. had onset of asthma previous to the age of 20. Only 1 per cent. of the sensitive patients had cardiorenal disease; whereas 20 per cent. of the nonsensitive patients had this complication. Chronic bronchitis was a complication in only a small number of the sensitive patients, but it was a complication or cause of asthma in nearly all of the nonsensitive patients. These statistics thus seem not only to separate bronchial asthma into two types, namely a sensitive and a nonsensitive, but they are of value in determining the cause and the treatment of bronchial asthma. For instance, the patient that has onset of bronchial asthma early in life is usually sensitive to some protein, chronic bronchitis is not a usual complication, and cardiorenal disease is a rare complication. Contrary to the above, the patient that has onset of asthma after the age of 40 is not sensitive to proteins, chronic bronchitis is almost always a complication or cause, and cardiorenal disease is frequently a complication or cause of asthma. With the serum of the sensitive patients complement fixation and precipitin reactions were done, using the protein to which they were sensitive as an antigen. These tests proved to be of no help in diagnosis, prognosis or treatment. The treatment of the nonsensitive group of bronchial asthmatics has been disappointing. About one case in every six has been relieved of asthma by vaccines made from a diphtheroid organism. This particular type of organism was selected because it was usually the predominating one in the patient's sputum when the sputum was cultivated on plain agar. The sensitive patients offer a very good prognosis. If the patient is sensitive to the food proteins, omission of these foods from the diet is followed by relief from bronchial asthma, unless the patient has considerable bronchitis, which may require attention, and vaccines made from the predominating organism in the patient's sputum greatly benefits or relieves this condition. They have treated their wheat cases with subcutaneous injections of the wheat proteins, but have been unable to increase the patient's tolerance for these, and the eczema that is a frequent complication in these cases has been made worse. Therefore omission of the food proteins from the diet seems to be the simplest treatment for this type of bronchial asthma. Treatment with the amino-acids of the food proteins may be of benefit. Those patients who are sensitive to bacterial proteins are successfully treated with stock vaccines of that particular organism to which they are sensitive. These vaccines have been given at weekly intervals, in gradually increasing amounts, beginning with 200 million the first dose. Relief from attacks of asthma has continued for from four to six months after the vaccines were discontinued, and relapses have yielded to a second series of vaccines more quickly than to the first series.

British Medical Journal.

July 14, 1917.

1. Medical and Surgical Notes from Mesopotamia. G. Grey Turner.
2. Acute Febrile Polyneuritis. Gordon Holmes.
3. The Chadwick Lecture on Mental Hygiene and Shell Shock during and after the War. F. W. Mott.
4. Treatment of Cranial Injuries in War. J. Anderson.
5. Early Treatment of Gunshot Injuries of the Spinal Cord. H. M. W. Gray.

3. The Chadwick Lecture on Mental Hygiene and Shell Shock During and After the War.—F. W. Mott, in discussing the treatment of shell shock, states that

in the early stages it varies to some extent in different individuals, according to symptoms and signs, but that there are some symptoms which are seldom absent in all true cases—namely, insomnia and terrifying dreams. He has found the continuous warm bath of great value in the treatment of these cases when they return from France. The bath is kept continuously at the temperature of the blood by a special mechanism of heat regulation; the patients are kept in the bath for a quarter to three-quarters of an hour, or even longer. The effect is most soothing on the nervous symptoms. A drink of warm milk added at bedtime, together with a bath, often suffices to produce sleep without hypnotics. If hypnotics are used less amount is required. Next the general bodily condition must be improved by nourishing, easily assimilated food and regular evacuation of the bowels. The severe headache requires an icebag and drugs which relieve neuralgic pains. After improvement begins, an interest in surroundings and everyday life should be established. Noise must be avoided, and quiet is demanded, but not loneliness. As soon as they are better, patients are encouraged to become interested in games; also there are popular concerts and popular lectures to divert the mind and produce an atmosphere of cure, which is very essential. Discipline is very necessary; laxity of discipline, over-sympathy and attention by kind, well-meaning ladies giving social tea parties, joy rides and drives, with the frequent exclamation of "poor dears," has done much to perpetuate functional neurosis in the British soldiers. The too liberal gifts of cigarettes have produced a cigarette habit in officers and men which is highly detrimental in these cases of war neurosis, especially in cases of irritable dilated heart. Those patients affected with a functional paralysis need much help and encouragement. Mott, in treating the immobile arm or leg, performs a number of associated movements with the afflicted member, telling the patient at the same time to help him by thinking of the same movement. After a little while the patient may be doing the main part of the movement himself. The greatest tonic for this type of cases is to tell the patient that he is not likely to be returned to active service, but that the aim of the treatment is to put him in shape for his previous occupation, or some work useful to the State, whereby he will not be a burden to himself or the community. Mott considers that if this method were adopted early, in a large number of cases known by an expert to be temperamentally unfit for military service, a great economic saving would be affected. Malingerers would have to be guarded against. He entirely approves of the natural methods of restoring function, but not by the machines now in use in some places, as they are wrong in principle and in practice. Associated movements as in the use of parallel bars, the climbing rope, football, Indian clubs are all beneficial, as the mind is also concentrated on the limb as well as the means of procuring the movement, and the sound limbs are exercised at the same time. Diversion of mind by useful occupation, both in workshop and garden, have been successful in the cure of these disabled soldiers. Mott is convinced that occupation in the open air, while decidedly beneficial treatment for nervous cases in the convalescent stage, is not always popular with a certain type of case. Each case has to be studied as to work, hours, fatigue, and general sense of wellbeing. The money earned by these men should be supplemented to the pension money or gratuity.

Le Progrès Médical.

July 8, 1917.

Adrenaline in Hemorrhages and Congestions.—Satre first discusses the vasoconstrictor property of suprarenal extract. Nothing can be more clean-cut than this action, which can readily be studied under local application to a mucous surface. In experiment on animals, if some of the extract is thrown into the renal artery, the kidney contracts energetically. Thrown into the jugular vein, it causes contraction of all the arterioles in the body, and the blood pressure is increased. Hence, in free hemorrhages from mucosæ or in simple congestion of the latter, local application of the extract is quite sufficient for hemostasis. In a parenchymatous hemorrhage, in the course of an operation, the indication is filled in the same manner. The extract is indicated locally in hemorrhoids because of its power of contracting both the dilated and normal vessel. In hemorrhage from the intestine, however, should the drug be injected into the general circulation in the belief that it will exact a localized hemostasis? In theory no; for the contraction of all the arterioles raises the blood pressure, which in turn should tend to increase the hemorrhage. We must, however, bear in mind that if the later is capillary in origin the capillary blood pressure will be low when the general blood pressure is high. All therefore depends on the character of the hemorrhage, for if the source of the blood is an artery the extract will aggravate the hemorrhage. In the clinic this problem has not yet been fully worked out. In hematemesis the drug is, of course, able to exert its local action. In hemoptysis the systemic injection gives good results, although for reasons just mentioned the mechanism is not obvious. But various authorities prefer to inject the extract into the trachea or directly into the disease focus.

Euthanasia.—M. G. relates that one army surgeon, at least (Bertholey), has written a thesis on euthanasia (Lyon, 1917), in which he agitates the question of the right of the military practitioner to anticipate death in those suffering intensely and with no hope of survival. This problem has been discussed in the United States and Canada in civil practice; while in Europe, Italy is mentioned in the same connection. As a military problem the same objections hold good. The patient who has suffered atrociously may lose his pains before death. Euthanasia is an ill-chosen term for physical suffering alone is comprised, despite the fact that mental anguish remains as a result of regret to die, of the uncertainty of the future, etc. In most cases we know that the mental processes become obscured before death, and that as a rule the latter occurs with patient unconscious. In but two out of thirty-five dying soldiers was consciousness clear. These two suffered acutely up to the last, and the patients could have been put out of their misery, but such intervention would have inverted all our conceptions of civilization.

Archives Médicales Belges.

February, 1917.

Injections of Peptones in the Treatment of Typhoid Fever and Other Infections.—Wolf first mentions the sharp reaction which follows the injection into the blood of albumoses and peptones. Years ago the author showed that injections of the latter under the skin or into the muscles could favorably influence hemorrhagic diathesis and paroxysmal hemoglobinuria. During the past two years he has been using it in typhoid fever in the interest of the prevention and treatment of intestinal hemorrhage, its most fatal complication. In cases likely to develop these hemorrhages, minute extravasations of blood may readily be produced artificially by slight punctures, friction, etc. In such cases a 5 per cent. concentration of peptone solution is injected into the buttocks, 10 cm. at a dose, repeated daily, if necessary, and every other day in the absence of special indication. In his series of over 170 cases of typhoid but three developed hemorrhage under this treatment. Only one of these was severe, and in none did hemorrhage reappear. In connection with this use of peptone the author noted improvement in other respects. Two histories are given which show that the fever fell at once upon injection. However, we could hardly expect such a result save late in the course of the fever. Defervescence was not complete, but the author was emboldened to increase the dose, and also test the results of intravenous injection. The dose injected into the muscles was increased to 12, 15, and even 20 cm. of the 5 per cent. solution, without any detrimental effects. In order that the fever be lowered permanently the injections must be repeated every second day. The same general result was obtained by intravenous injections, 10 to 15 cm. of a 10 per cent. solution. A marked general reaction is observed which comprises tachycardia, headache, cough, etc., all of

which subside quickly. An overdose is shown by the development of violent tachycardia, respiratory distress, cyanosis, violent headache, severe cough, nausea, and vomiting (anaphylactic shock). This syndrome can be prevented by proper technique—very slow infusion under pulse control. Both the immediate and more remote effects of the intravenous injections upon the entire course of the disease are very favorable. The mechanism of action is unknown. Blood cultures continue to give positive results throughout. The author has injected peptones in syphilis and tuberculosis, but as yet it is too early to speak of results. Peptones would prove a very convenient remedy. They sterilize at 120° C., are readily procurable, and despite the initial reaction are readily assimilable. They can be injected for months without the development of intolerance.

Annales de Gynécologie et d'Obstétrique

May-June, 1917.

On the Determination of the Date of Fecundation in Women.—Ancel and Bouin refer to the current opinion that the ovum can be impregnated only for a very brief period after rupture of the follicle. This period is probably not above two days at most. But there is a difference of opinion as to when this rupture occurs. One faction places this at the end of the menses, while the other believes it to take place from twelve to fourteen days before the menses, or, what amounts to the same thing, 14 to 16 days from the beginning of the previous period. Each view is based in part on theoretic considerations. The first named is the reflex theory of menstruation, while the second is the internal secretion theory. The former is the old classic view which originated before the days of endocrinology. The more recent view is based on the belief that the internal secretion of the corpus luteum determines menstruation. This structure is formed at the expense of the follicle and pours certain hormones into the circulating blood. When the corpus has attained its full development the congested mucosa of the uterus begins to bleed, and when it has begun to undergo involution the flow ceases. The evidence in favor of the older theory was scanty and based chiefly on autopsy finds. Further, not much was known of the intimate nature of the corpus luteum. Data which uphold the modern theory have been supplied by Fraenkel in Germany and Villemin in France. It has been proved that in full menstruation one never finds a mature follicle, but a corpus luteum in a period of *status;* from five to six days after the menses one finds a corpus luteum in the midst of involution and also a follicle in its incipient stage of development; from fourteen to fifteen days after the menses the new follicle is at the point of rupture, and finally from seventeen to twenty-two days after menses another corpus luteum is in process of development.

The Amount of Blood Lost During the Menses.—Lahille found after a series of experiments that the statements made on this point by classical authors are somewhat too high. Estimating the amount of blood by the quantity of its constituent iron, he finds that 25 per cent. of women lose not over 20 gms., 50 per cent. from 50 to 55 gms., and the remaining 25 per cent., 65 gms. and upwards. When the amount is over 80 gms. the character of the menses is sensibly affected—clinically it is menorrhagia. At the acme of a period the daily loss may be 15 to 20 gms. This is seen to occur in the medium class. In a period four or five days long the loss of blood occurs chiefly on the second and third days, when the total loss will be 30 to 40 gms. On the first, fourth and fifth days the loss will average not over 5 gms. daily. The author thinks that his finds should be checked up by some other method of analysis.

Revue de Laryngologie, d'Otologie et de Rhinologie

June 30, 1917.

Leeches in the Larynx.—Navarro, of Cordova, gives a systematic account of this condition, which is often discussed as a matter of individual experience. The author, who is director of the municipal laboratory, has made special investigations into the subject. Leeches are "swallowed" during the period June-October, inclusive—very rarely during other months—and chiefly by field laborers, who drink water as they find it. In many cases the victims realize what has happened. The leech may attach itself to any one of a number of places, but the author is concerned only with the intralaryngeal region, although the symptoms produced by no means indicate the point of attachment, which can be determined only with aid of the mirror In an extralaryngeal location close to the glottis the symptoms of hemorrhage, dyspnea, violent cough, etc., can be produced the same as in an intralaryngeal site. When the leech is implanted within the larynx no typical symptoms develop. There may in fact be no symptoms of any kind. In rare cases there is impending suffocation, although this could be due to laryngospasm. The amount of tolerance on the part of the larynx to the intruder may be phenomenal. In general the tendency is toward progressive dyspnea. Perhaps characteristic of an intralaryngeal location is a certain alteration of the voice, but this is rarely encountered. It is not due to any change in the vocal cords, but to the movements of the leech in contact with the latter. The amount of blood lost, irrespective of location, is sufficient to cause noticeable anemia in several days. The author has seen the animal in almost every conceivable location within the larynx and on the inferior surface of the epiglottis. If the leech simply blocks the larynx its removal should be easy. In certain deeper locations there may be free inspiration with expiratory dyspnea. It is a necessary consequence that the smaller the leech the more readily it can enter the larynx and, other things equal, the less disturbance it can cause. A small leech so attached as to escape the ordinary field of the mirror may become visible only after a prolonged search. In treating these cases the application of cocaine is unwise, as shown by Botey of Madrid. Some laryngologists have had the idea of anesthetizing the leech incidentally so that it might be coughed up, but this idea seems based on an erroneous conception. An anesthetized larynx would lose its reflex susceptibility and expulsive cough would be inhibited. The author uses no cocaine. By means of Krause's forceps, with transverse opening, the animal must be quickly grasped; celerity counts much for success. If a fold of mucosa is included in the bite of the forceps a new hold must be taken. If the leech is implanted below the cords the patient must take a deep breath as the forceps are inserted. A larynx which can tolerate the presence of a leech is usually tolerant to the forceps.

A New Type of Acute Articular Rheumatism.—Chantemesse and two others have announced the nosological separation of a polysynovitis with visceral complications and terminal enuphacopathy. The disease represents an infection due to an unlisted microorganism intermediate between bacteria and fungi: It has been named the *Mycobacillus synovialis.*—*La Presse Médicale.*

Synergism of Arsenic and Quinine.—Gautier states that the addition of a minute dose of arsenic to a dose of quinine makes it of value equal to that of the very large dose of the latter salt.—*Le Progrès Médical.*

Hours for Meals.—Amar disputes the claim of Bergonié that heavy meals at noon and 7 or 8 P. M. are inferior for utilization of food. The cumulative experience of the public sanctions these hours. Carbohydrates are utilizable 30 minutes after ingestion whenever taken, while utilization of protein is difficult for the first two hours after a repast.—*La Presse Médicale.*

Effect of the War on Italian Births, Deaths and Marriages.—The average annual number of marriages in Italy before the war was 266,000. In 1914 the number was 250,000. In 1915 this number fell to 186,000. Figures for 1916 are not yet available. In 1915 the birth rate was diminished by 22,000. The figures for 1916 have not been completed, but it is known that the decline will be very great. In the city of Naples before the war the mean figures for marriages were 4545; for births, 17,881; for deaths, 13,564. In 1914 the births amounted to 19,044; deaths, 13,247; marriages, 4233. In 1915 the marriages decreased notably (3203) without much change in the births and deaths. In 1916 the marriages showed only a slight decline (3043), but the births fell to 16,337, and the deaths rose to 14,086.

Book Reviews.

SANITATION IN WAR. By Major P. S. LELEAN, C.B., F.R.C.S., D.P.H., R.A.M.C., Assistant Professor of Hygiene, Royal Army Medical College. With an Introduction by Surgeon-General Sir Alfred Keogh. K.C.B., M.D., F.R.C.P. With 54 illustrations. Second Edition. Price, $2.00 net. Philadelphia: P. Blakiston's Son and Co., 1917.

THIS small textbook on sanitation in war embodies a series of lectures delivered by Major Lelean with the object of assisting newly joined officers to gain an insight into sanitary methods employed on active service. The lectures deal with physical fitness for war, antityphoid inoculation, the march, sickness in the army, the rôle of insects in war, medical organization, administration and duties in the field, some new departures in field sanitation, and water and water supplies. These subjects are dealt with one and all in an instructive manner.

NOTES ON MILITARY ORTHOPEDICS. By COLONEL ROBERT JONES, C. B., Inspector of Military Orthopedics, Army Medical Service. With an Introductory Note by Surgeon-General Sir Alfred Keogh, G.C.B., Director General, Army Medical Service. Illustrated. London, New York, Toronto, and Melbourne: Published for the British Red Cross Society by Cassell and Company, 1917.

ORTHOPEDIC surgery has been afforded a wide scope in the present war. By means of orthopedic centers established throughout the British Isles, men suffering from physical disabilities of their limbs are so treated that, as a rule, they are enabled to undertake useful employment. Thus habits of diligence are fostered, and indolent and often discontented individuals are conceived into busy and self-respecting members of society. This little book by Col. Robert Jones, the well-known British orthopedist, formulates rules for the application of orthopedic principles to the treatment of injuries received in war.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, etc. By Leading Members of the Medical Profession Throughout the World. Edited by H. R. M. LANDIS, M.D., Volume II. Twenty-seventh Series, 1917. Price, $2.00. Philadelphia and London: J. B. Lippincott Company.

IN this number of the Clinics appears an innovation in the nature of a section of Clinics by such well known clinicians as Henry A. Christian, Lewellys F. Barker, Edward Martin, Barton C. Hirst, and others. In addition the volume contains seventeen articles of the type usually found in this publication. Whether such publication of the reports of clinics is a valuable procedure is perhaps open to question, but certainly it is a popular one and the beginning thus made is very well done. Christian on Arthritis and Jones on Vertigo are especially interesting and instructive. Articles by Foote on Giovanni Lancisi and by Jelliffe on the Treatment of the Schizophrenic are particularly worthy of attention. It may be said unreservedly that this number is one of unusual value.

THE TREATMENT OF EMERGENCIES. By HUBLEY R. OWEN, M.D., Surgeon to the Philadelphia General Hospital; Assistant Surgeon to the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases; Chief Surgeon of the Philadelphia Police and Fire Bureaus; Assistant Surgeon, Medical Reserve Corps, U. S. Navy. With 249 illustrations. Price, $2 net. Philadelphia and London: W. B. Saunders Company, 1917.

AS an outgrowth of the war there has been aroused an intense interest in first aid work and study on the part of the public. For a while this means seemed to be the one expression available among the laity of their desire to offer assistance to Uncle Sam in his fight.

Naturally such enthusiasm has hastened the publication of books on first aid to the injured, which might otherwise have been produced in a more leisurely fashion. Demand and supply certainly offer strong incentives, especially when backed up by the imminence of war.

Among this crop of first aid books comes one written by a surgeon, who for years has lectured to and instructed practically in first aid measures the policemen and firemen of Philadelphia, Pa. His book is an enlargement of these lectures. To one who has taught first aid, not only since it has become a fad, but through its droning, steady days, this little work is a volume of unmixed delight, relief, and satisfaction.

In the first place, it is written so concisely that not one word which is not required to elucidate the text has been employed. No space has been wasted on preliminaries, but the subject in hand is immediately taken up, and information, which is usually left in other works for the lecturer to supply, is found directly under the thumb. Secondly, no more anatomy and physiology is given than is absolutely necessary, for, as the author states, the book has been written primarily for the instructors of first aid to the injured, for police and fire surgeons, for ambulance surgeons, for resident physicians, for nurses, and for those laymen who wish to make a comprehensive study of the subject. This implies, of course, a previous study in anatomy and physiology. As one reads there comes the realization that the author has been born to command, and to instruct men in their conduct in times of emergency and stress.

It follows that the illustrations are all that may be desired, especially those portraying methods of bandaging, treatment for hemorrhage, and the machines used for resuscitation. One might venture to suggest that the illustrations of the Schaefer method of resuscitation could be made a little more clear, but the explanation in the text partially clears up this oversight. The reviewer has found that in teaching this method better results have been obtained by keeping the arms rigid, instead of working with bent elbows, as here shown.

The reviewer can best complete this review by resorting to the time-worn expression so often found in the reviews of long ago, that this book is a work which should be found on every bookshelf in the medical profession, and a truer statement has never been made.

THE PRACTICAL MEDICINE SERIES. Comprising ten volumes on the year's progress in medicine and surgery. Under the general editorial charge of CHARLES L. MIX, A.M., M.D., Professor of Physical Diagnosis in the Northwestern University Medical School. Volume VIII, Materia Medica and Therapeutics, edited by GEORGE F. BUTLER, Ph.G., A.M., M.D., Emeritus Professor of Therapeutics, Chicago College of Medicine and Surgery, Chicago, Ill. Preventive Medicine, Edited by WM. A. EVANS, M.S., M.D., LL.D., Ph.D., Professor of Preventive Medicine, Northwestern University Medical School. Series 1916. Price, $1.50. Chicago: The Year Book Publishers.

NATURALLY, since this book is written as a comprehensive review of a year's progress in these two subjects, it more than accomplishes its purpose. This volume is especially interesting in that it combines methods of treatment and means of the prevention of disease. Even an ice box for the shipping of water to needed quarters is shown by illustration as well as instructions for making the same.

Under personal hygiene is given a description of the clothes Dr. W. T. Grenfell advises for use in Arctic regions. One might wish that the same measures had been carried out with reference to the corresponding method of keeping cool in hot weather in the temperate zone. It is surprising how little is really written pertaining to the comfort and convenience of individuals required to meet conditions of unusual stress, even in the city of New York, during the intense heat. How many physicians or social workers are there who will ever reach the Arctic zone? But how many doctors and nurses are there who would like to present regulations as to clothing, hours of work, and definite knowledge of food to the public if the knowledge could be found in as condensed and well-written a form as this volume, which contains so much that is of absorbable value?

Altogether this special volume of the series does meet the requirements of the general practitioner in a very satisfactory manner. It brings together all the knowledge of a past year in a decisive style, and should save hours of reference research for hundreds of busy doctors.

Society Reports.

AMERICAN GYNECOLOGICAL SOCIETY.

Forty-second Annual Meeting, Held at Pittsburgh, May 31 and June 1, 1917.

THE PRESIDENT, DR. FRANK FARROW SIMPSON OF PITTSBURGH, IN THE CHAIR.

An Histological Study of 50 Uteri Removed at Cesarean Section.—Dr. J. WHITRIDGE WILLIAMS of Baltimore presented a study of uterine contraction and retraction before the separation of the placenta; also a study of the mechanism of the separation of the placenta, the amount of decidua retained after separation of the placenta, the vascular changes at the placental site, and pointed out some of the indications for the removal of the uterus, notably ascending uterine infection. He likewise presented a study of the scar resulting from previous cesarean section.

Dr. EDWARD P. DAVIS of Philadelphia was of the opinion that once a cesarean section had been done, a spontaneous labor might happen in the same patient without any complications whatsoever; furthermore, a cesarean section, properly done not followed by infection, led to an absolutely sound uterus without connective tissue. As regards the separation of the placenta, clinically we might disregard those means immediately which lessened its bulk after the birth of the child, and that the clinical phenomena, aside from the histological findings of simple separation, varied greatly. As to infection and the removal of the body of the uterus, any one who had had considerable experience in cesarean section realized that the danger point was the uterine body in all doubtful and suspected cases. While it was difficult to say positively that a woman could not recover whose uterus was infected, he thought we would save far more lives in doubtful cases by hysterectomy than by leaving the uterus. He had never regretted removing the body of the uterus in all suspected cases, and he had regrets for not so doing.

Dr. EDWIN B. CRAGIN of New York City said that he would like to utter a word of caution as to the relative safety of a uterus on which cesarean section had been done, especially if the cesarean section was done for obstruction. As specialists all of us could appreciate the fact that if a uterus was properly sutured and the puerperium was without infection, that uterine wall would be relatively sound if the original operation was done for such a condition as placenta previa or for eclampsia; but if we were talking to general practitioners of the safety of the uterus that had gone through one cersarean section, we must always have that fact borne in mind, namely, if that cesarean section was first done for obstruction, there was a possibility that the puerperium was not absolutely free from infection. To allow that woman to work her way in labor in the second stage, with a scar following a puerperium, and not free from infection, was likely to expose her to the risk of a rupture.

Dr. CHARLES A. L. REED of Cincinnati stated that one point of practical interest was the time factor involved in the successful cicatrization of the cesareanized uterus. He had had one of those unique coincidences that sometimes would occur in practice, namely, he had had occasion to do myomectomy on two cases in which the injury to the uterus was done through cesarean section. In both he operated in the presence of an early pregnancy. The pregnancy was not interrupted. Cicatrization occurred very promptly.

Dr. JOHN O. POLAK of Brooklyn said that the point that impressed him in Dr. Williams' paper was the fact of 15 hysterectomies having been done following cesarean section. This statement was absolutely out of harmony with his experience as to the frequency of the necessity of this operation following cesarean section. Even with the 20 infections, there was a large proportion of these women who had had their uteri removed unnecessarily. It was likewise the experience of his colleagues in Brooklyn that they had not adopted the suggestion of Dr. William or of Dr. Davis of doing hysterectomy, but had treated these infected cases by the extraperitoneal method, and where they knew infection had existed from the history and by repeated examinations through the vulva, and had dealt with these cases on the modified principle of the suggestion of Sellheim.

Dr. HERMAN J. BOLDT of New York City said that while one swallow did not make a summer, he had had one opportunity of doing myomectomy during pregnancy. The woman was four months pregnant and showed symptoms of impending abortion. The myoma was enucleated because of the symptoms present. This woman made a good recovery and went on to term without any trouble whatever.

Dr. JOHN G. CLARK of Philadelphia said that in connection with the subject discussed by Dr. Williams, Dr. Goodell of Montreal brought out a rather interesting explanation a few years ago of the so-called myopathic hemorrhages which occurred in women of 35 and on. Dr. Goodell believed at that time that the subsequent reconstitution of the blood vessels in the uterus after the puerperium was due practically to the threading of new vessels into the old and their construction in that fashion. He believed that in the majority of women with myopathic hemorrhages at 40 and over we would find patency of the uterus up to the menopause, when there was a failure and bleeding because of successive rings. He had three or four specimens showing apparently one blood vessel within the other.

Dr. HIRAM N. VINEBERG of New York City stated that a puerperal uterus that was highly septicized could not be removed without causing a more severe infection. Dr. Williams had had 20 cases of infection, and the conditions at the time of operation were most favorable for the spread of infection, yet these uteri were all removed with recovery. The point he wished to emphasize was that these uteri could be removed with safety, and that there must be suitable cases in which the uterus could be removed and the patient's life saved thereby.

Dr. E. GUSTAV ZINKE of Cincinnati related one experience that he had had of a woman on whom he made two cesarean sections, the first time for an elongated cervix and placenta previa, both pronounced. She had a perfectly normal recovery. She became pregnant within two months after cesarean section and went near the end of term, when he was requested to attend her in confinement. He told her he would do so provided she would submit to another cesarean section, and he based his position entirely upon the fact that she had an elongated cervix. To overcome this obstacle necessarily meant a prolonged stage of labor, and not knowing exactly the character of the uterine scar, he did not wish to take any chances. She promptly submitted to another cesarean section, and it was performed exactly at the end of term as nearly as he could calculate and before the symptoms of her labor began after the cervix had been obliterated. To his surprise he found it was another case of placenta previa. The placenta was situated in the lower segment of the uterus, almost centrally implanted. Of the first scar hardly anything could be noticed. The first incision was made transversely near the fundus; the second he made longitudinally, and in both operations the abdominal incision was made above the umbilicus. She recovered from this operation very promptly.

Dr. J. RIDDLE GOFFE of New York City supposed that all physicians who had had experience in removing fibroid tumors had made observations in reference to the healing of the wound later, and it had appeared to endure subsequent pregnancies. He had operated upon three patients from whom he removed fibroid tumors and they had afterwards become pregnant. One recent case was one in which he operated for fibroid tumors at the fourth month of pregnancy. The tumors were removed, and the woman promptly miscarried. Since that time she had been pregnant twice and had borne children normally. The deliveries were perfectly normal.

Dr. WILLIAM E. STUDDIFORD of New York City stated that he had had in the past year and a half two experiences with rupture of the cesarean scar, the last one occurring about ten days ago. In both of these cases the woman went into labor prematurely. In the first case the condition was not recognized, and the prolonged pains led the attending physician to attempt further dilatation of the cervix by the use of the bag, with the result that the woman became infected, and at the time of operation the fetus and membranes were

within the abdomen. The uterus had retracted, and the woman died within 24 hours after operation.

Dr. George Gellhorn of St. Louis said that there were cases in which a very slight subfebrile temperature had been running for ten to fourteen days after cesarean section, suggesting the possibility that the wound had separated partially. He had had the opportunity of observing one woman who died about five weeks after cesarean section from a cause unconnected with the operation. She had a very slight temperature, not more than 99.2° or 99.4° for ten days. He was unable to find any cause for the rise in temperature. At autopsy he found the endometrial side of the incision had separated and gave a picture identical to that shown by Dr. Williams. It was very essential to pay attention to these slight rises of temperature and arrange for the management of the next labor accordingly.

Dr. John A. McGlinn of Philadelphia did not believe the dictum "once a cesarean section, always a cesarean section," was true by any means. Such a dictum was dangerous. It was simply a catch phrase which remained in the minds of many people who were not able to discriminate. It should be eradicated from the literature, because the general profession and even the public took hold of this catch phrase and would not allow cases to be cesareanized when they should be.

Dr. Franklin S. Newell of Boston said that his feeling about subsequent cesarean section was that we were never quite sure about the uterine scar. He had removed three scars at operation during the last winter. In two of them the patients ran a febrile course after the first operation. One of the scars left a mass of muscular tissue which ran through the middle of it, and he felt that if that patient went into labor she would have had a rupture. It seemed to him, that a two per cent. mortality following cesarean section in subsequent labors was too high. He did not believe that the mortality following cesarean section before labor was as high as two per cent. We should select these cases carefully, and he thought a woman ran less risk in having cesarean section done in a subsequent labor under proper conditions.

The Value of the Avoidance of Shock and Trauma in the Treatment of Eclampsia.—Dr. Edwin B. Cragin of New York City asked if we were treating eclampsia with better results today than ten or fifteen years ago, and if so, why? In the first series of 20,000 deliveries at the Sloane Hospital, New York, with 251 cases of eclampsia, the maternal mortality was 71, or 28.28 per cent. The fetal mortality was 151, or 16.15 per cent. In the last series of 15,774 deliveries, with 138 cases of eclampsia, the maternal mortality was 20, or 14.49 per cent. The fetal mortality, including stillbirths and those dying before mother left the hospital, was 62, or 44.92 per cent. The reduction in mortality had been brought about by avoiding shock and trauma; by avoiding chloroform; by preparing the cervix before delivery; by avoiding *accouchement forcé;* by treating the toxemia while preparing the cervix.

Dr. J. Whitridge Williams of Baltimore agreed with everything which Dr. Cragin said about sparing the patient every possible amount of shock during the time of delivery. Unlike Dr. Cragin, he had in the last few years resorted to bleeding which had had a good effect in a considerable number of cases of eclampsia, consequently it was almost a routine in his service now to bleed every woman with antepartum eclampsia, and when he did bleed he took away 750 to 800 c.c. In a certain proportion of cases that ended the misery. The woman had no more convulsions; her albuminuria fell; the nitrogenous constituents of the urine rose just as though she had not been bled, and such women occasionally went on for some weeks or even months and had a baby at term without further eclampsia.

Dr. Reuben Peterson of Ann Arbor, Mich., said that long ago he gave up the use of chloroform in the treatment of eclamptic women. The field of cesarean section, both vaginal and abdominal, had been limited for a number of reasons. In his experience, if you happened to deliver a woman there was less shock from abdominal cesarean section. Abdominal cesarean section was limited in a hospital that admitted all kinds of obstetric cases because there had been so many vaginal examinations made. If there was any chance for the woman to be septic one should work from below. One should try all the methods that had been indicated by Dr. Cragin, but should not resort to an abdominal cesarean section. His investigations of both abdominal cesarean section and vaginal cesarean section had shown conclusively that if a woman could be taken early in her eclampsia, both operations were remarkably successful in saving both the mother and the child. He had seen good results from bleeding, but had not obtained satisfactory results from the use of veratrum viride.

Dr. Brooke M. Anspach of Philadelphia asked Dr. Cragin and Dr. Williams in how many cases of eclampsia they found acetone and diacetic acid in the urine, and how they met the condition of acidosis? The reason he asked this question was because during the last year he had a woman to treat who developed very serious symptoms of a toxemia more than two weeks after delivery. She had three severe convulsions in one day. She showed remarkable improvement after the intravenous injection of a pint of a 2 per cent. solution of sodium bicarbonate, and she had another injection the next day and recovered.

Dr. Edward P. Davis of Philadelphia said that he would not deliver a woman in eclampsia and toxemia unless she showed signs of going into labor, then he would assist her with the least possible traumatism. His objection to the bag was the fact that its long-continued pressure sometimes exhausted these patients and led to the development of convulsions. Abdominal cesarean section was rarely indicated, and vaginal cesarean section still more rarely indicated. He had come to have a high regard for venesection in eclampsia if it was followed by the use of salt solution or sodium bicarbonate in the vein.

Dr. Harold C. Bailey of New York City stated that eclamptics were particularly prone to develop shock. *Accouchement forcé* had been discontinued in the Bellevue Hospital Service. In 1900, when he took systolic blood readings, several eclamptics were delivered by that method and in several instances he found there was a drop of 100 millimeters of mercury. He then made blood pressure readings following the use of veratrum viride, and in one instance in which the drug was pushed he found a drop of 140 millimeters of mercury, with the woman in profound shock. Since that time he had not previous to delivery used veratrum viride. As regards vaginal and abdominal cesarean section his views were in accord with those of Dr. Cragin.

Dr. E. Gustav Zinke of Cincinnati, Ohio, said that the principal cure for puerperal convulsions lay in prophylaxis during the pregnant state. Some of these cases would terminate fatally in spite of what we did, and when we had these women we were confronted by the question of whether we had a case which would yield to treatment, or whether it was one of those cases that would get well in spite of treatment and sometimes because of neglect. He was asked to see a woman in consultation about five weeks ago, with a pronounced case of albuminuria. She had edema almost up to the shoulders, and her urine was loaded with albumin. She was at the end of the eighth lunar month. He told them to give her gentle saline catharsis, a hot bath every day, and an absolute milk diet, and he said to the doctor that more than likely it would precipitate labor, and if it did it was much better for the patient. She was brought to the hospital three days after she had delivered herself spontaneously of a living child. The albumin slowly disappeared. The milk diet was kept up; she was given a hot bath every day. Her pulse was never very high. She was given veratrum viride. Ten days after labor she had her first convulsion, which left her with left-sided paralysis, and in spite of all that was done she had three other convulsions, and died in spite of all their efforts.

Dr. Cragin in closing said that in regard to diacetic acid and acetone in these cases of eclampsia, he recognized all types of cases, one where the liver was least involved, the other where the kidney was more involved, and in a case where the liver was the organ more involved, we were more apt to get acetone and diacetic acid, and there soda had proved valuable in his hands.

Symposium on Radium Therapy — Methods and Results of Radium Treatment of Uterine Hemorrhage Due to Other Causes Than Malignancy. — Dr. Howard A. Kelly of Baltimore, in behalf of himself and Dr.

Curtis F. Burnham presented a report on 100 cases of uterine hemorrhages treated with radium and radium emanation. He pointed out how frequently doctors were consulted for this troublesome symptom and how weak the therapeutic arm had been, in that so many patients were subjected to a hysterectomy when curettage failed. Radium therapy here was as simple and as safe as a dilatation of the cervix, and consisted in nothing more than introducing a uterine sound with a hollow tip containing 500 millecuries of emanation and applying it successively to some eight different points in the uterus, fifteen minutes at each point. This practically always cut short the menstrual function and so simply obviated the need for a hysterectomy. In young women, as shown by several cases reported, the menstruation could sometimes be modified without even suspending it. In one case pregnancy and delivery of a healthy child followed the treatment. Seven of the 100 cases cited had heart disease, 2 epilepsy, 2 insanity, others Bright's disease and tuberculosis, manifestly bad risks for hysterectomy. No serious sequelæ followed the radium treatment. Also practically in all cases of fibroid tumors, radium had checked the monthly flow completely when desired. In young women it had been possible in some instances to cause the tumor to disappear without stopping menstruation permanently.

Radium in the Treatment of Uterine Hemorrhage and Fibroid Tumors.—Dr. C. JEFF MILLER of New Orleans stated that while it had been shown that the early extravagant claims as to the curative powers of radium in cancerous lesions had not been verified by subsequent analysis of case reports, it had developed that its effect in the treatment of uterine bleeding from various causes was almost that of a specific. Its most striking effect was its certain control of uterine bleeding due to the metropathies, or aberrant ovarium function. Aggravated cases of the menopause, usually relieved by hysterectomy, could be controlled by a single application of radium. Similar results were obtained in bleeding complicating fibroids of the uterus and certain types of fibroids might disappear or markedly shrink. Radium would not supersede surgery in the treatment of fibroids. Large growths giving rise to pressure symptoms, or presenting evidences of degeneration as well as submucous tumors should be treated surgically if operation was not contraindicated. When desirable to preserve the function of the generative organs in young women surgery should be considered the more conservative procedure since it permitted myomectomy. Its effect in controlling bleeding associated with chronic metritis and polypoid endometritis was equally satisfactory and when the dosage and screening were carefully measured it might be used as a last resort in excessive bleeding in young girls without causing cessation of the menses. Itching associated with kraurosis of the vulva, as well as pruritus, could often be promptly allayed by radium. Statistics to show the primary and ultimate results were necessary to prove its real therapeutic value. Results of its use during a period of three years showed that the primary results in controlling uterine bleeding were nearly 100 per cent., the ultimate results varying according to the times and number of exposures.

Radiotherapy in Uterine Hemorrhage of Benign Origin.—Dr. JOHN G. CLARK of Philadelphia said that in cases of hemorrhage of the uterus of benign origin, such as that from small myomata or myopathic change, particularly in women over 38 years of age, radium in small doses was one of the most effective remedies, relieving practically all of the cases from even the slight hazard to a major surgical operation. The hemorrhages in such cases stopped promptly and with rare exceptions permanently without untoward effects incident to the use of radium. Analysis of cases according to age indicated that those near the menopause responded best. Cases in former years, in which even repeated curettages failed to alleviate the hemorrhage, were promptly terminated after the application of 50 milligrams of radium for twenty-four hours. In over 100 cases there had been but one failure to relieve the hemorrhagic symptoms in these cases.

Radium in Uterine Cancer.—Dr. HAROLD C. BAILEY of New York City, in his paper discussed the present status of radium in the treatment of uterine cancer, followed by a detailed description of the technique used at the Memorial Hospital in 1915-16, and gave the account of a new method or adaptation for filtering the rays which had been gradually developed and had been adopted as the regular technique since January 1, 1917. The platinum applicators holding large amounts of radium emanation were placed in an iron capsule containing mercury. This mercury "bomb" offered efficient protection to the normal tissues and permitted of the entire lower part of the pelvis being swept with a sufficient dose in a period of usually not more than four or five hours. In addition, heavy applications were made over the lower part of the abdomen in three areas and directed towards the upper part of the pelvis. In this manner, from the standpoint of the amount of radiation, three or four times the dose possible with the ordinary technique could be directed into the pelvis and without subsequent irritation. He gave a general description of 125 cases treated since January, 1915, the accessory treatments, the amounts of radium used and the results to date.

Dr. FRANCIS CARTER WOOD of New York City said that he had had but little personal experience with the use of radium in the treatment of uterine hemorrhage. Those cases he had seen had suggested the necessity of an accurate preliminary diagnosis of the condition of the endometrium by the thorough microscopic study of curettings removed with care so as to obtain as large fragments as possible and promptly preserved. Without such precautions in obtaining the material, a satisfactory study was often impossible. He had seen a few cases treated in which the radium did not cause a cessation of the hemorrhage until such doses had been administered as to cause atrophy of the ovaries. As to the treatment of fibroids, he felt from his pathological experience that only a moderate percentage could be properly handled by radiation. It must be remembered that after extensive radiation hysterectomy, should it prove necessary, might be very difficult owing to the cartilaginous fibrosis of the parametria.

Dr. HERMAN J. BOLDT of New York City said that he wished to refer to hemorrhages from benign causes. While radium had certain advantages, he had failed to hear the final results from its use. Similar results might be obtained from the proper intrauterine application of chlorid of zinc. The advantage of radium was that less applications might be necessary. One might obtain a result after one or two treatments which might require a dozen treatments by chlorid of zinc. Radium might cause less pain than chlorid of zinc, but the proper application of a 50 per cent. solution of chlorid of zinc in the form of an intrauterine tamponade, would bring about a result equally as good as that by radium so far as the cessation of hemorrhage was concerned.

Dr. ERNEST C. SAMUEL of New Orleans, La., stated that when the hemoglobin was low he had found that a smaller dosage of radium spread over a longer period of time produced less toxic symptoms than a large dose over a shorter length of time. He was glad to have heard a statement by one gentleman that he had found only 2 or 3 per cent. of toxic symptoms as the result of radium applications. That had not been his experience. Almost 90 per cent. of patients that he made intrauterine applications to or applications around the cervix developed a distressing nausea and vomiting and some elevation of temperature.

Dr. HENRY SCHMITZ of Chicago believed that the radiotherapist who used small amounts of radium obtained as good results as the man who used larger amounts. In benign conditions he used less milligrams of radium, and the physical condition of the patients was much better than we found it in malignant conditions. The malignant cases very frequently showed advanced cachexia and anemia. Their resistance was materially lowered, and in such cases it was necessary to use larger amounts of radium rays than in non-malignant conditions.

Dr. WILLIAM P. GRAVES of Boston said that he had noted one thing which had not been mentioned in this symposium and that was that the successful reaction of the cancer cells to radium depended considerably upon the histological structures of the cancer. Cancers that were purely squamous in type, starting from the

portiovaginalis, were much more favorable to treatment. Those cases which originated in the endocervix, that was, adenocarcinoma of the cervix, did not respond in the same way.

Etiological Study of Vulvar Carcinoma.—Dr. FREDERICK J. TAUSSIG of St. Louis, Mo., stated the 15 cases upon which this paper was based were observed, with but one exception, at the Barnard Free Skin and Cancer Hospital, in the services of Dr. Gellhorn and himself. Eight of their patients received deep *x*-ray treatment, four of them with the Coolidge tube, but in none was there more than a very temporary improvement. They had come to the opinion that the *x*-ray could only be considered as an auxiliary to surgical measures in vulvar cancer. They had no radium to use, but it was difficult to see how its results could have been any better in view of the early and extensive involvement of the lymphatic system in these patients. There remained, therefore, only radical surgical removal as a therapeutic agent. It was difficult to work out a definite style of operation for a condition that was encountered so rarely as that of cancer of the vulva. However, through various untoward results, such as frequent glandular recurrences in the femoral ring, extensive postoperative necrosis of the vulva, inguinal infections, local implantation metastases, he had recently adopted the following two-stage operation technique: (1) Dissection of the entire superficial and deep inguinal and femoral lymphatic chain by the method of Basset. As seen this method consisted of an incision opening the entire inguinal canal and subperitoneal spaces in the iliac fossa superior to the external iliac vessels. After this chain had been lifted out, attached to the round ligament, the femoral glands were dissected out around the saphenous and femoral vessels. Now came the point of special value. Poupart's ligament was cut across over the femoral ring and the deep gland situated beneath it freed with its attendant fat and lymph vessels. The round ligament was then tied off at its entrance into the peritoneal cavity, and the entire lymph gland mass excised. The deep epigrastric vessels had to be ligated close to their point of origin in order to permit of a clean dissection. The femoral ring was closed by suturing the internal oblique to the femoral fascia, Poupart's ligament was then sutured over this, and a small drain placed in the deeper subperitoneal space. In all instances both sides should be cleaned out by a separate incision in this radical manner. The primary tumor of the vulva was kept away from the operative field in the inguinal region during and after this first operation. Only a sterilizing dose with the Coolidge tube and ordinary antiseptic treatment were employed to keep it clean. (2) Two weeks later the inguinal wounds had healed usually by first intention. He then proceeded to an excision of the vulva, using neither scalpel nor scissors, but only the cautery knife. No attempt was made afterwards to close the wound entirely by a dissection of flaps. Instead, a half dozen silk work gut sutures alone were used to approximate the skin edges. Thus a considerable surface was left denuded. No dressing was kept on the wound after the patient was back in bed. Under the open air treatment, with the occasional assistance of dry heat and the frequent irrigation of the vulvar wound with Dakin's solution, he had obtained rapid granulation, and none of the necrosis and infection that otherwise in his experience had been uniformly associated with these extensive vulvar excisions in old women. He believed this method of operation had distinct advantages.

Adenomyoma of the Rectovaginal Septum.—Dr. THOMAS S. CULLEN of Baltimore said that these growths were usually situated in the vaginal vault directly behind the cervix. They soon became adherent to the rectum and later might spread out into the broad ligaments. Histologically they consisted of nonstriped muscle and fibrous tissue. Scattered through the growth were islands of uterine mucosa. He referred briefly to his previous papers on the subject and then reported two cases. The first tumor was small and situated in the usual position. The second case was unique. Posterior to the cervix several small polypi projected into the vagina. On histological examination they were found to be typical adenomyomata covered by vaginal mucosa. Both broad ligaments were board like and at each period the patient had pain in both renal regions. At operation both broad ligaments were also found involved by the adenomyoma. The ureters were markedly dilated in the pelvis, each being one centimeter in diameter. Where they passed through the broad ligaments they were markedly narrowed by the adenomyomatous growth. Near the bladder they were of nearly normal caliber. The pain in the kidney regions at the periods was undoubtedly due to the increased compression on the ureters by the adenomyomatous tissue that naturally swelled at the time of menstruation. The ureters were liberated, the uterus with a portion of the vagina was removed. A portion of the growth was left attached to the rectum and in both broad ligaments. The patient was later treated with radium.

Gastrointestinal Conditions in Women.—Dr. CHARLES A. L. REED of Cincinnati, Ohio, stated that the chief distortions of etiological and pathological significance to which he invited attention had occurred under his observation in approximately 3,000 cases during the last eleven years. They were mentioned in their relative order of frequency as confirmed by physical examination, *x*-ray records and surgical exploration. The colon, ptosic, retardatively angulated, sometimes redundant, occasionally adherent, was the most frequently observed seat of distortion. Next was the cecum, dilated, flabby, hypermobile, often adherent, but more frequently covered with highly organized exudate. The ileum was often ptosic, angulated near its cecal end, dilated back of the angulation, and the seat of marked stasis. Adhesions of the terminal ileum were of frequent occurrence, while Lane's kink was occasionally encountered. He recently had four in succession. The ileocecal valve was sometimes incompetent. The duodenum, always dilated in the presence of constrictions or angulations at the terminal ileum, was also frequently enveloped in a highly organized exudate and frequently adherent. The sigmoid or pelvic colon was often redundant and was sometimes the seat of constrictive narrowing at its juncture with the descending colon. The vermiform appendix was generally normal, but was sometimes either adherent, atrophied or distended, only occasionally being the seat of active mischief. Chronic intussusception with adhesions of invaginated surface had been encountered. Diverticula and neoplasms both benign and malignant of the intestinal wall had been observed. The fat, often really lipomatous omentum, often found in these cases had a demonstrated etiological relationship to displacement of the colon and stomach. The stomach was generally found vertical to the left side, often of the fishhook type, sometimes extremely ptosic, and not infrequently the seat of adhesions to the mesocolon. Pyloric insufficiency occasionally with active ulceration of the pylorus, or duodenum, or both, was encountered. Another condition of great importance, but really secondary to the distortions mentioned, was that of general visceral cyanosis in which the veins, more especially of the mesocolon and the mesentery, were greatly dilated and filled with very dark blood, showing circulatory stasis, with resulting dangerous deoxygenation of the considerable quantity of blood thus impounded. It was to be understood that these conditions were rarely, if ever, found singly, just as it would be obviously improbable that all of them should exist in the same case at the same time. It was also to be remembered that certain of these conditions, as, for instance, a more or less marked ptosis of the colon, or certain adhesions, or even marked redundancies, might exist without producing symptoms. It was only when marked symptoms did exist, and when they were logically and obviously referable to the conditions enumerated, or to any of them, that the latter were to be recognized and treated as pathological within themselves and etiological with reference to secondary or other sequential phenomena. In any event, the conditions enumerated were sufficient to show that there is abundant pathology in the cases under consideration. As to treatment, it was essential to remember that the practical problem, so far as it is presented in the course of gynecological practice, was distinctly three fold, namely, the intestinal condition, the constitutional state, and the gynecologic sequelæ or complications. As to the intestinal condition, it should be carefully determined in the routine diagnosis of

every case; it should be recognized as initial pathology, and should be treated in accordance with its specific indications. This did not mean that every case should be remanded for operation. Other methods of treatment should be recognized as available in certain of the milder cases in which the ptosis was not pronounced or of long standing, or in which the constitutional conditions were not yet severe. The constipation, or its sequel, demanded first attention. Mild solvent laxatives and a diet less in protein and rich in cellulose, with intestinal antisepsis, associated with alkaline lavage of the large bowel, were indicated. The most important treatment of this class of cases was prolonged rest in bed with passive exercise and forced nutrition with a balanced dietary. If the intestinal distortions were marked, and especially if they were associated with adhesions, surgical intervention was demanded. Surgery should always be adapted to the specific indication presented, and it should always be applied on the principle of the minimum of surgery with which to meet the object in view. Acting on this principle, he had had occasion to break up adhesions, to relieve angulations, to remove redundancies, and to extirpate functionally dead segments of the intestine. The procedures involved had embraced appendectomy, appendicostomy, cecostomy, parietal implantation of the colon, resection of redundant transverse colons, resection of redundant sigmoids, removal of the right colon with end-to-end anastomosis, ileosigmoidoscopy, with colon exclusion, and ileo-sigmoidoscopy with secondary colonectomy. In certain cases shortening of the mesocolon and the mesentery was done by peritoneal plication.

Symposium on the Relation of the Glands of Internal Secretion to Gynecology and Obstetrics.—Dr. ROBERT T. FRANK of New York City stated that the reason for concentrating mainly upon the physiological aspect was twofold. First, in this subject, even more than in most others, a solid experimental foundation was essential; second, a mere experience meeting would be of little lasting value, and, at least part of the clinical data properly belonged to the discussion which was to follow the reading of the papers. Consequently it was considered advisable to assemble in easily accessible form facts, some new, others scattered in the literature, which were most important in the further study of the subject and which promised later to prove most valuable when applied to practical gynecology and obstetrics. It proved impossible to enlist authors to present the clinical aspects of such important glands as the thyroid and adrenals. In order to introduce the discussion, it had been deemed advisable to present in most condensed form the various outlines of the contents of the referats. The authors present would do this for their own papers, the committee undertaking the presentation for the absentees.

The Relation of the Pituitary Gland to the Female Generative Organs; from the Experimental and Clinical Aspects.—Dr. EMIL GOETSCH of Baltimore drew the following conclusions: (1) There is a close interrelationship in function between the pituitary and sex glands, a fact supported by abundant experimental evidence and by numerous observations on pituitary disturbances in the human subject. (2) Overfunction of the pituitary anterior lobe is associated with overactivity of the sex glands. (3) Deficiency of pituitary secretion in the individual is followed by underdevelopment and genital aplasia in the young and by sexual inactivity and retrogression in the adult. (4) Primary alterations in the function of the sex glands, as in pregnancy and after castration, are followed by pituitary hypertrophy and hyperplasia. (5) The specific action of posterior lobe extract (pituitrin, pituitary liquid) upon the smooth musculature of the uterus and bowel had led to the wide usage of this drug in obstetrical practice and in the treatment of intestinal paresis following abdominal and pelvic operations. (6) The administration of pituitary extracts was of distinct benefit in clinical states of pituitary underfunction.

The Pineal Gland Influence upon Growth and Differentiation with Particular Reference to Its Influence upon Prenatal Development.—Dr. CAREY PRATT MCCORD of Detroit, Mich., said that from the lack of unanimity in the literature any conclusions as to the details of pineal gland function must be made flexible rather than dogmatic. A survey of available data led to the following summary as representing the present status of the pineal gland as an organ of internal secretion: (1) A clinical syndrome was to be associated with disturbances of the functions of the pineal gland. Because of the involution of the pineal at puberty the constitutional manifestations of pineal pathology appeared to be confined to prepubertal years. The essential characteristics (apart from pressure and neighborhood manifestations) were (a) early sexual development evidenced in the enlarged genitalia, pubic hair, general body hair, early change in voice; (b) precocious mental development, manifested in maturity of thought and speech; (c) general overgrowth of body to the extent that a child of 6 or 7 years might have the appearance of a child near puberty. (2) The experimental extirpation of the pineal gland was surgically possible. The gland was not essential for the maintenance of life. The early symptoms following pinealectomy were attributable to the severe brain injury. No changes attended the removal of the gland in adult animals. As to the effects of pinealectomy in young animals, Sarteschi, Foa, and Horrax respectively stated that the removal of the gland led to precocity of development. Exner and Boese, and Dandy reported no changes after pinealectomy. (3) The administration of pineal substance to young mammals was reported to hasten growth and sexual maturity. In unicellular organisms (paramœcia) pineal extracts increased the rate of reproduction to more than double that of controls. In larval forms (ranidæ) both growth and differentiation were hastened as a result of pineal feeding. (4) The inference was allowable that the pineal gland was an organ of internal secretion whose functions, however, were of minor significance in the general activities of the endocrinous system.

The Physiological and Pathological Importance of the Parathyroid Gland from the Experimental Aspect.—Dr. CARL VOEGTLIN of Washington, D. C., drew the following conclusions: (1) The parathyroid gland has a definite physiological function which is still incompletely understood. (2) The presence of a minimum of parathyroid tissue in the body is essential for life and the continuation of normal metabolism. (3) Parathyroid insufficiency seems to be characterized by an increased irritability of the nervous system to the galvanic current, which may be due to the withdrawal of soluble calcium salts from the blood and tissues. Parathyroid insufficiency leads to an alkalosis which is converted into an acidosis as a result of active tetany. Definite metabolic changes take place in animals after complete parathyroidectomy. (4) Pregnancy puts an extra strain on the functions of the parathyroid, as evidenced by the appearance of tetany during this period in partially parathyroidectomized animals. (5) Tetany has been observed during lactation in animals with parathyroid insufficiency. Interruption of lactation was followed by recovery. (6) The offspring of partially parathyroidectomized animals exhibit a marked increase in nerve irritability. (7) An intravenous injection of soluble calcium, or strontium salts, or hydrochloric acid almost instantly removes the symptoms of tetany. However, tetany may reappear after this treatment, and the life of such animals cannot be saved by the continued administration of calcium. The injection of parathyroid extract seems to have a temporary curative effect on tetany animals. Isotransplantation of parathyroid into animals with parathyroid insufficiency is usually successful. The spontaneous recovery from tetany in experimental animals is probably due to changes in their metabolism (acidosis) caused by the hyperacidity of the skeletal muscles during tetany. (8) The experimental facts do not support the theory that eclampsia is due to hypoparathyroidism. (9) A condition which might justly be termed hyperparathyroidism is unknown at the present time.

The Relation of the Parathyroid System to the Female Genital Apparatus.—Dr. EUGENE H. POOL of New York City drew the following conclusions: (1) No direct relationship has been established between the parathyroids and the female sex organs; no morphological changes in the parathyroids have been noted during pregnancy; yet apparently there is a connection between the parathyroids and the sex processes in the female. (2) Tetany, the clinical evidence of insufficient

parathyroid function, is somewhat prone to occur in menstruating, pregnant and puerperal women, as well as patients suffering from gynecological diseases, or who have undergone gynecological operations. (3) The cause of maternal tetany is now referred to parathyroid insufficiency. (4) The function of the parathyroids is apparently closely connected with calcium. (5) There is reason to believe that maternal tetany and lactation tetany are associated with calcium deficiency. (6) Latent tetany, or a subtetanic condition, is much more common in pregnant and puerperal women than is usually assumed. (7) Tetany in newborn infants, the offspring of tetanic mothers, is usually fatal within a short time after birth. (8) In the treatment of maternal tetany the administration of calcium in large doses is followed by beneficial results in the great majority of the cases.

The Thyroid Gland in Relation to Gynecology and Obstetrics. — Dr. DAVID MARINE of Cleveland Ohio, said that in summarizing it might be stated that there was evidence in man of a thyroid sex gland interrelation recognizable in the female in association with the development of secondary sexual characters, with the menstruation and with pregnancy and also in the male at puberty, but to a very slight degree. The meager evidence available would tend to indicate that the interstitial cells of the ovary and perhaps, also, the adrenal cortex played a major role in this relation in the female, as certainly the cells of Leydig did in the male. The thyroid enlargement was of the nature of a work hypertrophy to stimulate metabolism identical in appearance, and so far as they knew, different only in degree from that seen in simple goiter. Both of these reactions could be controlled and prevented either indirectly by giving iodine or directly by giving the iodine containing hormone in physiological doses.

The Possible Bearing of the Thymus Gland upon the Female Genital Tract.—Dr. ALVIN M. PAPPENHEIMER of New York City stated that there were many points of interest in connection with the thymus which he had not attempted to discuss, but it was doubtful whether even the most detailed scrutiny of the enormous literature would lead us to more satisfactory conclusions. The fundamental problems of thymus physiology remained unsolved, and the established facts, which concerned chiefly the normal and abnormal structure of the gland, were not such as lent themselves to clinical application.

The Endocrine Function of the Pancreas and Its Relation to the Sex Life of Women.—Dr. A. J. CARLSON of Chicago drew the following conclusions: (1) All evidence supports the view that some substance or hormone secreted by the Islands of Langerhans into the blood is necessary for utilization of sugar by the tissues. This function is specific for the pancreas. Other endocrine organs may influence sugar metabolism in a superficial way by altering the sugar mobilization (adrenals, thyroid), or by increasing or decreasing the rate of oxidation in the body in general. The rest of the endocrine glands cannot maintain the power of the tissues to oxidize sugar in the absence of the pancreas, and the hypo or hyperactivity of other endocrine glands do not produce actual diabetes in the presence of a normal pancreas. (2) While the failure of the tissues to use sugar in the absence of the pancreas is the central and definitely established fact, there are probably other primary defects involved in the development of acidosis, lipemia, increased metabolism, lowered resistance to infections, etc. (3) All the evidence points to the view that true diabetes mellitus in man is primarily the result of pancreatic deficiency (islets). (4) There is, at present, no organotherapy of diabetes, experimental, or clinical. (5) There is, at present, no evidence of any specific relations of the endocrine functions of the pancreas to the gonads, male or female, or to menstruation, pregnancy, and lactation. Absolute diabetes, induced after conception, leads to death of the fetus. Absolute diabetes probably renders conception impossible. Partial diabetes under careful dietary control permits of normal sex life of women (menstruation, normal pregnancy, normal child, lactation), and pregnancy under such conditions does not aggravate the diabetes. But in the absence of such dietary control the condition of pregnancy aggravates the diabetes in the mother, and uncontrolled diabetes in the mother is extremely injurious to the fetus. There is some evidence that in late stages of pregnancy the fetal pancreas may function for the mother.

The Experimental and Clinical Evidence as to the Influence Exerted by the Adrenal Bodies upon the Genital System.—Dr. SWALE VINCENT of Winnipeg, Manitoba, read this paper, of which the following is a summary: (1) What we call the adrenal body represents the anatomical association of two elements, each of which is derived from a separate and independent system. The adrenal proper, or cortex, is a part of the cortical or interrenal system. The medulla is simply an accumulation of chromophil cells of the same nature histologically, chemically, and pharmacodynamically, as similar masses of cells in other parts of the body. (2) There is no clear evidence that these two systems are functionally related. (3) The adrenal medulla, as well as the chromophil tissue generally, is developed from the sympathetic nervous system. Its duty seems to be to facilitate the functions of this system in certain physiological emergencies. (4) The adrenal cortex (as well as the accessory cortical adrenals) is developed from the germ epithelium, and the evidence is now strongly in favor of the view that it has certain important functions in connection with the development and growth of the sex organs. (5) There is a considerable amount of clinical evidence that tumors of the adrenal cortex are frequently associated with sex abnormalities. (6) The clinical evidence also favors the view that when cortical tumors occur in the female an accentuation of male secondary sexual characteristics develops, and simultaneously a hypoplastic condition of the internal generative organs supervenes. (7) The additional evidence as to a connection between adrenal cortex and the sexual organs is furnished by the enlargement of the cortex during breeding and pregnancy. (8) Feeding young animals with adrenal gland substance seems to stimulate the growth of the testes. (9) It is possible that a final solution of the problem will only be arrived at when the more general problem of the relationships between the ductless glands shall have been solved.

The Relation of the Ovary to the Uterus and the Mammary Gland from the Experimental Aspect.—Dr. LEO LOEB of St. Louis, Mo., drew the following conclusions: (1) The ovary is a complex gland, of which the most important constituents are follicles in various stages of growth and atresia, and corpora lutea. In addition we find in some species interstitial gland and some embryonic structures developing parthenogenetically from eggs. (2) Cyclical changes occur both in the ovary and secondarily in the uterus and mammary glands. (3) The primary cyclical changes in the ovary are in sequence; follicle ripening, ovulation, corpus luteum formation. In some species ovulation is accompanied by degeneration of all but the smallest follicles. (4) An elaborate self-regulating mechanism controls ovulation. Normally the corpus luteum inhibits ovulation. During pregnancy the life of the corpus luteum is prolonged. Experimentally ovulation can be influenced at will, accelerated by excising all corpora lutea, or retarded by producing artificial deciduomata. The retarding action of the corpus luteum is chemical, not mechanical. (5) The corpus luteum has a sensitizing action upon the uterus. This action can be analyzed by experimental methods. If the uterus is incised or mechanically stimulated at the time during which the corpus luteum is elaborating this growth substance, maternal placenta (deciduoma) is formed. The mechanical stimuli, therefore, assume in this respect the function which the ovum exerts under normal conditions. The form of growth response of each species is characteristic. The localization of sensitization varies in different species, being limited to the uterus in rabbits and guinea pigs, but distributed more widely in the human female. No specificity exists in the sensitizing substance given off by the corpus luteum as far as different individuals of the same species are concerned. The life period of experimental deciduomata is short except in pregnancy, during which their persistence is prolonged. (6) Corresponding to and dependent upon the cyclical ovarian changes, uterine cyclical changes occur. The cycle consists of heat, growth, with associated glandular ativity, regression, and interval. Heat probably is due to maturation of the follicles and dependent

upon the absence of the corpora lutea; growth activity is the result of corpus luteum secretions; regression marks the cessation of corpus luteum secretion, which is followed in the interval by a condition of rest. Pregnancy causing a persistence of the corpus luteum is characterized by an accentuation, but not a prolongation of the active phase, and an inhibition of the uterine cyclical changes throughout gestation. (7) While it is possible to produce experimentally during pregnancy a new ovarian cycle, through excision of the corpora lutea, such a new ovarian cycle is not followed by a new uterine cycle. During pregnancy a mechanism is at work preventing the uterine mucosa from responding to the stimuli given off by various ovarian structures. (8) It follows from conclusions 4, 5, and 6 that the corpus luteum subserves at least two functions, inhibiting ovulation and producing a substance which causes growth in the uterus. (9) The ovary shows other noncyclical functions. It has a trophic influence on the genitals and either primarily or secondarily determines the development of the secondary sexual characters. (10) The ovary likewise controls the development of the mammary glands. It exerts a trophic influence on this organ and determines its normal cycle. During heat and subsequent to ovulation proliferated changes occur; these cease while the corpus luteum develops and functionates. (11) The incidence of breast cancer in mice is greatly reduced by castration.

Transplantation and Retention of Ovarian Tissue after Hysterectomy.—Dr. WILLIAM P. GRAVES of Boston drew the following conclusions: (1) Specific surgical menopause symptoms consist chiefly of vasomotor disturbances in the form of hot flushes. (2) Theoretically, vasomotor changes of the artificial menopause are due to a break in the uteroovarian functional harmony, by which the physiological balance of the glands of internal secretion is upset with consequent dysfunctional activity. (3) After extirpation of the uterus, vasomotor disturbance ensues with approximately equal frequency, whether the ovaries be retained *in situ*, totally ablated, or transplanted. (4) Retention of ovarian tissue after hysterectomy is of little or no physiological value and may be productive of serious harm to the patient.

The Preparation and Standardization of Ovarian and Placental Extracts.—Dr. WILLIAM H. MORLEY of Detroit, Mich., drew the following conclusions: (1) A more uniform method of preparing extracts must be instituted. (2) Some method for the standardization of these extracts must be discovered, in order to facilitate the comparison of the results of the different laboratory workers and clinicians. (3) Many results obtained in the laboratory or in the clinic are due to the faulty preparation of extracts. (4) The isolation of the active principle of the ovary and the placenta will clear up many, if not all, of these mooted points.

The Placenta Regarded as a Gland of Internal Secretion.—Dr. ROBERT T. FRANK of New York City presented this communication, of which the following is a summary: (1) The experimental work of the last decade proves that Halban was correct in ascribing to the placenta an action upon the uterus and breasts. (2) Placental extracts (mainly the lipoid fraction) rapidly induce hyperplasia of the uterus and breast, gland tissue and nipples), in castrated or in noncastrated animals. (3) The chemical substance which induces these changes is thermostabile, very resistant to strong alkalies and acids, and completely soluble in 95 per cent. alcohol. (4) The substance appears identical in its physical, chemical, and biological properties with a similar substance obtained from the corpus luteum. (5) The substance can exert its influence in the absence of the thyroids, adrenals, pancreas, or in the absence of thyroid and adrenals combined. (6) In view of the apparent identity of corpus luteum and placental substance, the question arises whether the placenta acts merely as a storage reservoir for corpus luteum secretion during the latter half of pregnancy, or whether the placenta elaborates a hormone of its own.

Relation of the Sex Glands to Metabolism.—Dr. JOHN R. MURLIN and Dr. HAROLD C. BAILEY of New York City drew the following conclusions: Our results uphold the work of Loewy and Richter so far as the reduction in metabolism after castration is concerned. Removal of the ovaries of our dogs was followd by an increase in weight in both and a lowering of the metabolism in from 12 to 17 per cent., and in the other from 6 to 14 per cent. We feel that indirect action has a bearing on this reduction, and we do not believe that the indications point decisively to the loss of a specific stimulus from the ovary affecting the oxidative processes of the cells. To throw more light on this complex subject further experiments with animals are necessary.

Dr. J. WHITRIDGE WILLIAMS of Baltimore said that every one who was dealing with obstetrics knew what pituitrin was and what the extract did. In the discovery of the physiological action of the posterior lobe of this gland we had a most powerful therapeutic agent, one which was doing a great deal of good and, at the same time, doing a great deal of harm. The active principles had not been thoroughly worked out, but there was a good deal to be learned about it. The active principle of the posterior lobe, the pituitary body, and active principle of ergot were closely related, and it was likely in the use of pituitary extract we might go through the same cycle which we went through with the use of ergot. The injection of a cubic centimeter of any of the ordinary pituitary extracts in many cases had a marvelous effect. Within three minutes after injection of this drug the uterus, which previously had been acting in a very sluggish way, took on intense activity, and often labor would be brought to a standstill within the next few minutes. About the thyroid, his practical experience with pregnancy, complicated by goiters of various kinds, had shown him that the condition could be in great part disregarded.

Dr. GEORGE GELLHORN of St. Louis, Mo., had observed great improvement in two cases of kraurosis vulvæ. In one there had been permanent relief after feeding the patient ovarian extract; another one was temporarily improved after injecting the extract. Neither suggestion nor deception was permitted to enter. The sole criterion was a change from the dry, glistening, unyielding tissue to a soft, moist, and pinkish mucosa which bore no evidence of scratching. If in two cases of senile osteomalacia the same therapy led to a temporary restoration of locomotion, it was hard to explain it on the ground of suggestion.

Dr. JOHN G. CLARK of Philadelphia said that with regard to Dr. Goetsch's paper he could not help but feel that the preservation of normal ovarian tissue was of very vital value in younger women. He made this statement based upon a long series of cases. If there was any one point that was definitely conclusive it was the retention of ovaries or an ovary, regardless of whether the uterus was present or not. It was of vital importance to a young woman. He had noticed this in following up his cases, and it had largely determined him along the lines of a more radical policy so far as inflammatory cases were concerned. He had observed in the younger women in the ward that where ovaries suggestively diseased were preserved these patients did not have a satisfactory postoperative convalescence. A large proportion of them subsequently suffered pain and distress free from pathology. In fibroid cases in young women, where the ovaries were normal, he saw definitely better results than under the older methods where the ovaries were removed.

Dr. FRANCIS CARTER WOOD of New York City stated that he had tried the Beatson operation experimentally and the influence of the removal of the ovaries on carcinoma of the breast. This operation produced a temporary effect, which was no doubt due to the removal of the secreting substance of the ovary or due to nutritional and vascular conditions. He took primary tumors in mice and gave large injections of corpus luteum and *x*-rayed a number of the mice and no effect was produced, so that this substance when injected into an animal caused hypertrophy of the breast itself and growth of the epithelium. The cancer tissue lost its power to respond to this peculiar substance.

Dr. C. C. GUTHRIE of Pittsburgh said that in reference to Dr. Graves' work on the transplantation of ovaries, his interest was aroused years ago when he conducted experiments in laboratory fashion on the transplantation of ovarian tissue. In the later nineties or shortly thereafter Dr. Robert T. Morris of New York reported the birth of a child in a woman whose ovaries had been removed and replaced by other ovaries. So far as he knew, this was the first authentic account of

the reproductive function after the transplantation of ovaries.

Dr. HERMAN J. BOLDT of New York City said that regarding the case reported by Dr. Morris, he (Dr. Morris) had been waiting for two weeks for him to supply a patient who had had normal ovarian tissue. He did a ventrosuspension on a woman and gave him half of one ovary. In the case of his patient Dr. Morris had removed both ovaries two years previously. The patient had not menstruated during that interval. After the transplantation of ovarian tissue, the patient began to menstruate again, subsequently became pregnant, and bore a child. The child was still living.

Ureteral Stricture; Report of 100 Cases.—Dr. GUY L. HUNNER of Baltimore said that ureteral stricture was far more frequent than was formerly suspected. Too much importance was given in the literature to congenital stricture. Most of the cases were due to systemic infection from a distant focus, such as the tonsils, teeth, or sinuses. The symptoms were local pain at the site of the inflammatory area, renal pain due to back pressure, referred pain to the bladder, rectum, hip, thigh, etc. . . . There was elevation of temperature with and without infection of the urine. Gastrointestinal symptoms and mental symptoms were referred to. The diagnosis must be made from kidney lesions and from lesions of practically every abdominal organ, and also from sacroiliac and other hip joint lesions. The treatment consisted of dilatation from bladder approach or of retrograde dilatation through the extraperitoneal route.

A Cystoscopic Study of the End Results of Various Forms of Cystocele Operations. — Drs. LEROY BROUN and REGINAL M. RAWLS of New York City stated that for the purpose of this preliminary report twelve patients were found to have a practically normal plane of the base of the bladder. Three of these had a mild trigonitis. The character of cystocele operations done upon these patients varied greatly. The larger number consisted of freeing the bladder from the vaginal mucosa and uterus, coapting the prevesical fascia under the bladder and approximating the vaginal mucosa after the excess had been removed. A few of the operations consisted of a simple separation of the vaginal mucosa on each side of the median incision, the removal of the excess, and an approximation of the edges under the bladder. One was after the old Emmet method, and one by anchoring the bladder on a higher plane to the broad ligaments and uterus, after its previous separation from the vaginal mucosa and uterus. In another series of cases the base of the bladder was found to be thrown into horizontal folds of varying degrees of prominence. There were eight patients in this group. In half of these there was no displacement of the mouths of the ureters; in the other four this displacement was very noticeable. The character of operations done in these cases was as follows: In three, after the separation of the bladder from the vaginal mucosa and the uterus, the prevesical fascia was united under the bladder, the excess of the mucosa was removed, and the edges coapted. In three others, after the separation of the bladder from the mucosa and the uterus, the base of the bladder was anchored by silk sutures higher up on the broad ligaments and uterus, or to the shelf made by the united broad ligaments, if the uterus was removed. In one case an oval denudation was made on the anterior wall and the edges coapted. The cystoscopic examination of these eight patients showed the base of the bladder in each instance to be thrown into horizontal folds of varying depth and extent. In some the mouths of the ureters were found displaced; in others, in addition to the displacement, one or both could not be located. Trigonitis of a mild degree of the granular or membranous type was the usual accompaniment. The uniform method of putting 300 c.c. of water in the bladder was followed in the entire cystoscopic study. When abnormalities were found, as in these and other cases, the bladder was distended to its full capacity to determine whether or not the folds would disappear. In no instance was this accomplished. The convolutions and sulci remained as first seen under the 300 c.c. distention, showing that they were of a permanent character. The kind of operation done did not seem to bear in a marked degree upon the character and extent of the permanent folds found to be present. This review of the study of the end results on these patients, from the viewpoint of the anatomical condition in which the base of the bladder was left, was not of a flattering character. That the abnormal conditions found were of a permanent character could not be questioned, since they did not disappear under full distention.

A Vaginal Subtotal Hysterectomy Technique, Equally Applicable to Cases with or without Procidentia Uteri or Cystocele.—Dr. DOUGAL BISSELL of New York City described a technique for subtotal vaginal hysterectomy. Subtotal vaginal hysterectomy was preferable to total hysterectomy when the vaginal route for hysterectomy was the route of choice. Subtotal vaginal hysterectomy was less difficult to perform than total vaginal hysterectomy. There was less liability to secondary hemorrhage, and should secondary hemorrhage occur it was under easy control. As the uterine arteries were not tied the uterine and ovarian circulation were not interfered with. There was minimum liability to sepsis, as the posterior cul-de-sac was not opened. Peritoneal drainage was not resorted to. The union was primary. When subtotal vaginal hysterectomy was performed, procidentia of the uterus and cystocele could be corrected at the same time. For procidentia the uterosacral ligaments were in addition shortened. For cystocele the newly formed uterine body was interposed, as in the Watkins operation, or the body could be returned to the peritoneal cavity and the posterior surface and part of the base of the bladder sutured to its anterior face. Reconstruction of the fascial shelf between the bladder and the anterior vaginal wall then became necessary.

Clinical Study of Blood Pressure, Pulse Pressure, Homoglobin in Postoperative Shock, Postoperative Hemorrhage, and Postoperative Cardiac Dilatation. — Dr. JOHN O. POLAK of Brooklyn, N. Y., stated that the deductions which one might draw from his studies were. (1) There is a constant rise of from five to fifteen points in the hemoglobin readings following anesthesia with ether, when such anesthesia occupies more than 30 minutes. Consequently, allowance must be made for this rise in using hemoglobin estimations as a diagnostic sign in internal bleeding. (2) The erythrocyte count is also increased, but its variation from the preoperative is so slight that it does not warrant any conclusions. (3) In the majority of cases there is a moderate fall in both the systolic and diastolic blood pressure following ether anethesia. The blood pressure returns to normal, that is, to preoperative reading, in from twelve to forty-eight hours. The inhalation of oxygen after the withdrawal of the ether vapor diminishes this fall in blood pressure, but is only transient in its effect. (4) In cases of shock, especially where there has been much blood lost during the operation, the fall in blood pressure is greater than after long operation without blood loss, dropping from ten to fifteen minutes. (5) The pulse pressure is a better index of hemorrhage or cardiac failure than the systolic pressure. (6) There is a constant rise in the leucocyte count in hemorrhages, while the leucocytes fall in shock.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

MEDICAL COUNCIL OF CANADA.

Montreal, October 10, 11 *and* 12, 1916.

(*Concluded from page* 222.)

SURGERY.

1. Fracture of patella: Causes, symptoms, and modes of treatment.
2. Dislocation of the Hip Joint: Varieties, symptoms (clinical features), and modes of reduction.
3. Carbuncle: Definition, pathology, symptoms, diagnosis, complications, and treatment.
4. The pathology and symptoms of tuberculosis of the kidney: Outline your method of examination, with findings, leading to a diagnosis.
5. Cholelithiasis: Diagnosis, complications, and treatment in detail.
6. Give the history, clinical features, and treatment in detail of a typical case of middle meningeal hemorrhage.

MEDICINE.

1. Discuss the important points in the differential diagnosis of cardiac dilatation and pericardial effusion.

2. How would you establish a differential diagnosis between (*a*) acute lobar pneumonia, (*b*) congestion (active) of the lungs, (*c*) acute pneumonic phthisis?

3. Write what you know about (*a*) the etiology and (*b*) the diagnosis of epidemic cerebrospinal meningitis.

4. How would you treat a case of typhoid fever complicated by intestinal hemorrhage, giving (*a*) the hygienic, (*b*) the dietetic, and (*c*) the medicinal treatment?

5. Describe the method of giving salvarsan. Discuss the dosage of the remedy, pointing out the indications for its use.

6. A woman aged fifty-one years was seen in a restless state, with twitching of muscles. She was slow in answering questions or obeying orders. Her speech was rather thick. There was no fever. The pulse was regular and of high tension (200+). There was no cough, cyanosis, nor edema. The pupils were equal with normal reflexes, while the tendon reflexes were greatly exaggerated. There was no paralysis. The history showed that the patient had suffered recently severe headaches with frequent vomiting. Recently also her strength had failed and she occasionally complained of severe præcordial pain, yet no pericardial signs were made out. The urine had been free from albumin but now contained blood. The Wassermann was negative. Kernig and Babinsky signs were absent. Discuss the diagnosis and point out further clinical methods useful in establishing a diagnosis.

ANSWERS.

SURGERY.

1. FRACTURE OF THE PATELLA is *caused* by muscular violence and by direct violence. "*Fracture by direct violence* is often star-shaped, and the aponeurosis is not torn, so that the fragments are not separated. Signs of local injury, pain, and bruising are apparent. *Treatment* consists in keeping the limb at rest on a back-splint and applying an ice-bag. Early passive movement and massage are advisable.

"*Fractures due to muscular violence* are more common. They are always transverse; the aponeurosis and capsule on either side of the patella are torn, and the fragments are separated. The patella is broken when poised on the condyles in the semiflexed position. It is then held down by the ligamentum patellæ, and when the quadriceps is suddenly contracted, as in a person trying to regain the upright position, the patella snaps. *Signs:* There is loss of the power of extension, separation of the fragments, and pain, followed by distension of the joint with blood, and synovitis. The aponeurosis is torn at a different level to the fracture, and hangs over between the fragments. The lower fragment is tilted forwards. *Treatment:* The best method is open operation, and wiring four or five days after the accident; for only by this means can bony union be obtained. The obstacles to bony union, without open operation, are that the tilting of the lower fragment cannot be overcome in any other way; the aponeurosis cannot be removed from between the fragments, nor the blood-clot from the joint, except by slow absorption. If no operation is done the union is fibrous, and the fibrous bond will stretch unless the patient be condemned to a stiff knee for six to twelve months. A working man is badly off with either a stiff knee for that time or a stretched bond forever. The *open operation* must necessarily be aseptic. The knee may be washed out with 1 in 40 carbolic or 1 in 2,000 bichloride without injury, or sterilized saline solution may be used. The joint is opened by a horseshoe incision, the blood-clot is removed, the aponeurosis clipped away, the bones drilled and fixed in accurate apposition with silver wire, and the wound is closed without drainage. As atrophy of the quadriceps occurs early, massage and passive movements must be begun in ten days. The patient may go about on crutches in three weeks. Bony union is firm in six weeks. *Retentive apparatus* is used where operation is inadvisable or refused. This may be plaster of Paris, but does not admit of massage. Another plan is to use mole-skin plaster covering the thigh, and kept fastened to the lower part of a back-splint by elastic extension. Or poroplastic may be moulded, one piece over the thigh, the other over the leg, the upper piece being cut out to fit around the upper part of the patella, and the lower to fit around the lower part. These are bandaged firmly to the limb, and fastened together on either side of the patella by Malgaigne's hooks, which are screwed up daily as they become loose. At the end of six weeks the patient is allowed up, but must wear a knee-splint to keep the joint stiff for six to twelve months."—(*Aids to Surgery.*)

2. HIP JOINT DISLOCATIONS.—*Varieties—Backward:* (1) On to the dorsum ilii; (2) on to the sciatic notch. *Forward:* (3) On to the obturator foramen; (4) On to the pubis.

Dorsal dislocation: Head of femur lies on the dorsum ilii, and can be felt in the buttock. The obturator internus is ruptured in most cases. The short rotator muscles are lacerated. The trochanter lies well above Nelaton's line and approximated to the anterior superior iliac spine. The leg is shortened two to three inches. The iliotibial band is relaxed. The leg is flexed, adducted, and inverted. The femur crosses the lower third of the opposite thigh. The toe rests on the opposite instep. A hollow exists in Scarpa's triangle.

Sciatic dislocation: Similar to the above, except in the following:—The obturator internus tendon is intact and lies over the neck of the femur, holding it down in the sciatic notch. Shortening amounts only to one inch or less. The axis of the femur crosses the opposite knee. The great toe rests on the dorsum of the opposite great toe.

Treatment of the backward dislocations: Flex the knee and thigh in position of adduction. Abduct the thigh and evert simultaneously. Bring the leg down straight. "Lift up, bend out, roll out."

Obturator dislocation: The head of the bone lies on the obturator externus in the obturator foramen. The abductor muscles are lacerated. The trochanter is obscured, the iliotibial band is tense. The leg is lengthened, the toes point forward and outward. Flexion, abduction, and rotation outward are well marked. The head of the femur is felt in the perineum. The capsule is torn in its lower part. Pain referred to the distribution of the obturator nerve.

Public dislocation: Similar to the above except: The femoral head is felt under Poupart's ligament. The leg is shortened about one inch. Abduction and eversion are more marked, the toes pointing outward.

Treatment of forward dislocations: Thigh is flexed in a position of abduction. Adduct the thigh and then invert it. Bring the thigh down straight. "Lift up, bend in, roll in."—(From Groves' *Synopsis of Surgery.*)

3. *Carbuncle* is a localized inflammation of the subcutaneous tissue, which has gone on to sloughing. Staphylococci are the exciting cause; diabetes, albuminuria, infective fevers, and lowered vitality are the predisposing causes.

The disease begins as an infiltration of a patch of subcutaneous tissue, which is hard, painful and tender, and the skin over it red and hot. The infiltration may extend till it is the size of a dinner-plate, and the inflammation ends in sloughing and suppuration, not only of the subcutaneous tissues, but of small areas of the skin over it, so that openings develop in the skin, and allow of the exit of pus and sloughs. The openings extend, the sloughs separate, and the wound heals by granulation. The back is a common situation. Sometimes the face is affected, and there is then a danger of thrombosis extending to the cavernous sinus and producing pyemia.

Treatment: Anesthetize, scrape away the slough, treat the surface with pure phenol, dress with antiseptic gauze, and give the patient good food and tonics.

4. "*Tuberculous disease of the kidney* occurs in three forms: 1. As part of general tuberculosis, and giving rise to no special symptoms. 2. It may extend upwards from tuberculous disease of the bladder and affect both kidneys. The mucous membrane of the ureters, pelvis, and calyces, and finally the kidney itself, become converted into tuberculous granulation tissue. The kidneys become enlarged owing to hydronephrosis or pyonephrosis, and a perinephric abscess may follow. Death occurs from chronic toxemia or uremia. Treatment is of little use. 3. Primary tuberculosis of the

kidney is unilateral. A focus of tubercle begins in the cortex, caseates, and spreads to the pelvis, infecting it. Pyonephrosis follows, and infection of the bladder may succeed it. Perinephric suppuration may also occur. The *symptoms* at first consist of aching pain in the loin and frequent micturition, not improved by rest. Hematuria comes on early and without apparent cause, is not increased by movement or improved by rest. Pus is usually present in acid urine, and the *Bacillus tuberculosis* may in some cases be detected. In the late stages the kidneys may be felt much enlarged. The *diagnosis* is doubtful in the early stages, unless bacilli can be demonstrated by the microscope or inoculation of a guinea-pig. The hematuria is much slighter than in cases of renal calculus, and is not influenced by rest. The hemorrhage is not so profuse as in cases of new growth. Slight attacks of renal colic may occur from the passage of caseous matter, but not severe attacks like those due to calculus. An exploratory incision settles the diagnosis in doubtful cases."—(*Aids to Surgery.*)

5. *Gallstones.* "While the calculus remains free in the gall-bladder, usually there are no symptoms. Impaction of the stone in the common duct gives rise to intermittent jaundice, following sharp pain in the right hypochondriac or epigastric region, frequently radiating toward the right scapula, nausea, vomiting, sweating, depression, and often intermittent fever (Charcot's intermittent fever). When the stone is impacted in the cystic duct, jaundice is less common, but the hepatic colic is severe, and dropsy of the gall-bladder may occur. The diagnostic points are the age, sex, history of previous attack, with jaundice and intermittent fever, location of the pain, dark, amber-colored urine, containing bile, and sometimes the finding of the stone in the feces.

Complications and sequels. (1) Suppurative cholecystitis (empyema of the gall-bladder); (2) secondary abscesses; (3) permanent jaundice, with production of Charcot's intermittent fever; (4) ulceration and passage of stone into the intestine; (5) obstruction of the bowels from gallstone; (6) stricture of the ducts and atrophy of the gall-bladder."—(*Pocket Cyclopedia.*)

Surgical treatment. Cholecystotomy is done through an incision parallel to and 1½ inches below the costal margin over the gall-bladder. The liver is drawn up and the intestines packed away with gauze. If the gall-bladder is distended the fluid is removed by tapping it with a trocar and cannula. The opening is then enlarged, and the stones are removed with a scoop. The bile-ducts are examined along their whole course by a finger externally, and by a long probe internally. If the interior is fairly healthy, the opening is sutured with two layers of continuous sutures and the abdomen is closed. Usually it is necessary to drain the gall-bladder for a time, in which case the margins of the opening are stitched to the peritoneum and transversalis fascia of the abdominal wound. The fistula thus established soon closes if there is no obstruction to the passage of the bile into the intestine. If not, it must be closed by a plastic operation or cholecystenterostomy."—(*Aids to Surgery.*)

6. Middle meningeal hemorrhage. "*Symptoms:* When not obscured by some other cerebral lesion, the typical symptoms are—(1) temporary concussion; (2) a lucid interval of a few minutes to a few hours; (3) gradually increasing drowsiness ending in coma. If the hemorrhage is rapid or there is cerebral laceration as well, there may be no interval of consciousness. In addition there may be, from pressure on the motor area, twitching of the corresponding parts followed by paralysis. The pupil on the injured side becomes first fixed and dilated, the other following. When the coma is well marked the pulse is slow and full, and the breathing is stertorous. When the brain is lacerated there are alternating tonic contraction and relaxation of the muscles supplied from the injured area. The *Prognosis* is very grave. The *Diagnosis* is difficult, unless the symptoms are typical, and they seldom are. *Treatment* consists in trephining, removing the blood-clot, and stopping the bleeding. A flap is turned down, and a trephine hole made over a spot 1½ inches above and behind the external angular process exposes the anterior branch. After the blood-clot is removed the bleeding-point is searched for and tied; if it is not seen, more bone must be clipped away. If the bleeding comes from a canal in the bone, it may be stopped with gauze, sponge, or aseptic wax. If the brain then expands, the bone may be replaced and the wound stitched un without drainage; if not, the bone must not be replaced, and the wound should be drained for twenty-four hours. The posterior branch can be reached by a hole made just below the parietal eminence."—(*Aids to Surgery.*)

MEDICINE.

Pericarditis with Effusion	Cardiac Dilatation
Recent history of gout, acute rheumatism, acute infectious or septic disease, scurvy, nephritis, or tuberculosis, chronic gonorrhea.	Usual history of chronic valvular disease of the heart.
Fever and slight pain often associated.	No fever or pain, as a rule.
Nervous symptoms are often present.	Absent or but slight.
Inspection often reveals bulging. Apex-beat is elevated, feeble, and later absent.	Apex-beat usually visible, wavy, and diffuse.
Heart's impulse usually absent, or occupies center or upper border of dull area. Friction fremitus may be present.	Though feeble, the impulse is palpable.
Percussion shows a triangular flat area, and the boundary line alone changes on altering the position of the patient. There is dull tympany in the axillary region. Dullness over left lung below angle of scapula common.	Dull area varies with the chambers dilated; it is co-existent with a wavy impulse, does not extend so high (except in mitral stenosis), and does not vary with change of position. There is no dull tympany.
Auscultation shows the first sound distant and muffled; a friction rub is often present.	First sound clear, short, and sharp resembling the second sound. Friction murmur rare, but an endocardial murmur may appear later.

—(From Anders and Boston's *Diagnosis.*)

2. Lobar Pneumonia. *Diagnosis:* (1) From *acute phthisis:* The symptoms and physical signs of *lobar pneumonia* and *acute pneumonic phthisis* may be the same for the first eight or ten days; at this period the fever in *pneumonia* drops by crisis; whereas in *phthisis* the fever continues for some time longer and the patient gets worse; the sputum contains tubercle bacilli and elastic fibers, and instead of retaining the rusty color it becomes purulent and greenish.

In *pneumonia*, the breathing is very rapid, the pulse-respiration rate is disturbed, the fever is usually high, and runs a regular course, crepitant râles are heard at first, then signs of consolidation follow, and crepitant râles again succeed.

In *phthisis*, the breathing is hurried and there is dyspnea; the fever is often high, but does not run a regular course. At first the signs are those of bronchitis, followed by consolidation, a softening, or excavation in different parts of the lungs; sometimes there is nothing to be heard but scattered râles.

Acute pulmonary congestion is "undistinguishable from the first stage of pneumonia."—(Butler.)

3. Epidemic cerebrospinal meningitis. *Etiology:* The *Diplococcus intracellularis meningitis.* Sporadic cases may be due to the pneumococcus, streptococcus, colon bacillus, typhoid bacillus, bacillus of influenza, or gonococcus; but the epidemic form is always caused by the *Diplococcus intracellularis.* It enters the system through the mucous membrane of nose, mouth, or pharynx, and reaches the meninges by way of the lymphatics or the circulation. The disease may be conveyed by "carriers." *Diagnosis* is made from (1) the symptoms, (2) Kernig's sign, and (lumbar puncture. *Symptoms:* The onset is generally sudden, with headache, rigors, stiff neck, opisthotonos, vomiting,

moderately high (102° F.) and irregular fever, full and rapid pulse, herpes, photophobia; convulsions, delirium, monoplegia or hemiplegia, enlarged spleen, retracted abdomen, and disturbed reflexes may be present *Kernig's sign* is obtained (if the thigh is flexed at right angles to the abdomen, the leg cannot be fully extended on the thigh, as it can in health, owing to the contraction of the flexor muscles). By *lumbar puncture*, some of the cerebrospinal fluid may be withdrawn and examined for the presence of the diplococcus.

4. *General treatment of typhoid fever.* "As soon as the nature of the disease is recognized the patient should be confined to bed. The room should be large and airy, and provided with efficient means of securing thorough ventilation. The temperature of the room should be maintained between 65° and 70° F. The bedpan must be used from the beginning until convalescence is well advanced. The stools and urine should be rendered innocuous before being thrown out. This may be done by treating the evacuation with twice its volume of a 1 per cent. solution of chlorinated lime or a 5 per cent. solution of carbolic acid, and allowing it to stand in a covered vessel for two hours before emptying it into the closet. Soiled clothing should be thoroughly boiled. The *diet* should be liquid or semisolid, unirritating, and easily digestible. Milk alone (6 ounces every four hours) does not supply the required number of calories (2,500-3,000), but, as a rule, it should form a large part of the diet. It may be given diluted with lime water, or as buttermilk, malted milk, koumiss, junket, or ice cream. Among other suitable foods may be mentioned raw or soft boiled eggs, chicken jelly, milk toast, strained oatmeal gruel, potato puree, tea, coffee, cocoa, fruit juices, wine jelly, and custard. Beef tea and broths may be harmful. In the event of digestive disturbances the diet should be restricted for a time to whey or albumin water. Water, plain or flavored (lemonade, soda water, etc.), should be given in large amounts between the feedings. When the first sound of the heart becomes weak and the pulse dicrotic, alcohol is usually indicated. From 4 to 8 ounces of whisky or brandy may be given in the twenty-four hours, the amount being determined by the general effect. The *cold bath* or the *cold pack* affords the best means of controlling fever and preventing the development of severe nervous symptoms. It may be employed every three or four hours when the temperature is 102.5° F. or over. Hemorrhage, signs of perforation, menstruation, and great prostration are contraindications.

"*For the hemorrhage:* Absolute rest is imperative. Cold bathing should be suspended. It is advisable to elevate the foot of the bed. An ice-bag may be applied with advantage to the right iliac region, and ice may be given to suck. The best drug is morphine (⅙ to ¼ grain) hypodermically. Ergot is useless. In cases of recurrent hemorrhage calcium lactate (10 grains thrice daily) and gelatin may be given by the mouth."—(Stevens' *Manual of Practice.*)

5. *Salvarsan is indicated* in: "(*a*) Early cases of syphilis in which contagious manifestations are appearing in rapid succession, in spite of efficient mercurial medication. (*b*) Cases in which, for family or social reasons, it is of special importance to limit the production of infective material or cause the disappearance of symptoms in the shortest possible time. (*c*) Cases in which the symptoms are recalcitrant to the action of mercury, or in which, from idiosyncrasy, that drug cannot be exhibited in sufficient dose. (*d*) Cases of syphilophobia and syphilomania, whether showing symptoms or not; its psychic action in these instances being of greater importance than its therapeutic effect. (*e*) Very early cases of the sequelæ of the luetic infection, before organic changes have occurred."

Salvarsan is contraindicated in: "(a) Cases that are doing well, *i.e.* in which the disease is pursuing its normal mild course under ordinary medication. (*b*) Cases with serious organic lesions of the eyes, kidneys, heart, or other internal organs. (*c*) Cases with post-syphilitic or parasyphilitic disease of the internal organs, more especially of the nervous system."—(*Progressive Medicine.*)

It may be administered intramuscularly or intravenously. The intravenous injection is described by Hirsch as follows: Two graduated glass containers of 250 c.c. capacity are used. Into one is poured 150 to 200 c.c. of sterile salvarsan solution. The other is filled with a like volume of sterile saline solution (made with sterile distilled water and chemically pure sodium chloride). The saline solution is allowed to flow out of the needle so as to expel all air from the tube. The stopcock is now reversed, allowing the salvarsan solution to flow out of the needle, thereby expelling all air from its tubing. The stopcock is now reversed to its former position, until the saline solution is running in a slow, even stream from the needle. The desired site of puncture is selected on the arm or at the elbow, and the needle is gently pushed or thrust through the skin into the vein. Meanwhile the saline solution is continuously running from it. The needle is held at about an angle of 10 to 15 degrees to the skin surface, depending on the prominence and caliber of the vein. Care must be exercised not to push the needle through both walls of the vein. This accident can best be avoided by not introducing too long a surface of the needle into the tissues.

Dosage depends on the type and stage of the disease. Generally from 0.1 to 0.6 gm. is used at intervals of from 5 to 10 days.

6. The diagnostic possibilities are: Uremia, with impending convulsions and coma, with chronic nephritis; cerebral thrombosis (in spite of the high blood pressure); small hemorrhage or tumor in the neighborhood of the island of Reil; arteriosclerosis, with vascular spasm; diabetes. Further clinical methods would include examination of the fundus oculi; complete examination of urine, including a measure of the total quantity passed by day and by night separately, an estimation of the total urea eliminated, the phenolsulphonephthalein test, and tests for sugar.

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†	
Alabama*	W. H. Sanders, Montgomery	Montgomery	
Arizona*	J. W. Thomas, Phoenix	Phoenix	Oct. 2
Arkansas	T. J. Stout, Brinkley	Little Rock	Nov. 13
California	C. B. Pinkham, Sacramento	Los Angeles	Oct. 9
Colorado	David A. Strickler, Empire Building, Denver	Denver	Oct. 2
Connecticut*	Chas. A. Tuttle, New Haven	New Haven	
Delaware	J. H. Wilson, Dover	Dover	Dec.
Dist. of Col'bia	E. P. Copeland, Washington	Washington	Oct. 9
Florida*	E. W. Warren, Palatka	Palatka	
Georgia	C. T. Nolan, Marietta	Atlanta	Oct. 9
Idaho*	Charles A. Dettman, Burke	Pocatello	Oct. 2
Illinois		Chicago	
Indiana	W. T. Gott, Crawfordsville	Indianapolis	Jan. 8
Iowa	G. H. Sumner, Des Moines	Iowa City	
Kansas	H. A. Dykes, Lebanon	Topeka	Oct. 9
Kentucky	J. N. McCormack, Bowling Green	Louisville	
Louisiana	E. L. Leckert, New Orleans	New Orleans	Dec. 6
Maine	F. W. Searle, Portland	Portland	Nov. 13
Maryland	J. McP. Scott, Hagerstown	Baltimore	Dec. 11
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston	Sept. 11
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Lansing	Oct. 9
Minnesota	T. McDavitt, St. Paul	Minneapolis	Oct. 2
Mississippi	J. D. Gilleylen, Jackson	Jackson	
Missouri	G. H. Jones, Jefferson City	Kansas City	Sept. 24
Montana*	Wm. C. Riddell, Helena	Helena	Oct. 2
Nebraska	E. A. Carr, Lincoln	Lincoln	
Nevada	S. L. Lee, Carson City	Carson City	Nov. 5
N. Hampshire	Walter T. Crosby, Manchester	Concord	
New Jersey	A. MacAlister, Trenton	Trenton	Oct. 16
New Mexico	R. K. McClanahan, Santa Fe	Santa Fe	
New York	H. H. Horner, Univ. of State of New York, Albany	New York, Albany, Syracuse, Buffalo	Oct. 2
N. Carolina	H. A. Royster, Raleigh	Raleigh	
N. Dakota	G. M. Williamson, Grand Forks	Grand Forks	Jan. 1
Ohio	Geo. H. Matson, Columbus	Columbus	
Oklahoma	R. V. Smith, Tulsa	Oklahoma City	
Oregon	B. E. Miller, Portland	Portland	Jan. 7
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia	
Rhode Island	G. T. Swarts, Providence	Providence	
S. Carolina	H. E. Boozer, Columbia	Columbia	
S. Dakota	P. B. Jenkins, Waubay	Waubay	
Tennessee	A. B. DeLoach, Memphis	Memphis, Nashville, Knoxville	
Texas	M. F. Bettencourt, Mart	Austin	
Utah	G. F. Harding, Salt Lake City	Salt Lake City	Oct. 1
Vermont	W. Scott Nay, Underhill	Burlington	
Virginia	J. N. Barney, Fredericksburg	Richmond	
Washington*	C. N. Suttner, Walla Walla		
W. Virginia	S. L. Jepson, Charleston	Charleston	
Wisconsin	J. M. Dodd, Ashland	Madison	Jan. 14
Wyoming	H. E. McCollum, Laramie	Laramie	

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PROCEEDINGS OF THE MEDICAL ASSOCIATION OF THE ISTHMIAN CANAL ZONE for the Half Year, January, 1916, to June, 1916. Vol. IX, Part 1. Illustrated. 190 Pages. Published by The Health Department, The Panama Canal.

TWENTY-SECOND REPORT OF THE BOARD OF HEALTH of the Town of Montclair, New Jersey. From January 1, 1917, to December 31, 1916. 64 Pages. Published by Wynkoop-Hallenbeck-Crawford Co., Lansing, Michigan (State Printers). 1917.

HEALTH SURVEY OF NEW HAVEN. A report presented to the Civic Federation of New Haven by CHARLES-EDWARD AMORY WINSLOW, JAMES COWAN GREENWAY, and DAVID GREENBERG of Yale University. 114 Pages. Illustrated. Price, 75 cents. Published by Yale University Press, New Haven, Conn.

NOTES ON MILITARY ORTHOPAEDICS. By COLONEL ROBERT JONES, C.B., with an introductory note by SURGEON-GENERAL SIR ALFRED KEOGH, G.C.B. Illustrated. 132 Pages. Published for the British Red Cross Society by Cassell & Company, Ltd., London, New York, Toronto and Melbourne. 1917.

ASTHMA. Presenting an exposition of the Non-passive expiration theory. By ORVILLE HARRY BROWN, A.B., M.D., Ph.D., with a foreword by GEORGE DOCK, Sc.D., M.D. 36 Engravings. 330 Pages. Published by C. V. Mosby Co., St. Louis, Mo. 1917.

DREAM PSYCHOLOGY. By MAURICE NICOLL. 194 pages. Price, $2. Published by Oxford University Press, New York City.

BUILDING HUMAN INTELLIGENCE. By DR. ARNOLD LORAND. 451 pages. Price, $3. Published by F. A. Davis Co., Philadelphia, Pa.

POLIOMYELITIS IN ALL ITS ASPECTS. By JOHN RUHRAH, M.D., and ERWIN E. MAYER, M.D. Illustrated with 118 engravings and 2 plates. 297 pages. Price, $3.23. Published by Lea & Febiger, Philadelphia, Pa.

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THE MEDICAL CLINICS OF NORTH AMERICA. July, 1917. 193 pages. Illustrated. Published bi-monthly by W. B. Saunders Co., Philadelphia and London. (Six numbers a year.) Price per year, $10.

DENTAL MATERIA MEDICA AND THERAPEUTICS. With Special Reference to the Rational Application of Remedial Measures to Dental Diseases. A Text-Book for Students and Practitioners. By HERMANN PRINZ, A.M., D.D.S., M.D. Fifth edition, enlarged and revised according to the U. S. Pharmacopeia. Ninth decennial revision. 659 pages. Illustrated. Price, $5. Published by C. V. Mosby Co. St. Louis, Mo. 1917.

MANUAL OF THE DISEASES OF THE EYE. For students and general practitioners. By CHARLES H. MAY, M.D. Ninth edition revised. With 377 original illustrations, including 22 plates, with 71 colored figures. 440 pages. Price, $2.50 net. Published by William Wood & Company, New York.

STUDIES FROM THE DEPARTMENT OF PATHOLOGY OF THE COLLEGE OF PHYSICIANS AND SURGEONS. Columbia University, N. Y. Vol. XV, 1916 Reprints.

THE MASTERY OF NERVOUSNESS BASED UPON SELF REEDUCATION. By ROBERT S. CARROLL, M.D. 346 pages. Published by The Macmillan Co., New York. Price, $2.

Therapeutic Hints.

Therapeutic Action of Sponge Baths.—Mary Larter states that sponge baths are beneficial for the metabolism and building up of the body tissues; the properly given cold-water sponge bath aids in the oxidation of the carbohydrates, while the warm sponge bath promotes the oxidation of the nitrogenous elements, the degree of oxidation depending largely upon the duration and temperature of the application. She warns that cold water is rarely borne well without at the same time applying friction. Therefore, the physiological effects of a properly given sponge bath of the correct temperature and desired friction may be summed up as follows: (1) Increased vitality; (2) increased activity of the nerve centers; (3) increased muscular tone; (4) increased activity of the kidneys, skin and liver; (5) more oxygen inhaled, due to increased respiration; (6) increased blood pressure; (7) stronger, slower pulse; (8) tonic effect upon the heart; (9) increase of the blood corpuscles, especially the white ones, thus demonstrating the legitimate use of baths for aiding phagocytes. In administering antifebrile sponge baths it requires a person with a calm, quiet temperament to do the work properly. The strokes with the wet sponge must be long and soothing, and executed with considerable pressure. If friction be desired (depending upon physician's orders) use water of correct temperature tested accurately with a thermometer, to be given for specified length of time. Articles needed for sponge baths are one rubber sheet, one bath towel, two cotton towels, one small towel for the abdomen, one hot water bag and cover, one ice cap, one foot tub, half full with water of 80° to 90° F. and one bath thermometer. Have everything in readiness, first apply ice cap to patient's head, hot water bottle to feet, then remove top covers of bed and substitute a cotton sheet; then pass the rubber sheet, covered with a cotton sheet, under the patient and lastly cover the public region with a small towel. Begin the sponging with the same stroke as in ordinary cleansing, having plenty of water in the washcloth. Rinse washcloth frequently and gradually cool water by addition of ice, thus obviating the risk of wetting the mattress because of possibly a defective rubber sheet. This should be continued for twenty to thirty minutes, and, if carefully done, the reduction in the temperature may be noted in half an hour following the termination of the sponge bath. Sponge baths of low temperature and of a certain duration will cause a rise of blood pressure, whereas hot sponging primarily causes heightened blood pressure, followed by relaxation of the blood vessels and consequent fall of blood pressure, anemia of the brain through the continued use of hot applications can produce faintness; warm sponging slightly increases the number of red cells and decreases the leococytes in the parts not exposed to the water, and thus warm sponge baths could be used in the treatment of anemia. The primary effect of both hot and cold water on the body is stimulating, while its secondary effect in the prolonged hot sponge bath is sedative, then weakening; in the cold sponge bath, the secondary effect is stimulating; when prolonged, depression follows overstimulation.—*Clinical Medicine.*

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TREATMENT OF CHRONIC BRIGHT'S DISEASE.*

BY J. M ANDERS, M.D., LL.D.,

PHILADELPHIA, PA.

THERE are two principal criteria which should serve to guide us in the treatment of chronic Bright's disease. They are, the general condition of the patient as it is influenced by the progress of the affection, and the rate of metabolic excretion as determined by modern methods of examination. We should also pay due regard to the results of clinical and microscopical studies of the urine, although in my experience both albumin and tube casts have, at times, shown a tendency to increase under a judiciously restricted diet on the one hand and to remain uninfluenced by a pretty generous diet on the other.

Without stopping to attempt to remove the touch of vigorous professional confidence in the percentage of albumin and the number and variety of tube casts as an index to the severity of the morbid process, and making it the foundation for prognosis and treatment, I feel that we have depended too exclusively on this somewhat uncertain standard in the past.

I propose considering the two criteria mentioned above for a moment separately so far as practicable, believing that most light may be thus thrown on the present-day means of dealing with this important disease.

The Rate of Metabolic Excretion.—This must be gauged by the most modern and approved methods. The amount of urea excreted in the twenty-four hours is an indication of the outcome of the case, and should be carefully and repeatedly estimated.

Among the substances excreted with great difficulty by a diseased kidney is creatinin. In this connection it is of interest to note that Myers and Lough have shown that an estimation of the blood creatinin is of prognostic value, *e.g.* over 5 mg. per 100 c.c. of blood having invariably terminated fatally in from a few days to two months, while figures from 3 to 15 mg. are to be regarded as decidedly unfavorable. It is essential, therefore, that substances which like urea, creatinin, pigments, hippuric acid, and phosphates are excreted with difficulty, should be allowed in minimal amounts in Bright's disease. To avoid the ill effects of phosphoric acid, von Noorden[1] recommends that calcium carbonate be added to substances containing it.

*Read at the eighteenth annual meeting of the American Therapeutic Society, New York City, June 1 and 2, 1917.

The test meal for renal function probably gives the earliest evidence of diminished kidney efficiency. Mosenthal and Lewis[2] hold phenolsulphonephthalein excretion and Ambard's coefficient are tests which enable one to follow most minutely the progress of renal disease.

General Condition of the Patient during the Progress of the Disease.—While seeking to afford protection to the diseased kidney by extreme moderation in diet, especially in proteins, due attention is to be paid to the matter of avoiding deleterious effects to all other organs—to the metabolism. The strength of the patient is to be preserved by adapting sound hygienic, therapeutic, and dietetic principles to the individual case.

Extremes of mental and bodily activity are to be avoided and the habits and mode of life of the patient regulated, the aim being to maintain the nutritive equilibrium, without producing irritation of the renal epithelium. All noxious substances entering into the etiology must be avoided and removed as far as possible. Primary foci of infection, *e.g.* in the teeth and tonsils, or elsewhere, should receive particular attention. By diminishing or removing such irritants as uric acid, alcohol, lead, and the like, the cardiovascular system is also conserved—a point of vital importance. The cooperation of the patient is always necessary to the end that the directions given shall be carried out persistently and faithfully.

The value of a change of residence to a warm, dry, and mild climate in many cases of the chronic interstitial form of Bright's disease is undoubted. The variability and humidity of temperate climates, particularly during winter, are aggravating factors in this disease, while a sea voyage or a sojourn at some resort where the soil is dry and sandy, and the climate warm and equable, may be highly beneficial.

Diet.—The chief control of chronic Bright's resulting from treatment is found in diet coupled with the foregoing suggestions pertaining to mode of life, rather than in drugs. The dietary restriction should be both quantitative and qualitative. I quite agree with Shattuck[1] that a varied diet is more likely than a monotonous one to promote the making of good blood and improving the general nutrition, and that of the myocardium in particular.

An excess of protein, which is always harmful, can be avoided only by a close study of the functional capacity of the kidney at short intervals of time, and the repeated estimation of the urea and creatinin content of the circulating blood. By pursuing such a course it is found that ofttimes greater latitude may be extended without injury to

the sick kidney, and thus aid decidedly the general metabolism. In this connection, the view of Foster and Davis,[4] to the effect that in cases in which there is no great amount of edema, we must allow considerable water, the while we diminish the protein intake, in order to eliminate the solids and retained nitrogen, is sound and to be adopted.

On the other hand, when dropsy of a more marked degree is present, the fluid intake should be restricted to a total daily amount not exceeding one liter. In this class of cases, composed largely of instances of chronic parenchymatous nephritis, a salt-free, or, what is more practicable, a salt-poor dietary, is a most useful adjuvant to efforts at removing the edema.

Whilst whole milk should make up a considerable portion of the diet, von Noorden has pointed out that milk contains on the whole too much protein, and recommends that it should be restricted to three pints a day, to which a pint of cream should be added. The writer has found skim milk and buttermilk, in appropriate quantities, of signal value in cases in which dropsy is marked.

Recently, Terwaert and Van Lier[5] have put forth the claim, based on their experiments and clinical experience, that restriction to a milk diet in cases of nephritis with retention of urea is decidedly harmful.

In general, a mixed diet will be of advantage; proteins in quite limited amounts,* greens, fruits (especially fruit juices), pure fats, and light, well cooked farinaceous dishes and cereals (except oatmeal) may be allowed. Cocoa may be allowed as a beverage at the morning meal. The effect of a given restricted dietary is to be noted by making careful observation of the bodily weight and of repeated tests of the functional capacity of the diseased kidney as well as of the urine and the urea and creatinin content of the blood.

In the writer's view, it is no less important to the welfare of the sufferer from chronic Bright's that the metabolic processes be watched than to protect by an appropriate diet the chronically "sick" kidney with a view to maintaining, as far as possible, its functional equilibrium.

Drugs.—Drugs, while not curative, may counteract certain dangerous tendencies resulting from interference with kidney excretion. In the exudative variety, in which anemia is often pronounced and progressive, a chalybeate course, from time to time, is useful. In this form, anasarca is also present and calls for treatment. The patient should be put to bed, where he should remain until the circulatory equilibrium is restored, while, at the same time, cholagogues, diuretics, and diaphoretics should be given.

Saline cathartics, exhibited after the Matthew Hay method, *e.g.* in concentrated solution in the early morning, so as to produce two or three watery discharges daily, are useful. Mercury, in all of its forms, is to be omitted, since it has been shown that this drug has a selective affinity for the kidney and is, therefore, harmful in its effects in Bright's disease. Unfortunately, the custom of prescribing a mercurial preparation at intervals in this complaint, especially when edema is present, is only too common, but it should not be approved by the medical profession.

Again, one of the main aims of treatment is to spare the renal epithelium irritating substances, hence such diuretics as caffeine, theophylline, sodium-acetate, and other members of the purin group should be abandoned in the therapeutics of this disease. On the other hand, we may employ for their diuretic effects, unirritating substances such as digitalis and the salts of potassium, especially the citrate, either singly or in combination.

Active diaphoresis, especially if induced by means of hot water baths, or hot, wet or dry packs, is a potent factor in lessening dropsical transudates and the albuminuria, if persistently carried forward at intervals of twelve or twenty-four hours.

In cases in which the renal lesions have not reached an advanced stage, the writer has observed excellent results from a course of the hot Nauheim baths, which markedly enhance elimination through the skin and kidneys.

The Karell diet, or the Karell cure, is warmly advocated by Goodman[6] and others. The technique is simple: "The patient receives daily at 8 and 12 A. M., and 4 and 8 P. M., 200 c.c. of raw or boiled milk, warm or cold, according to the taste." If great complaint is made of thirst, the patient may be allowed to rinse out his mouth with water, with instructions, however, that none be swallowed. It is customary to continue this strict diet in cases of renal edema for a period of one week, after which it may be gradually relaxed.

No aspect of the therapeutics of Bright's disease has engaged the attention of the profession to so great a degree as that of the associated hypertension. The lesson has not been learned as yet when active interference with this ofttimes compensatory mechanism should be commenced. It is to be recollected that while high systolic and diastolic blood pressures are constant symptoms of chronic interstitial nephritis, if we except the arteriosclerotic kidney of the aged, the inflammatory parenchymatous form, so long as it is compensated, exhibits no increase of blood pressure.

Says Engel,[7] the theory that ascribes nephritic hypertension to the chronic parenchymatous variety of renal disease rests upon confounding it with cardiac hypertension. In approaching the question of the management of the symptom, it is well to keep in remembrance that in the renal type of high tension, including evidences of damage to the vascular system, an unfavorable prognosis appears to depend, as pointed out by Stone, upon the height of the diastolic pressure, to which rather than to the systolic, our closest attention should be given, since it should form a guide to aid our efforts to reduce high blood pressure. In view of the presence of a greatly increased diastolic pressure, myocardial exhaustion supervenes, resulting in decreased urinary output, and symptoms due to increased retention of urea, leading in some cases at last to a fatal termination.

On the other hand, cerebral deaths, due to the greatly augmented diastolic pressure, are more common than myocardial deaths. It follows as a natural corollary that by a reduction of the high diastolic pressure, we not only relieve such features as headache, vertigo, and so-called renal asthma, but also and more importantly, prevent rupture of the

*While from 80 to 100 gm. of nitrogen daily are required, it is often advisable to allow much less, even as small an amount as 5 gm. for a week or two.

cerebral arteries—an accident that often terminates life abruptly. This indication is to be met by the cautious use of nitroglycerin in ascending doses, beginning with 1 minim every three hours. In this manner we also relieve the heart of a serious strain, which is the result of a greatly increased tension and may lead to myocardial exhaustion. My experience of the use of hot baths in selected cases accords with that of Rowntree,[8] who states that a drop of 10 to 20 mm. often persists some time after a hot bath that results in a good sweat.

While affording therapeutic assistance to meet high tension, the effects upon the heart, the urinary output, and the urea and creatinin content of the blood must be noted. A too great reduction of the arterial tension, a prevalent mistake, is undesirable, being attended with danger of uremia and serous transudates owing to the resulting insufficient urinary excretion.

Myocardial exhaustion, which manifests itself in the terminal stage of cirrhotic kidney, with signs of cardiac dilatation, scanty albuminous urine, and anasarca, requires heart tonics and stimulants. Here digitalis has good effects; it improves the myocardial tonus and often decidedly increases the urinary output as to both fluids and solids for a season at least. With the digitalis, a small dose of nitroglycerin may be combined if the peripheral tension be high.

If, despite the treatment described above, definite uremic manifestations, more particularly vomiting, muscular twitching, convulsions, or coma, supervene, vigorous measures are to be resorted to with all possible expedition. Starvation for two or three days is advisable. Prompt venesection followed by the use of physiological salt solution given subcutaneously, 500 to 1,000 c.c., as recommended by Herrick,[9] often gives much temporary relief.

The writer has observed good effects from the subsequent employment of the Murphy drip method of administering this solution, preceded by colonic flushing. Free catharsis and active diaphoresis must be secured in the manner above described.

Inhalation of chloroform, or, what is often a useful and the writer believes an essential measure, in some cases at least, the hypodermic injection of morphine in doses of from gr. 1/6 to ¼, is to be employed, and repeated according to the indications of the particular case. White and Wilcox[10] have shown that morphine does good in Bright's disease, by diminishing the oxidizing functions of the body metabolism. The late Dr. LeFevre lauded chloral, and the writer has observed gratifying results from its use in half-drachm dosage thrown into the rectum at intervals as required.

Time and space do not permit of a full presentation of the treatment of all complicating conditions and symptoms in chronic Bright's disease, but those omitted from consideration here must receive attention in accordance with accepted therapeutic principles.

Kidney Organotherapy.—This method of treatment has recently received considerable attention, but it has not had vogue long enough to permit of a proper appreciation of its value. Sajous[11] claims that favorable results have been reported in about one-half of the cases of chronic nephritis in which kidney preparations have been tried. One may use a maceration, as have Page and Dardelin,[12] or, more conveniently, a tablet preparation. The dose of the latter is ten to fifteen 5-gr. tablets daily, preferably given between meals. Kidney preparations produce several effects of which the chief are three: (*a*) The prevention of uremia, (*b*) a reduction in the percentage of albumin, and (*c*) increased diuresis. It is not improbable that kidney preparations owe their stimulating effect upon the urinary output and their antitoxic power to an adrenal principle in organic combination.

Salvarsan has yielded encouraging results in cases of syphilitic origin. Perhaps the only prerequisite to a fair degree of success in the use of salvarsan or neosalvarsan is the selection of cases in the earlier stages of this form of nephritis, since no drug "can possibly restore destroyed renal parenchyma or transform fibrous connective tissue into secreting kidney cells."[13]

Surgical Treatment.—The percentage of cases in which surgery, *i.e.* incision of the capsule or cleavage of the cortex, serves a useful purpose is probably small, and it is gratifying to note that the ardent advocates of these operative procedures are far less numerous than they were a single decade ago. It is conceivable that a splitting of the capsule or mere puncture of the same will diminish abnormal tension and thus relieve pain which may be present. Moreover, for hematuria, more particularly if practically limited to one side, "the operation should be recommended, as it has been frequently followed by the cessation of the hemorrhage in chronic Bright's disease." (Newman[14].)

As a rule, the good effects of operation are only temporary, the result of an improved circulation which, however, cannot be long maintained. Surgical methods cannot modify the nature and progressive character of a chronic nephritis, cannot arrest no even appreciably retard the renal and arterial fibrosis and their mechanical consequences. Finally, no form of treatment is, in a real sense of the word, curative that has not for its main aim an amelioration of the toxemic condition present and the removal of etiological factors in particular cases.

REFERENCES.

1. Von Noorden: *British Medical Journal*, Nov. 28, 1903.
2. Mosenthal and Lewis: *Journal Amer. Med. Association*, Sept. 23, 1916, p. 933.
3. Shattuck: *Journal Amer. Med. Association*, Feb. 6, 1906.
4. Foster and Davis: *Amer. Jour. Medical Sciences*, January, 1916.
5. Anders: Practice of Medicine, Diseases of the Urinary System.
6. Goodman: Transactions of the College of Physicians, Philadelphia, XXXVIII, 1916, p. 89.
7. Engel: *Berliner klinische Wochenschrift*, October 16, 1906.
8. Rowntree: Musser & Kelly Practical Treatment, Vol. IV., p. 780.
9. Herrick: Modern Medicine, Vol. III, p. 929.
10. White and Wilcox: International Clinics, Vol. II, 26th Series.
11. Sajous: Internal Secretions and Principles of Medicine, p. 784.
12. Page and Dardelin: *Presse Médicale*, December 21, 1904.
13. Anders: Practice of Medicine, Diseases of the Urinary System, p. 1039.
14. Newman: *British Medical Journal*, October 8, 1904, Vol. II.

1605 Walnut Street.

ARE THERE SUBJECTIVE PAINS?

BY MEYER SOLOMON, M.D.,

CHICAGO.

IN this paper I have endeavored to answer a definite question which I have chosen as the title of the paper. Are there such things as subjective pains? The answer to this question means much to us from many viewpoints, purely scientific and practical (diagnostic and therapeutic). I shall not hasten to answer this question. Owing to the nature of the problem involved, considerable quotation of the opinions of others must, of necessity, be resorted to, but this, I am confident, will be excused if it but leads to clarification of the situation, and to ultimate solution of the problem at hand.

How the Term "Pain" Is Used in This Discussion.—When I use the term "pain" in this paper, I do not mean to refer to or to include states of so-called psychalgia or so-called painful mental states, such as depression, fear, anxiety, shame, sadness, and the like. Nor do I have reference to such uncomfortable peripheral experiences as pressure feelings, hot or cold feelings, tremulousness, itching, and their ilk. I am speaking of what we ordinarily refer to as distinct so-called physical pain —that acute condition which Sherrington so well describes as the psychical adjunct of an imperative protective reflex, and which we generally regard as being a subjective appreciation of a peripheral process, peripherally induced, of sensory origin, and of which we become self-conscious.

The biological function of the self-conscious recognition of pain-sensations and its manifold and marked advantages over mere reactivity without self-consciousness of the nature of the process, need not be dwelt upon at this time. True, pain itself is a psychological fact. No such thing as pain exists unless self-consciousness is there to perceive it.

Behan, in his excellent and very complete work, entitled, "Pain, Its Origin, Conduction, Perception and Diagnostic Significance," finds it extremely difficult to define this everyday pain that all of us know so well, and which all have experienced much too often. It is one of those fundamental, elemental things that defy definition. It has been described as the kind of sensation we feel when the skin is cut or burnt. Sherrington's description of pain as the psychical (which he had better call the self-conscious) adjunct of an imperative protective reflex is in harmony with Behan's definition, which is as follows: "Pain is distinctly a mental interpretation, and cannot be strictly defined. It is the interpretation of some abnormal and generally harmful process which is occurring in the organism. It cannot be classed as a sensation, but rather is the result of the perception and interpretation of sensation by the mind,"[1] or, as I should prefer to say, by the self-consciousness.

When speaking of pain, therefore, in this paper, it is the simon-pure, true-to-color, universal experience and recognition of certain peripherally induced processes to which I refer. For the purposes of this discussion it is not necessary that I give a review of the very important work on pain and its tracts of conveyance as worked out so beautifully by Head and his associates. Behan gives a good working summary of the practical conclusions arrived at as a result of this indefatigable and painstaking labor, and the original papers[2] themselves may be referred to, if desired.

Peripheral Causes of Pain.—Of course, all sorts of peripheral factors of a physical nature may be the initiating stimuli of pain. In fact, excessive stimulation of any kind (chemical, thermal, mechanical, electrical) may reach such a degree of intensity that it finally produces pain. The original seat of this stimulation may be anywhere along the sensory tract or system—the cutaneous terminals of the sensory nerves, the muscular and visceral sensory terminals, the nerve trunks, the posterior sensory ganglia and sensory roots, and the optic thalamus. Irritation of the sensory tracts of the cord and brain rarely cause pain, but generally only paresthesias, while direct stimulation of the sensory cortex produces no pain.

The peripheral processes that may be responsible for the evocation of pain are protean. Behan gives a splendid summary of the peripheral types and causes of pains in every region of the body.

Head has called our attention to what he properly calls "referred pains" of peripheral (visceral) origin. The viscera, under excessive stimulation or irritation, may produce pains in various parts of the skin or bodily surface, the pain being referred or transferred from the former to the latter location by nerve connections. That these referred pains have been and still are being overlooked and labelled "hysterical," "neurasthenic," "imperative," "psychic," or "imaginary" pains goes without saying.

In discussing the causes of local pains in so-called neuritis and neuralgia, after mentioning the now generally acknowledged fact that genuine neuritides are relatively uncommon, Dana[3] justly declares that the neuralgias are in fact as a rule nothing less than true local pains, of a certain distribution, and terminates his discussion with the final conclusion: "That 'neuralgia' as usually defined is a very rare disorder, and its diagnosis is to be made only after careful examination of muscles, bones, nerves, nerve centers, and sources of reflex irritation."

We must, then, take into consideration as the possible peripheral causative stimuli of local pains, all sorts of conditions which we are ordinarily too apt to overlook—toxic processes, arteriosclerosis, occupational fatigue, chronic focal infection, disorders of the joints, muscles, tendons, bones, etc.

Objective Central Pains.—Over and above all these causes of pain we have certain types of pain which are called "central" pains—pains of central origin. The term "central pains" is used in two different senses. In the first sense one refers to objective pains occurring as the result of trouble in the central nervous system, more specifically, the optic thalamus. But, as Gordon Holmes[4] points out:

"It must be remembered that Roussy originally pointed out, and his observations have been confirmed, that these lesions which produce spontaneous pains and the associated overreaction to affective stimuli lie in the lateral region of the thalamus, where they must interrupt the fibers connecting the cortex with the thalamus, as these pass from the internal capsule into the latter. And if

we assume that by so doing they remove a control which the cerebral cortex, the organ of discriminative sensibility, exerts on the thalamus, the center of the affective elements of sensation, there would result a condition of overactivity of the latter which must show itself, first by an exaggerated reaction to these elements; and secondly by the occurrence of affective sensation under conditions which are not recognized as naturally capable of producing it, and these sensations will consequently appear to be spontaneous."

This type of so-called central pain is, it is plain, no exception to the rule that pain is apparently always due to peripheral stimulation recognized by the self-consciousness as such.

So-called Subjective Pains.—The term "central pains" is used by others in still another sense. In this latter sense the authors using this term refer to pains subjectively induced. Some call them hysterical, neurasthenic, or imperative pains, others refer to them as functional pains, and still others label them imaginary pains. Let us use the convenient trade-mark, "subjective pains," to include those pains said to be induced by the patient himself. I do not refer to self-mutilation or exaggeration or simulation.

Since in the field of medicine such supposedly subjective pains are most apt to be found and studied by psychopathologists, let us see what some writers and clinicians of standing have to say on this point.

Dubois,[4] after stating, "It is wise to remember that pain is, in the last resort, a sensation which can only be perceived by the ego. It is a purely psychic phenomenon," follows this in the very next sentence with: "Just as we have the right to consider as psychical all troubles of motion which cannot be explained by organic lesions or by intoxication, so we may suspect the mental origin of a pain when by conscientious and repeated examinations we are unable to discover its cause." He adds a few illustrative cases.

Dejerine and Gauckler,[5] in their discussion of "genital algias," assert: "The *thought* (italics mine) of physical malformation, painful coitus, a rather profuse leucorrhea, a real but temporary lesion, may be the origin of the psychic fixation of a painful symptom which, whatever its source, ends by being a pain of purely central causation." And again, in their consideration of what they call "thoracic algias," they say: "The false pulmonic, by reason of being examined and palpated, gets to the point where he discovers some peculiarly sensitive region. The mental representation of this pain projects itself in the form of a localized pain in the chest, accompanied occasionally by a cutaneous hyperaesthesia of the region where the pain is felt." Later on, in their discussion of subjective disturbances of sensibility, they speak of topalgias or what they also call "central psychic algias," as constituting practically the great majority of subjective disturbances of general sensibility described by various writers as occurring in the course of the psychoneuroses, and mention the possible locations of these pains (and they here include disturbances of visceral sensibility), finally to tell us that "The majority of these phenomena come about through the psychic fixation on the part of the patient of some pain that had once been experienced or some emotional sensation which had once been felt," adding, on the next page, that "Sometimes there seems to be no starting point, and the pain is created wholly by suggestion." They continue on the page after this to speak of "central pains," by which they mean subjective pains; and a few pages further along, in their discussion of the special therapy of these pains by stoical contempt, they make this statement: "All *pains of phobic origin* (italics mine), due to fixation of the patient's attention on some point of his body, and by the subcontinuous (subconscious is probably meant) calling forth of a pain whose cause has long since disappeared, may be treated in the same manner."

In contrast to these specific expressions of their belief in the possible ideational origin of localized pains, we find the following views thrown in with other statements and leading them to attribute such pains as are here described to the triple influence of emotion, suggestion and education: "There is no question that one may succeed by focusing the attention, even though it be more or less complicated by phenomena of imitation and suggestion, in educating a visceral or peripheral sensibility in just the same way as a blind man or a clever artisan educates his tactile sensibilities. But these facts ought to be put in the group of hyperesthesias rather than in the list of purely objective disturbances of sensibility. They are in fact phenomena of localized hyperirritability, which may be compared in their own particular domain to the diffuse hyperexcitabilities which we have already studied." The last sentence, although at variance with what goes before, is one with which we can not help agreeing.

Prince[7] has included pains under so-called hysteria. Freud,[8] in his presentation of "The Case of Miss Elizabeth v. R.," speaks of her pains as being symbols, by conversion of painful experiences or memories which have been repressed into the storehouse of the subconscious and subsequently forgotten, as the means of terminating or solving a disagreeable mental conflict. At one point he says: "The ideas of 'defense' (abwehr) against an unbearable presentation, the origin of hysterical symptoms through conversion of psychic into physical excitement, the formation of a separate psychic group by an arbitrary act, leading to the defense—all these were in that moment palpably presented before my eyes."

One finds, on carefully reading the report of this case, that, as, in fact, Freud himself admits, the pains complained of by this patient were fatigue pains of an indefinite nature, and the skin and muscles were especially sensitive (hyperalgesic) to pressure and pinching.

Others, following in the footsteps of Freud, have explained similar cases in like fashion. For example, Moyle[9] reports a case of a woman with severe attacks of pelvic pain with no discoverable physical cause, and sums up his view of the case in these words: "Frankly, then, this pain seems to represent a continuance of an accidental experience ('a single attack of pelvic pain occurring late in her convalescence from confinement'), or the exaggeration of discomfort from ptosis, through an unconscious elaboration into a justification for her life of invalidism."

Kempf,[10] in an interesting paper, giving the report of a patient who, among other symptoms, showed urticaria and itching, but without pains, in discussing Freud's views of the case of Miss Lucy R. (also reported in the same monograph in which is included "The Case of Miss Elizabeth v. R."), who apparently developed the persistent olfactory image of cigar smoke, and on comparing it to the findings in his own case, truly says: "Just how Freud understands that excitement may be converted into a physical innervation is not intelligible. Furthermore, it seems to me that this conversion conception is the keystone of Freud's important, but not quite satisfactory, libido concept." A critical analysis of this aspect of the problem cannot be entered upon here.

Diller,[11] in speaking of pains of "severe character, intermittent, remittent, constant or paroxysmal, dating back over a period of many months or many years," declares: "Such pains, I am firmly convinced, may constitute the expression of a morbid psychic state. Whether we call such pains hysterical or not does not particularly matter, but that they originate in the mind of the patient, and not in the knee, or abdomen, or back to which they are referred is the principle thesis of this paper." He refers to these pains as instances of "psychic pain, pain due to an idea, a mental operation." As means of recognition of these peculiar pains, he mentions two kinds of evidence: negative and positive. As negative evidence he finds that the pain does not conform to that of any one organic disease, and "seems too contradictory in time, appearance, duration and in many other ways features to indicate organic disease," nor can any physical disease be discovered after painstaking examination. As positive evidence, he mentions the influence of suggestion, and the fact that the patient tells the story in great detail, dramatically, showing that he has centered his life about the pain.

Fry,[12] after stating that "each of the several fundamental psychopathic tendencies presents a psychic reaction to pain which is destructive," and after enumerating the pains in the so-called hysteric, hypochondriac, neurasthenic and paranoic, finally gives consideration to the pains in the obsessive or psychasthenic, and calls them "imperative pains."

Janet and Sidis nowhere, so far as I can find, speak of subjectively induced pains. As I shall show later, by quotations from Sidis, he would agree at once with the thesis which I hope to prove before ending this paper, namely, that there are no subjectively induced pains.

Behan,[1] in spite of his prolonged study of the problem as evidenced by his very exhaustive and complete work on this single topic of pain, feels himself justified in asserting: "I shall also point out that the intellect can, by the exercise of memory, recall to mind the objective sensations classified as pain, and, by making them pertinent to the moment, cause them to appear real, as if experienced at the time. In other words, intellect is able to produce, without any objective means, the sensation of pain. The class of pain sensation which seems to appear without any definite causative factor, is frequently called subjective pain." And Behan then tells us that he believes in the reality of subjectively induced pains.

Dana[13] discusses the general subject of pain, from the standpoint of a neurologist, in an interesting contribution. He first lays down the law or doctrine of parallelism, concluding that "it must be apparent that all pains and all suffering are real things. There is no such thing, strictly speaking, as an imaginary pain; that is, a pain which has no morbid neural condition underlying it." In his discussion of what he calls "psychic or attention pains," he refers at one place to the pain in a certain obsessive patient being "central and would ordinarily be called 'imaginary' or hallucinatory," but he explains it as follows: "There was a disorder of attention and a lowering of the threshold of consciousness; all the time there was some real neural irritation which occupied and morbidly enlarged the field of attention."

Dana enumerates the following types of pains met with amongst psychoneurotics: (1) neurasthenic pains and pains in the constitutionally inferior, which he justly attributes to peripheral causes in individuals with cerebral and spinal centers that are weak, irritable, easily exhausted and tired, upon which, as a basis, attention pains may be superimposed; (2) the pains of obsessives, true psychic or attention pains, which Fry, as mentioned above, in a later article, called "imperative pains," and which occur in so-called psychasthenia; (3) depression and anxiety pains, occurring in hypochondriacal, depressive cases.

I quote Dana at great length in order to herewith present his attempt to explain the origin or modus operandi of these types of pain: "If one were to interpret these sensations psychologically, . . . I should say that in the psychasthenic pains there has ceased to be any peripheral irritation. The neuritis is gone; the nerve injury is healed, and the only neural disturbance is a morbid change in some primary sensory center, like the optic thalamus, where sensory impressions are first received and distributed. In other words, there is slight or no disorder of the sensory nerves, but there is some disassociation and disorganization in the work of the higher sensory mechanism. But beyond this, there has occurred disorder of attention; the patient's mind has become so fixed on this slight neural change that the threshold of consciousness is greatly lowered; and even slight neural disturbance keeps up an agonizing suffering. I would still insist that there is a neural change, and that the pains are not imaginary, but the neural disturbance is always a minimum, while the focusing of attention on it is at a very morbid height.

"On the other hand, in pains and dysesthesias that go with the anxious depressions, there is probably present a real morbid condition affecting perhaps especially the protopathic nerves. These usually do not arouse sensations in consciousness, but through conditions of autotoxemia, arteriosclerotic and the rheumatic and bad metabolic conditions that usually accompany the period of involution, these nerves are irritated. In addition to this, the mind of the patient is depressed by his psychosis and made more sensitive and attentive to the inflow of sensory impulses. There is then both an increase in the stimulus and a lowering of the threshold of consciousness."

Yet we find that the last sentence but one of his

article is somewhat in confliction with the above declarations, for we find Dana remarking: "There is not yet any simple test by which we can tell surely *when a pain is not a real, but an attention or habit pain* (italics mine)."

Sherrington speaks nowhere of possible subjective pains and assumes with right that all pain is of objective origin, although subjectively appreciated. He says: "Thus, physiologically the stimulus which excites these end-organs must, whatever its physical or chemical nature, possess, in order to stimulate them, the quality of tending to do immediate harm to the skin. Further, the reflex they excite (1) is prepotent; (2) tends to protect the threatened part by escape or defense; (3) is imperative; and (4) if we include psychical evidence and judge by analogy from introspection, is accompanied by pain.""[14]

Attempted Explanations of So-called Subjective Pains.—I have already enumerated the attempted explanation of a number of different writers who have believed in the occurrence of true subjectively induced pains. Many insist, without further explanation or qualification, that there are imaginary pains, by which they mean pains actually felt, but directly of purely ideational origin.

Behan, although contending that there is always some neural change produced, even though it be only central, which is responsible for the pain, still speaks of subjective pains in about the usual manner, although, like many another, he would deny that there are any true "imaginary pains," for either the patient has the pain or he has it not. Yet, if he has real pains which do not seem to be peripherally induced, he would not hesitate to classify them as subjective pains, centrally induced.

After these many quotations, I shall return to the question which I put before myself in the title of this paper: "Are there subjective pains?"

Evidence in Support of the Existence of Subjective Pains.—The evidence in support of the actual existence of subjective pains which has been offered by different authors interested in this question, include pains said to be due directly to hypnosis, pains occurring in the psychoneuroses, emotional pains, habit pains, monomania pains, pains found in the occupational neuroses, pains said to be the result of dreams, and, in general, ideational pains. Let us consider these topics briefly.

So-called Hypnotically Induced Pains.—It is said that by hypnosis it is possible to bring into the patient's self-consciousness the perception of real pain. Now, it is well known that many marvels, far beyond the facts, have been attributed to the power of hypnotism. Among the most common of these are hallucinations of all sorts. And yet, after a study of this very problem, by Boris Sidis,[15] one of the foremost, most trustworthy and most brilliant students in this field, the conclusion is reached that "*hypnotic and post-hypnotic suggested hallucinations are not genuine, but are essentially spurious; that hypnotic hallucinations, unlike actual hallucinations, are not really experienced; that hypnotically suggested hallucinations are only forms of delusions.*" (Italics Sidis'.)

Hugh Crichton Miller,[16] not aware of the conclusions of Sidis in this respect, quotes Moll, who speaks of subjective pains in these words: "Such 'imaginary pains' have been excellently compared with hallucinations. Now, we can say that the hallucinatory object is imaginary, but it is false to say that the perception is imaginary; it has a central cause, whether the object is imaginary or not. Similarly a pain that is felt is the result of a definite central process. It is a matter of indifference whether the central process is caused by a peripheral one, such as a prick, or by suggestion by a spontaneous mental act. The pain exists in both cases, and is not imaginary." As I shall show before I get through, ordinary hallucinations, like pains, are always peripherally induced, directly.

Psychoneuroses and Pains.—From what I have already said, with the many quotations from different clinicians, earlier in this paper, it is apparent that when pain cannot be attributed to peripheral processes or objective causes, it is not infrequent to see it pigeon-holed as subjective or central. It is, therefore, only by exclusion, or rather, when one cannot find any other cause for it or does not know what its real cause is, that one finds a pain being looked upon as subjectively induced.

Most writers agree that such subjective pains are actual or real pains, although brought on by ideational processes, or, as Behan would put it, by "the power of transferring sensation from the warehouse of past experiences to the mart of present change."

The attempt to prove such pains to be symbols, by "conversion," of painful psychic experiences or memories which have been repressed into the subconscious, is simply based upon the assumption that such pains of subjective origin can actually exist. Hence we are face to face with the fact that it is the latter question which is fundamental for consideration.

If it is impossible to produce pains by hypnosis, as is plain from what I have said under the heading, "So-called Hypnotically Induced Pains," or even in dreams, as I shall prove below, how much more impossible is it to expect such pains to be produced by ideas in the waking state of any person! Hence ideas, whether by suggestion or fixation of attention or what not, cannot produce pains, in the apparently normal or in neuropathic or psychopathic individual.

Emotions and Pains.—Pain, we are told, may be produced as the result of emotions—in great anger, sorrow, fear, and the like. Although in most cases this is not real pain of the ordinary kind, but rather a feeling of unpleasantness, nevertheless the feeling thus produced is an actuality, and in some cases emotional upset may really lead to pain. But how is such pain possible as the result of emotional upset? It is by the intermediate production of certain peripheral changes, such as spasms, as in angina pectoris. One sees clearly, then, that in these cases the pain is of peripheral origin, the peripheral changes being induced by emotional upset. Thus the emotional disturbance is accompanied by certain peripheral processes which in their turn may produce pain or other disagreeable peripheral, local manifestations. This sort of pain is not in opposition to the thesis here maintained, which is, that pain is of peripheral origin in all cases, and that purely subjective pains do not exist.

So-called Habit Pains.—Behan describes these pains in the following words: "This is the name

given to that great class in which the pathways for pain have been so grooved from frequent repetition that on the least provocation the stimulus travels over them and gives rise to a pain sensation."

What I have already said is sufficient to lead us to the conclusion that there are no such things as habit pains. Either the pain is kept up by certain irritating peripheral changes, or there is no real pain present.

So-called Monomania Pains.—Behan cites Brissaud in support of these so-called monomania pains, by which is meant a pain recurring as a habit at a certain time or in connection with certain objects. Brissaud believes that patients suffering with such pains are in fact suffering from an obsession, and that they have a delusion of pain when none exists. Behan adds: "If Brissaud means that they really have not pains, but delude themselves into believing that they have and act as if they had, and that the whole business is a delusional state, then we can at once agree with him." In that case, then, there are no so-called monomania pains.

Pains in the Occupation Neuroses.—Walton, cited by Behan, mentions pain induced only by making certain occupation movements and not invariably produced even then. We can dispose of these at once by declaring unequivocally that either such patients have real pains or they have not such pains. And when pains do exist, they are due to definite, peripheral, local, provocative factors of one sort or another.

Dreams and Pains.—In his work on pain, Behan informs us: "In the dream state, also, vivid sensations may occur." And by this he means that pains may occur in dreams, as a result of the ideational processes in the dream.

I know of no one who will assert with absolute positiveness that true pains have ever been brought on in dreams as the direct result of the dream ideas themselves, and this, in spite of the fact that in dreams, as Freud mentions, we descend from the thought level of mental imagery to the sensory perceptive level of mental activity—from concept to percept, from idea to sensation.

The so-called toothache and headache dreams, and the like, are, in truth, dreams in which one has a real toothache existing independently of the dream, brought on by peripheral processes and woven into the dream as such; or, no real toothache or headache is present, but the dreamer merely has an idea of the same, and thinks about it *as if* he were having a pain in the tooth or head.

Freud[17] himself, in his Interpretation of Dreams, in disputing the somatic source of dreams, says: "I can perceive a sensation during sleep through and through sleep, as it were, which happens as a rule with painful stimuli, but without weaving the pain into the texture of the dream." He nowhere, so far as I can discover, considers the possibility of pains occurring as a direct result of the dream thoughts.

We may, with assurance, it seems to me, declare that it is impossible to experience actual pain in sleep as a result of dreams, unless there is real, peripherally induced, local pain present—toothache, headache, furunculosis, etc., etc. Our discussion to follow, of supposedly ideational pains, will give the reason for this.

Ideas and Pains.—The receptive apparatus for pain is not yet well defined, but we do know that the existing sense receptive organs for pain are widely diffused, and are capable of receiving pain stimuli of various kinds (such as touch, deep pressure, heat, cold). The terminal filaments in the skin have been called nociceptors by Sherrington, who has shown that those parts of the body most subject to injury in phylogeny (evolution) have a more numerous supply of nociceptors than those not so exposed. Crile[18] has done much to develop this point of view at great length.

The pain-conducting apparatus consists of the nerve fibers from the periphery to the sense-perceptive centers. The primary pain center is supposed to be in the optic thalamus. The cortex has an inhibitory and controlling influence over the thalamus, as Holmes believes. The cortex itself, be it repeated, is insensitive, although attempts have been made in the past to localize pain perceptive centers in different areas of the cortex. Pain, then, is a special type of sense-perception.

In consideration of the relationship of ideas to pains, we are in the same position as we would find ourselves in discussion of the general topic of the relation of ideas to other peripherally induced processes—smell, hearing, taste, vision, and all sorts of haptic phenomena, such as feelings of warmth, of coldness, of pressure, and the rest. This leads us to the general problem of hallucinations. Pain is the self-conscious recognition of a definite kind of peripheral sensation.

We must ask ourselves the question: Can an idea evoke a sensation, directly? Observe yourself, analyze yourself, study yourself, and you will at once hit upon the truth. The answer is emphatically "No."

No one has put this better than Sidis, whom I shall permit to answer this question for us, from various angles.

Sidis[19] says: "The image of a light does not shine, the idea of a voice does not sound, and the representation of a perfume does not smell. A sensation, or presentation as it is sometimes termed, differs from an image or representation qualitatively, fundamentally. The sensation or presentation is given as immediate experience, while the image, the representation, is essentially mediate, it is a mental substitute for the immediate experience of the sensation. The idea or image bears the same relation to the sensation as a photograph bears to the original, or rather as a symbol to the thing it represents. Ideas, images, representations, substitute, represent sensations, but they are not sensations. A sensory process is fundamentally different. A sensation is not an intense idea, nor is an idea a weak sensation. Ideas differ far more qualitatively from sensations than visual sensations, for instance, differ from olfactory sensations. There is not a particle of evidence to substantiate the view that ideas or images are copies of sensations in the sense of being weak sensations or 'centrally excited sensations.'"

Again, in his differentiation of ideational from perceptual processes, he writes:

"Ideational and perceptual processes cannot be identified. The two are qualitatively different: the sensation has intensity, the image lacks it. We

may point out the main differences of sensation and image. (a) A sensation has intensity, an image totally lacks it. (b) An image is a reproduction or, rather, a representation, a symbol of a sensation, but no sensation represents another; a sensation, unlike an image, is not mediate, but immediate experience. (c) A sensation bears the mark of externality, an image lacks it. Finally, (d) a sensation cannot be called up at will, while an image is independent of peripheral stimulations of external objects, and is usually under the control of the will. No sensation differs so much from another as the image differs from its corresponding sensation."

Subjective pains may be said to be hallucinations of pain. Sidis insists, and I believe he is unquestionably right, that an hallucination is a percept and is essentially sensory in character, and remarks: "Ideas and images are not possessed of magic virtues, and with all the fancy work about them, they cannot display sensory qualities."

In his elaboration of the question of the primary and secondary sensory elements, he states: "The primary elements are initiated directly by incoming peripheral stimulations, while the secondary sensory elements are brought about indirectly, through the mediacy of the primary elements, the secondary elements themselves being really derived from sense-organs other than the ones directly stimulated by the peripheral excitation." But even here, to be sure, the secondary elements are of peripheral origin, the sense-organ being indirectly excited by a peripheral stimulus which primarily arose elsewhere. However, there is no evidence to prove that pain may be evoked as a secondary sensory element. We must surely agree with him when he specifically maintains that *there is memory for images, but not for sensations.* His contention that hallucinations are real and objective because of the constituent sensory elements chimes in with all that has been mentioned above.

We need not summon to our aid any further evidence for the conclusion that *an idea of a pain can by no manner of means evoke a pain.*

General Remarks.—One must differentiate a generally sensitive or irritable nervous system, with a generalized hyperesthesia for all peripheral sensations, from true pains. It is true, however, that persons with irritable and impressionable nervous systems feel pains more readily and acutely than individuals with relatively stable nervous systems. There may, thus, be pains in a patient otherwise or also neuropathic or psychopathic.

Simulation, of course, cannot produce pains, unless self-mutilation be resorted to. Unsatisfactory or false descriptions or interpretations by the patient may lead to the description of certain peripheral feelings as pains, although no actual pain is in reality experienced by the patient.

Exaggeration must be excluded.

Delusions of pain must be clearly differentiated from true pains.

The referred pains of head must be thought of in certain cases. How often they occur and how we can positively prove their origin it is difficult to say.

Nothing said throughout this paper should in any way lessen our faith in the value of a stoical attitude in life, and in the good to be obtained by psychotherapy and distraction in the relief or minimization of actual pains by heightening the threshold of consciousness, with blocking or repression of the pain.

Conclusions.—All pains are peripherally induced and subjectively appreciated.

There are no subjective pains of primary central origin.

Ideas cannot directly produce pains.

When, as a result of cross-examination of a patient, real pains are found to exist, look for a peripheral cause of some sort or other. The peripheral factors responsible for the production of pain are protean.

REFERENCES.

1. Behan: Pain: Its Origin, Conduction, Perception and Diagnostic Significance.

2. Consult the following by Head: The Consequences of Injury to the Peripheral Nerves in Man, *Brain*, 1905, XXVIII, 116; A Disturbance of Sensation, with Special Reference to the Pain of Visceral Diseases, *Brain*, 1893, XVI, 1-133, 79, 82; *Brain*, 1894, XVII, 339-480; *Brain*, 1896, XIX, 153-276; *Brain*, 1900; with Campbell, Pathology of Herpes Zoster and Its Bearing on Sensory Localization, *Brain*, 1900, Part III, 353-523; with Gordon Holmes, Sensory Disturbances from Cerebral Lesions, *Lancet*, January 6, 13, 20, 1912, No. 3, with Rivers and Sherren, The Afferent Nervous System from a New Standpoint, *Brain*, 1905, Part II, XXVIII, 98-115; with Rivers and Sherren, The Grouping of Afferent Impulses Within the Spinal Cord, *Brain*, 1906, XXIX, 538; with Sherren, The Consequences of Injury to the Peripheral Nerves in Man, *Brain*, 1905, XXVIII, 99, 116-338, 339-388; with Thompson, On The Grouping of the Afferent Impulses Within the Spinal Cord, *Brain*, 1906, XXIX, 537-743. In this connection one should not fail to take note of the work of Trotter and Davies (*Journal of Physiology*, 38.) In contradistinction to Head's hypothesis of a dual nerve mechanism in the skin, Trotter and Davies conclude that the skin possesses four independently variable functions and so believe in the existence of four separate peripheral mechanisms (including both fibers and end-organs) for pain. See also Head's Theory of Cutaneous Sensibility by Harvey Carr, *Psychological Review*, Vol. XXIII, No. 4, July, 1916.

3. Dana, C. L.: Periostitis and Osteitis as a Cause of Local Pains and So-called Neuritis and Neuralgia, MEDICAL RECORD, April 29, 1916.

4. Gordon Holmes: Article on the Thalmic Syndrome, in *Modern Treatment of Nervous and Mental Diseases*, Vol. II, White and Jelliffe.

5. Dubois: The Psychic Treatment of Nervous Disorders, English translation by White and Jelliffe.

6. Dejerine and Gauckler: The Psychoneuroses and Their Treatment by Psychotherapy, English translation by Jelliffe.

7. Morton Prince: Hysteria from the Point of View of Dissociated Personality, *Journal of Abnormal Psychology*, October, 1906.

8. Freud: Selected Papers on Hysteria and Other Psychoneuroses, English translation by A. A. Brill, Chapter III, The Case of Miss Elizabeth v. R.

9. Moyle, H. B.: Pain as a Reaction of Defence, *The Psychoanalytic Review*, II, 2, April, 1917, p. 198.

10. Kempf, Edward J.: A Study of the Anesthesia, Convulsions, Vomiting, Visual Constriction, Erythema and Itching of Mrs. V. G., *Journal of Abnormal Psychology*, XII, No. 1, April-May, 1917.

11. Diller, Theodore: Pain As the Chief Cause or Sole Expression of a Psychic State, With Illustrative Case, *International Clinics*, Vol. II, Eighteenth Series.

12. Fry: Imperative Pains, *Journal of Nervous and Mental Diseases*, November, 1911.

13. Dana, C. L.: The Interpretation of Pain and the Dysesthesias, *Journal of American Medical Association*, March 18, 1911.

14. Sherrington, Charles S.: The Integrative Action of the Nervous System, p. 319.

15. Sidis, Boris: Symptomatology, Psychognosis, and Diagnosis of Psychopathic Diseases, p. 243.

16. Miller, Hugh Crichton: Hypnotism and Disease, A Plea for a Rational Psychotherapy, p. 39.
17. Freud: The Interpretation of Dreams, English translation by A. A. Brill, p. 189.
18. Crile, G. W.: The Origin and Nature of the Emotions, and Man, An Adaptive Mechanism.
19. Sidis, Boris: The Foundations of Normal and Abnormal Psychology.

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HOSPITAL SOCIAL SERVICE IN NEW YORK.

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A DESCRIPTION of the development of any form of social service may properly begin with a definition of terms. The phrase is now applied to such a range of activities that definitions will serve at least to make clear the meaning of the writer even though they fail to fulfill any other requirements.

The term "social service," as it is used to-day, may be defined as the practical application of the ideals of chivalry to the conditions of modern community life. It represents the conscious effort of the stronger to help the weaker, of the more fortunate to help the less fortunate, and, in the aspect with which we are chiefly concerned, the effort of the well to help the sick.

No better examples of general social service can be given than the work of our neighborhood settlements here in New York, of our institutional churches and synagogues, and of our great charitable societies. These organizations seek to render service to their neighbors by providing a better environment and wider opportunities. They aim to make their beneficiaries happier people and better citizens; but they deal, to a large extent, with well people or with individuals whose problems are not complicated by ill health.

Medical social service is obviously that branch of general social service which deals with the social problems caused by, or complicated by, illness. How closely it is connected with general social service is evident when we consider the relation of poverty to disease. It is hardly possible to render social service in a modern community without constantly employing some form of medical social service.

Medical social service is not a recent development. It is essentially as old as the practice of medicine. Wherever, among those who have cared for the sick, there has been the impulse to treat the patient as well as the disease, there medical social service has been rendered. The parable of the Good Samaritan provides a perfect example of such service, for the traveler not only bound up the wounds of the man who had been set upon by thieves, but also provided for his after-care. The development which is recent in such service is its recognition and organization. What was left for centuries to individual physicians and nurses with enough of vision to see the need and enough of personal initiative, or of opportunity, to meet it, has, within a generation, become a recognized factor in the diagnosis and treatment of disease. Once recognized as an accessory to modern treatment, it was both logical and inevitable that its organization and standardization should follow, and, as a result, there has developed a highly specialized, technical form of medical social service, adapted specifically to the treatment of disease and organized as a distinct department of our medical institutions. This is hospital social service as we know it to-day.

It will be seen that the definition given to general social service will apply to its specialized branches; but where the problem of the individual to whom service is rendered is caused or complicated by ill health, there medical social service is applied. Where the illness or ill health is the sole factor, or the chief factor, in the situation, the type of social service to be rendered becomes at once more technical, and this is the specific field of hospital social service.

It is apparent that the distinction between medical social service and hospital social service is one of degree only, depending upon the emphasis laid upon ill health in the problem of the individual or family under consideration. Frequently the province of one invades the other, as the illness assumes a graver or a less serious aspect. Conceivably a patient first in need of hospital social service later comes within the province of medical social service, as his illness recedes, and ultimately is a candidate for social service without medical technicalities, when, for example, the physical handicap has been removed and our neighbor is wrestling solely with an economic situation. The only value in the arbitrary distinctions between the form of social service rendered lies in the delimitation of territory for the persons rendering it, in the possibility of efficient coöperation and the avoidance of duplication of work.

There is a further advantage in such a delimitation and that is the standardization of qualifications for workers in these various types of social service. There has been so much discussion of these qualifications and of the relative importance of so-called social training as compared with medical (hospital) trainng that the subject merits especial emphasis. Contrary to the opinions expressed in some other cities, it is the conviction of those who have studied the situation in New York that whereas social training is highly valuable, medical training is absolutely essential for intelligent medical social service; and that for our hospital social service departments graduate nurses only should be eligible as salaried workers. This viewpoint is the result of experience with conditions as they exist in New York and with the development of the work here. They will be discussed later.

Before describing the origin and growth of hospital social service work in New York, it is proper to outline its earlier development elsewhere. The earliest systematic hospital social service recorded was the attempt made, in 1791, by Sir William Blizzard of the London Hospital, in Whitechapel Road, to follow the patients into their homes for the purpose of remedying conditions and providing for suitable after-care. This he endeavored to accomplish through the assistance of volunteers who made home visits under his supervision. This was an isolated effort of an individual with vision.[1] For nearly a century no other hospital imitated this inspiration, although there is a record of medical social service rendered by the Boston City Dispensary in 1806.[2]

In 1880, in England, an organization with the

amazing title "Society for After-Care of Poor Persons Discharged Recovered from Insane Asylums"[3] was established in connection with institutions for the care of the insane. In so far as these institutions were considered hospitals, this organization must be noted as an early example of hospital social service. The effort thus made to follow up mental cases discharged from institutional treatment was imitated by our State Charities Aid Association which, in 1905, undertook, through official visitors and volunteers, to supervise the home care of such patients.[4]

In 1890, C. S. Loch of the London Charity Organization Society made an important contribution to hospital social service by his suggestions for the reorganization of the "lady almoners," already associated with many English hospitals.[5] The plan thus outlined was submitted to a committee of the House of Lords in the same year. The first lady almoner under this plan was appointed in 1895, at the Royal Free Hospital in London. Her qualifications and duties are described in the *British Medical Journal* (February 5, 1910).[6]

Baltimore was the first American city in which a definite effort was made to secure recognition by the medical profession of the importance of systematic medical social service. It had long been recognized that there are factors in disease which drugs and surgery alone cannot eliminate—factors of temperament, of environment, of circumstances; in a word, *social* factors—which had acquired an increasing significance in the study of diagnosis and treatment. These factors were deemed of such importance by Dr. Charles P. Emerson of Johns Hopkins University that, in 1902,[7] he secured the coöperation of the local Charities Society in sending medical students to visit families in their homes, to study at first hand the social causes of disease. In describing this contribution to medical social service, Miss Cannon says, "Dr. Emerson's valuable work differed from the present social service in hospitals in that he was aiming to eduucate medical students, not primarily to serve hospital patients. His students visited many who were not sick and paid no especial attention to the clinics."[8] Unfortunately, this valuable experiment was discontinued, after several years, as it was thought to take too much time from more technical and, inferentially, more important work.

No further advance in the development of hospital social service was made until 1905, when Dr. Richard Cabot of Boston secured official recognition for a medical social service worker, Miss Garnett I. Pelton, a trained nurse, in the Out-Patient Department of the Massachusetts General Hospital. That was the beginning of a movement which grew at first gradually and through isolated efforts, and later with amazing rapidity, into the officially organized social service departments which are found in all well-equipped hospitals to-day.

The first organized hospital social service department in New York City was established at Bellevue Hospital in 1906. For many months there was but one social worker, Miss Mary E. Wadley, a trained nurse, who built up, single handed, the social service department of an institution with a daily census of over one thousand beds. Under her leadership there has grown a department, now comprising subdivisions, with forty-five salaried workers and auxiliary committees numbering over one hundred and fifty men and women. The spirit of hospital social service in New York is in large part due to the courage, vision, and personality of Miss Wadley of Bellevue. The social service departments of our other hospitals have been modeled, more or less, on the standard set by Bellevue; and Bellevue, under Miss Wadley, remains the leader, as it was the pioneer, in hospital social service in New York.

Prior to 1906 much excellent medical social service had been undertaken by the tuberculosis and other clinics, the nurses' settlements, and visiting nursing associations. Notable contributions to this movement were made by the Nurses' Training School of the Presbyterian Hospital, under Miss Anna C. Maxwell, and by Dr. Henry Dwight Chapin at the Post-Graduate Hospital.[9] This type of medical social service represents the function of the visiting nurse rather than that of hospital social service as we have defined it.

A feature of the work here which is distinctive and has had a marked influence upon its development in New York is the fact that it was started in the wards of our hospitals rather than in the out-patient departments, and has only gradually and recently invaded our dispensaries. In other words, hospital social service in New York has grown centrifugally, from within outward. It began at the heart of the hospital and has only gradually reached its extremities. This development has had a significant effect upon the attitude of the hospitals in New York to their social service departments, as well as upon the attitude of the departments toward their work. Here, from the first, the emphasis has been laid upon the technical, medical aspect of the problem, and the social elements in each case were viewed in the light of their bearing upon the diagnosis, treatment, and the prevention of recurrence. It is at once apparent why it is so strongly felt in New York that the hospital social service worker must be a graduate nurse. Only a nurse understands the routine and vernacular of the hospital. The necessary technicalities and red tape hold no mystery for her. She is familiar with it all. She is *persona grata* to the medical staff and nurses because she speaks their language and understands their viewpoint. To her, with the least possible expenditure of time and effort, a technical problem can be explained, and she can make an intelligent contribution to its solution through the social data, interpreted in medical terms, which she is able to collect. To the patient, unaccustomed to the hospital atmosphere and routine, she is the "friend at court." She is able to interpret the hospital to the patient and able to interpret to the patient the mysteries of the hospital.

It should go without saying that no amount of training, either medical or social, will make a successful worker of a woman without tact, sympathy, untiring patience, and the saving grace of humor. A thorough groundwork of social training will save much wasted effort and many needless mistakes in "social diagnosis" and "social treatment." But though she have all these things, if she has not hospital training, she cannot, in our opinion, become the ideal hospital social service worker. In ordinary medical social service, perhaps less tech-

nical training will answer reasonably well. Certainly that is the opinion in some other cities. In hospital social service, never. That is the consensus of opinion here.

Very recently a most interesting development of this idea is the plan of providing a course at Columbia University for graduate nurses desiring positions in the social service departments of hospitals. This course will be given under the joint supervision of the Department of Public Health Nursing at Teachers College and the New York Conference on Hospital Social Service, the college providing the theoretical work and the social training, the Conference arranging for practical "field work" in the social service departments of the affiliated hospitals. A certificate, at the satisfactory completion of the course, would cover both fields, and a nurse with personal qualifications in addition would find positions open to her in any city in this country.

Reference has been made, in this connection, to the New York Conference on Hospital Social Service. This organization was formed at a meeting called for that purpose at the New York Academy of Medicine on January 25, 1912. It was the result of a series of informal conferences held by representatives of the social service departments of a number of New York hospitals for the exchange of experiences and suggestions in the problems common to their work. The Conference is composed of the trustees and other officials of the affiliated hospitals, representatives of their staff and medical boards, members of their social service committees, and finally the social workers themselves. The Conference is governed by a board composed of representatives of each group, (*a*) officials, (*b*) committees, (*c*) workers of the hospitals, enrolled in its membership. The routine business naturally devolves upon the officers, a smaller executive committee, and upon an executive secretary, Miss Mary H. Combs, R.N. The Conference holds four public meetings each year—in October, December, February, and April—which serve as a forum for the discussion of current problems. The Proceedings of the Conference are published annually. There are now thirty-six hospitals and dispensaries enrolled.

Among the interesting by-products of this organization has been the development of the cardiac work in New York, which originated in a discussion before the Conference, following a committee report, which was submitted in February, 1912, on the industrial training of cardiac cases. This led to the establishment of the Convalescent Home for Cardiac Cases at Sharon, Conn., where industrial training was given in addition to convalescent care, and the group of members of the Conference who conducted this experiment later incorporated their organization under the name of The Trade School for Cardiac Convalescents. This society maintains the Sharonware Workshop at 84 Lexington Avenue, where men handicapped by heart disease and previously engaged in laborious work are employed, under medical supervision, in an occupation suitable to their physical condition.

The success of this pioneer effort to meet in some part the immense cardiac problem—second, numerically, to the tuberculosis problem—and the recognition by the trustees of the Trade School that their special field, the laboring man, represented only a fraction of the problem as a whole, led to the organization of the Society for the Prevention and Relief of Heart Disease, incorporated in October, 1915, which serves as a clearing house for all phases of the problem. Under the auspices of this society, special cardiac classes are being organized in the dispensaries of many New York hospitals, and it is hoped that the city will eventually be districted, as it now is for the dispensary treatment of tuberculosis, and that an association of cardiac classes may render the same service to these classes that the Association of Tuberculosis Clinics now so efficiently renders to the district tuberculosis clinics. The Association for the Prevention and Relief of Heart Disease would stand in the same relation to such an organization as the Committee for the Prevention of Tuberculosis now stands to the Associated Tuberculosis Clinics; while the Trade School for Cardiac Convalescents represents the special care of a selected group of cases, much as a tuberculosis class, or the Home Sanatorium, cares for selected cases. Ultimately, it is hoped that similar organizations may be achieved in other cities and affiliated into a national association. Only by intensive work for small groups, and coöperation and affiliation of the larger groups, can we hope to solve this tremendous problem of medicine and social service.

In conclusion, two questions naturally suggest themselves to any one who has studied the situation here and elsewhere. (1) Why have the hospitals been so prompt to avail themselves of this form of public service, involving as it does a considerable increase in their operating expense? (2) Why have physicians, as a class, been so slow to recognize the need of such departments in their hospitals or to utilize them to the full, once established?

The answer to the first query is more obvious than that to the second. The organization of a hospital is, after all, a business proposition. Whatever makes for efficiency, the hospital is quick to appreciate and appropriate. The social service departments in our city hospitals have made for efficiency in treatment and economy in administration, despite the expense of maintaining them—an expense which should be promptly increased by the payment of adequate salaries to our social workers. They have made for efficiency by providing etiological data, not otherwise obtainable, which assists in making correct and complete diagnoses; by rendering treatment more effective through intelligent coöperation in the homes of the patients, and by adequate after-care. They have made for economy by reducing recurrences and securing the completion of treatment. Finally, they have rendered the hospital acceptable to the public, which is, in itself, a service of magnitude. The social service department is the shock absorber of the institution, serving as the intermediary between the patient and his family outside the hospital, on the one hand, and between the family and the hospital authorities, on the other. The amount of friction and time saved is incalculable—it is an economy of both money and energy.

It is not so easy to understand the indifference

or ignorance of the medical profession. To them has been due the inception of the idea of hospital social service and upon them devolves the responsibility for its success. Only one explanation seems reasonable. "Physicians are a conservative class, besides a very busy one. They are not apt to take up any new adventure unless they can see quite clearly for themselves the actual benefit of the method. In other words, they are not moved by the pure sentimentality which would appeal to the laity."[10]

Once let them be convinced of the value of hospital social service work in the diagnosis and treatment of their hospital cases, and the social service departments have no more ardent advocates than the medical profession. Of what use to prescribe a tonic and recommend a liberal diet to a dispensary patient who cannot benefit by the one because he cannot secure the other? How prevent recurrent decompensation in a cardiac case who goes to a home on the fifth floor or to a job as hod carrier? Of what benefit to recognize a migraine as the result of eyestrain, if the patient cannot afford glasses? How help the acutely ill patient whose symptoms are aggravated by worry over home conditions? What convalescent care can be given to the man whose family are starving while he is out of work? And if he goes without convalescence, how long before he will be back in the ward? How can the surgeon estimate the end results of his work unless he can have his cases followed up for weeks, or months, after their discharge from his ward? And this is true of more cases than the surgical alone.

To the patient and to the public the social service department in our hospitals means the humanizing of an institution, until from a place of mystery and terror it has become a refuge and a haven. To the officials it means increased efficiency and economy of routine. To the medical board it should mean a completeness of care and a thoroughness of cure never before possible under the old régime.

REFERENCES.

1. Wadley, M. E.: "Hospital Social Service," *American Journal of Nursing*, November, 1911, p. 91.
2. Report of Boston City Dispensary.
3. Cannon, Ida: "Social Work in Hospitals," p. 8.
4. Fourteenth Annual Report State Charities Aid Association, New York, November 1, 1906; also later Reports of its Subcommittee on the Aftercare of the Insane.
5. Nineteenth Century, Vol. XXXII, pp. 303-4.
6. Cannon, Ida: "Social Work in Hospitals," pp. 8-12.
7. Emerson, C. P.: "A Social Service Department of a General Hospital," *National Hospital Review*, May 15, 1909.
8. Cannon, Ida: "Social Work in Hospitals," p. 15.
9. Chapin, Henry Dwight: "Preventive Care for Children," MEDICAL RECORD, March, 1917.
10. Stillman, E. G., Secy. of Conference: Personal Communication.

129 EAST SEVENTEENTH STREET.

When to Eat and How Much.—Bergonié has calculated that to get the best utilization of food one should eat at 7.30 A.M. the chief meal of the day, to consist of 1500 to 2000 calories. The second and last meal, consumed at 6 P.M., should comprise 1000 to 1200 calories. A heavy noon meal and a late evening meal, the author holds, despite the prevailing custom, are irrational.—*La Presse Médicale.*

SHOULD WE BE MORE CONSERVATIVE IN THE USE OF ARTIFICIAL PNEUMOTHORAX?*

BY JOHN ROY WILLIAMS, M.D.,
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PULMONARY tuberculosis seems to have as many different treatments as "Carter had oats," and Carter is said to have had "some oats." We have nearly every possible form of treatment for this disease from a rational attack upon the cause of it, directly and indirectly, down to McDuffie's "garlic poultice." Somewhere in the list is found artificial pneumothorax, or lung compression, for which, by some, are being claimed the most wonderful results. .

The origin of the idea seems to be a matter of debate. Murphy[1] says, "the principle of organ rest was first conceived by Carson of Liverpool, in 1821, when he advanced the idea that a diseased lung would heal more quickly if the lung itself were put at rest. He published a paper in 1822, detailing experiments on animals in which he produced an immobilization of the lung by artificial, or rather, surgical pneumothorax." Tuffier[2] claims that Potain, in 1888, was the first to attempt it for therapeutic reasons. Sloan[3] attributes compression to Carson by natural hydro and pneumothorax, but gives credit to Forlanini, in 1882, for being the first to bring it about artificially by means of atmospheric air introduced into the pleural sack by a needle from without. Minor[4] agrees with Sloan, and disputes the right of the Germans to claim the credit for Brauer.

Murphy[1], in 1898, took up the work and, while he admits that Carson was the originator of the idea, states for himself and associates, "we take a pardonable pride, we hope, in seeing this method universally adopted, sixteen years after it was first advanced by us, as an effective treatment of tuberculosis." So, who is the originator of this treatment?

Carson believed that cases of tuberculosis which developed a hydro- or pneumothorax showed a tendency to a cure of the tuberculosis, and that it was due to a fixation of the lung. Spengler[5] later made the same claim; but Cornet[6] holds that Spengler's idea is not in keeping with the experience of most clinicians.

Artificial pneumothorax, according to Forlanini, is "putting an air-splint on the diseased lung." Sloan[3] says, "this is a mechanical treatment analagous to the application of the plaster cast to the broken bone to immobilize it." But is it analogous? I do not believe it is. Compression tends to bring about blood and lymph stasis in the lung, and the plaster bandage that would do that would be improperly applied, causing a condition that would soon necessitate its removal. The lung is very rich in blood vessels, most of which have the thinnest possible walls, and are very easily collapsible. When you compress an organ the size of the lung down to that of your hand, the circulatory disturbances which must follow hardly seem possible of being other than unfavorable to the

*Read before the Medical Society of the State of North Carolina, April 19, 1917.

health of the organ, or to a recovery from any disease which may be attacking it.

Bruns[7] says that at autopsy he found a compressed lung showing complete atelectasis, with stasis of the blood which remained venous. McKenon[8] reports the findings in an autopsied lung that had been compressed, showing a marked and peculiar congestion of the lung throughout. It was 6 inches wide, 2 inches thick, and extended from the dome of the liver to just below the clavicle. It was bound down by eight tense bands of adhesions, which doubtless prevented it being more compressed. Was that a cure, or was it, in effect, an extirpation of the lung?

In tuberculosis our efforts should be to cure the diseased portion of the lung, and save the remaining healthy portion. Murphy[1] has likened the operation to that for appendicitis. In that he may be correct. The appendectomy does not cure the appendix, it removes it. Compression, in a very large number of cases at least, may be analogous to the removal of a healthy ascending colon along with the diseased appendix.

Murphy[1] says that as soon as we find tuberculosis, we should immediately compress, just as when we find appendicitis we should immediately turn the patient over to the surgeon for operation. He advocated compression in the early cases; yet he says that Saugman reported 67 early non-complicated cases treated by compression, with only 17 cases well after a period of from sixteen months to three and a half years, which is a little less than 24 per cent. I believe that with hygienic, dietetic, and medicinal treatment, without compression, we are doing very nearly three times as well.

Murphy[1] says to compress the early cases, Sloan[3] to reserve the treatment for the more advanced cases. Others, and they are the majority of the compressionists, say do not compress until the patient shows no hope of recovery by all other means. Most compressionists claim it requires a knowledge and skill uncommon among physicians to select cases proper for compression. Judging from the differences of opinion as to which are the proper cases for compression, one may believe it does require an almost superhuman skill and knowledge.

As for skill. From all I have been able to hear and read, along with a limited observation, the operation seems a very simple one. The simplest surgical skill, combined with the specially devised apparatus for the purpose, is all that seems necessary to perform the operation. As for knowledge, if we are to select the incipient cases, possibly a highly developed knowledge is necessary. But if we are to select the advanced cases, or the seemingly hopeless ones, I cannot see where any special amount of knowledge is required.

Most compressionists say we should select the far advanced cases in which the disease does not extend down any further than the third rib in the other lung. Suppose we compress a left lung with an apical involvement in the right? The compressionists say "rest for cure," yet they seem willing to throw extra work upon this right lung which they hope to cure. Can we not expect, and most compressionists report it to be their experience, that the disease in this right lung will rapidly advance? I am pleased to find that Dunn[9], along with a few others, cautions against this. But even if that other lung is not diseased, which is a very rare incident in the far advanced cases, will it not more certainly become emphysematous, which is not only undesired, but is also dangerous to the right heart?

What are the dangers of compression? There is the so-called "pleural reflex," to which has been attributed sudden death by some. Grey[10] says there is no such condition, yet Sundberg[11] reports two deaths from it, and one death from spasm of the larynx probably caused by the pleural reflex. Displacement of the mediastinum has proven very dangerous in a number of cases. Considerable displacement of the heart, with marked interference with its function and a serious disturbance of the circulation, has been frequently reported.

Rapid evacuation of a compressed cavity has been reported as causing a spread of the disease to the other lung, with early death following. Pleural effusions are very common, occurring in not less than 60 per cent of cases, if not more, as reported by nearly all of the compressionists. There is often perforation of the lung, nearly always followed by septic infection, producing a pyopneumothorax with its consequent deleterious effects. There is danger of infection from without during the operation; and it is thought by some that germs will pass from the lung into the pleural sack without perforation, especially in those cases where a high positive pressure is used.

Air embolism is reported as being a more or less frequent happening, proving very dangerous and, in a number of instances, fatal. Forlanini[12] reports a case of miliary pulmonary tuberculosis following compression, complicated with pericardial effusion and death. There have doubtless been other similar cases which have never been reported. Acute general miliary tuberculosis, tuberculous pneumonia, and tuberculous meningitis have followed the operation, and by many are believed to have been due directly to it.

Lloyd[13] reports a case of pulmonary abscess which proved fatal, and which he was helpless to check. I can easily see how such a condition can be brought about. And pulmonary gangrene can easily follow, caused by the blood stasis in a lung that is infected by many pathogenic germs.

Diminished aeration of the blood, causing poorer nutrition, will produce a lower tissue resistance. There is also a general inflammation of both the visceral and parietal pleura, believed due to the irritation of the gas used, to disturbed circulation in the parts, and probably to infection in many instances.

The failure of the compressed lung to reexpand after the removal of the gas, and a complete adhesion of the visceral and parietal pleura after expansion, are both reported to be frequent occurrences. There is a marked and sudden interference with the pulmonary circulation, bringing about blood and lymph stasis, and greatly raising the blood pressure in the pulmonary artery. There is damage to the right heart, caused by the increased pressure it has to work against, by the pleural inflammation and adhesions, by the lessened aeration of the blood, and by the emphysema brought about

in the uncompressed lung. And this dangerous effect is brought about when already the right heart is handicapped by the disease before compression is resorted to. To my mind this seems a rather long list of reasons why we should be at least more conservative in the use of artificial pneumothorax. Are all of these dangers to be lightly considered?

Are all of the supposed good results of compression due to it alone? To quote Webb,[14] "two cases which refused the application of pneumothorax, and whose condition seemed hopeless without the application of this remedy; and two cases in which we were unable to induce it, are now in excellent condition, walking several miles a day and with almost complete absence of expectoration." Does not this experience justify the belief that many compressed cases would have done just as well without compression?

With compression it is claimed the fever is reduced, cough and expectoration diminished. Certainly the fever is reduced, for with the blood and lymph stasis, absorption is made almost impossible; certainly the cough and expectoration are reduced, for the lung is placed in a condition making drainage almost impossible after the initiatory collapse of the lung. But is that a cure?

Is it worth while to deprive the blood of its necessary aeration; to bring about blood and lymph stasis; to keep up a poorer nutrition, producing lessened tissue resistance; greatly to overwork an already overworked right heart; to give the other lung, which is so often already diseased, from half as much more to double the amount of work to do; to take a chance of bringing about an extension of the disease to the uncompressed lung, in order that we may reduce the cough and expectoration? Should we be willing to take a chance of bringing about air embolism, perforation of the lung with almost certain septic pleurisy with effusion, tuberculous pneumonia, tuberculous meningitis, acute general miliary tuberculosis, sudden failure of the right heart, sudden death from pleural reflex, or from spasm of the larynx, for the still unproved good results of compression in a still very limited number of compressed cases?

The reports of cases treated by compression are interesting, to say the least. They claim from 0 per cent. of cures to 100 per cent. They claim improvement in from 18 to 92 per cent. This seems a very wide variation in the results obtained, and justifies the belief that, at best, the reports are vague, ambiguous, and misleading.

The reports show some compressionists claiming no effusions in their cases, while others report 100 per cent. with effusions. Baldwin and his coworkers at Saranac claim 100 per cent. effusions in their cases. Peters believes that with time from 90 to 100 per cent. will show effusions. Bullock[15] claims to have had but one effusion in all his cases, and that one with a beneficial effect. He attributes it to the wonderful climate of that portion of the West in which he operates. This would seem to attribute an extraordinary virtue to climate, of which I have never heard before. You may remember that he is the man who claimed that none of us east of the Mississippi can point to a single cure of tuberculosis two years after discharge from treatment. He might be placed along with Marpham, who claimed to have grown dead tubercle bacilli in pure culture. It is a case of "he may be right, but I doubt it."

Hamman[16] says that after compression the lung very often fails to reexpand. Mannheimer[17] says, "We can never know whether the lung will reexpand. Sloan[18] says that "after reexpansion a complete fixation of the lung to the chest wall occurs in some cases from pleural adhesions brought about by the effects of the gas on the pleura." Are these desirable conditions?

Julian[19] writes me saying, "At present I cannot commend the method as fully as I would like." Homan[19] writes saying, "I have never been very enthusiastic about the operation." Thompson[19] writes me that "he feels sure the pendulum will slowly swing back to a more conservative basis in the use of artificial pneumothorax." Pierce[19] writes me that "it is not to be used indiscriminately."

Sajous,[20] in writing of the treatment of pulmonary hemorrhage, states: "In hospital and sanatorium practice, also in large cities, we have a much more certain and safe remedy in compression of the lung by gas injected directly into the pleural cavity." He also writes, "In profuse hemorrhages, where the pressure need be only temporary, oxygen gas, as found in the markets will be all that is required, as ere it is absorbed a clot will be formed." James,[21] in writing of compression in the treatment of tuberculosis, in conclusion states, "This method was practised for several years, but has now been generally abandoned."

So far as artificial pneumothorax in the treatment of tuberculosis is concerned, I admit I may seem to be rather pessimistic. I shall want a more uniform report of the results obtained, and better reasons for their having been obtained than have yet been furnished. I do believe, however, that the operation is clearly indicated in cases of uncontrollable hemorrhage, where all other means have been exhausted and the life of the patient seems in imminent danger. Here the compression need not be kept up long enough to bring about many of its dangers. Here it is an emergency measure, and seems rational and justifiable. This is in keeping with the opinion of Sajous, whom I do not find advocating the operation for any other purpose.

Many compressionists say that the operation is dangerous, requiring great skill and knowledge. I agree with them that it is dangerous; not, however, because of the necessity of an almost superhuman skill, but because of the direful results in such a large percentage of cases. Even by those to whom the greatest skill is attributed, many disappointments are admitted.

We are warned against overenthusiasm by many compressionists. Is it because they have found it not to be the wonderful life-saver after all? Is it because they have had so many accidents they are wanting to see the pendulum swing back in the other direction? Is it because they believe the consumptive already has enough trouble without adding compression to his depression? It may be better to pay more attention to the cause of the disease, the tubercle bacillus and its usually associated mixed infection, and a little less attention to the symptom complex, except in so far as it may aid us in making an early diagnosis and directing us in our fight against the cause.

A more or less extensive experience with the tuberculous, covering a period of about thirteen years, has brought my mind to the point where it dictates that early diagnosis, hygienic, dietetic, and medicinal treatment, and careful general management of the case, afford the safest and surest means of cure of pulmonary tuberculosis. I present this paper with the hope that it may assist in turning the pendulum on its backward swing, and that it might deter from the indiscriminate practice of compression that is being followed by some to-day.

REFERENCES.

1. Murphy: Recent Studies of Tuberculosis, 1914.
2. Tuffier: *Ibid.*
3. Sloan: *Southern Medical Journal*, August, 1916.
4. Minor: Trans. Med. Soc., State of N. C., 1916.
5. Spengler: Nothnagel's System of Medicine.
6. Cornet: *Ibid.*
7. Bruns: *Southern Medical Journal*, August, 1916.
8. McKenon: *Ibid.*
9. Dunn: Trans. Med. Soc., State of N. C., 1916.
10. Grey: Trans. Nat. Assoc. Study and Prev. Tub., 1914.
11. Sunberg: Recent Studies of Tuberculosis, 1914.
12. Forlanini: *Ibid.*
13. Lloyd: *Southern Medical Journal*, August, 1916.
14. Webb: Trans. Nat. Assoc. Study and Prev. Tub., 1914.
15. Bullock: *Ibid.*
16. Hamman: *Ibid.*
17. Mannheimer: *Ibid.*
18. Sloan: *Ibid.*
19. Julian; Homan; Thompson; Pierce: Personal letter.
20. Sajous: "Cyclopedia of Practical Medicine."
21. James: Osler's "Modern Medicine."

THE CARE OF THE FEET IN PREGNANCY.

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A FEW months ago, Grossman (MEDICAL RECORD, 1916, XC, 1074) called attention to a hitherto neglected subject, the care of the feet in pregnancy. In this article the author, who has studied the question from the standpoint of the orthopedist, arrives at the conclusion that all pregnant women should be instructed as to the proper care of the feet; that prophylactic measures should be instituted regardless of the presence or absence of weak feet; that neuralgic pains in limbs, back, and sciatic region are suggestive of weak feet; and that only by the institution of prophylactic and of early active treatment can we hope to prevent severe suffering in one of the most trying periods in a woman's life.

Strange to say, obstetric literature contains no allusion whatsoever to this subject, and yet it is an every-day experience of obstetricians to hear patients complain of weakness of their feet during the first weeks or months after childbirth. This weakness may persist in some instances, and may become a permanent drag on the efficiency of the body. It is a well-known fact, both to physicians and the laity, that after parturition the feet often increase in size and that larger shoes are needed. This may seem trivial to the medical attendant, but it is a very real drawback to the young society matron, and, indeed, to any woman who wishes to preserve her physical attractiveness.

Moreover, such an enlargement is more than a mere cosmetic blemish, as it were. It represents a true pathological alteration with a clear-cut etiology. Let us bear in mind that in pregnancy all tissues of the body are more succulent. The joints share in the general succulence and thus become softened and looser as pregnancy progresses. This physiological fact is so well known as far as the pelvic joints are concerned that we take it into account in slight degrees of pelvic contraction; hence the usefulness of the Walcher position. The foot joints are subject to the same changes; but what originally was physiological and transitory may eventually become pathological and permanent if the increased weight of the body is permitted to rest upon the foot which is not properly supported. Many pregnant women avoid active exercise, particularly walking, and in consequence the muscles of the foot and leg, which should share the burden, become weakened so that the ligamentous structures largely have to bear the strain.

During the puerperium the muscular weakness makes rapid progress, and the flabbiness of the calves testifies to the extent of atrophy through inactivity. The coldness of the extremities, the tingling sensation in the feet, and the weakness of the knees on the first attempts to rise from the lying-in bed, may be the forerunners of a permanent flat foot, with its various unpleasant consequences. That not every woman retains this weakness illustrates the marvelous recuperative power of the human organism, but as we can not foresee the ultimate outcome, it behooves us, as obstetricians, to forestall any possible invalidization of our patients.

The prevention of weakness of the feet is so simple that one might wish the obstetric textbooks would, in future, devote a small space to its consideration. The obstetrician may begin his prophylactic attention long before the orthopedist has the opportunity. The patient who complains of painful feet in pregnancy should not be consoled with the thought that this "inevitable discomfort" will cease with the birth of the child, but the foot should be strapped at once and the strapping continued as long as necessary. A suitable shoe should be prescribed by an orthopedist. At the same time, *methodical* exercises tending to strengthen the plantar muscles, the tibialis posticus and anticus, and the group of muscles that give spring to the foot, should be instituted. The patient is seated with the knees crossed. The foot (not the leg) is slowly bent upward and downward; then follows a complete rotation in the ankle joint to the right and another to the left. These exercises are gradually increased in number until each is taken fifty or more times. To still further strengthen the plantar structures the toes are trained to grasp a small solid rubber ball about the size of a "ping pong" ball, and this exercise, too, is gradually increased.

It is not enough to merely suggest exercises; one has to insist on their proper and *regular* performance. I admit that it is not always easy to overcome the indifference of the patient and to strengthen her will power, but earnestness on the part of the physician, and, in many instances, the dread of a shoe of larger size, will accomplish the desired result.

During the puerperium, regularity and gradual increase of these exercises is facilitated by the help of the nurse. Moreover, most patients are only too glad to vary the monotony of the lying-in state. The exercises may be commenced on the day following delivery and need not be delayed more than a day or two even where lacerations have been repaired.

I have carried out the plan, as outlined above, for a number of years, and I can attest how gratifying it is to both patient and physician to observe the ease in taking the first steps and the influence this apparently insignificant detail has had upon the general wellbeing. It may be added, parenthetically, that the same exercises are most useful after any gynecological operation and help to shorten the convalescence.

The tendency toward flat foot is but one of the many untoward sequels which pregnancy and parturition may produce in the female organism. A very large percentage of gynecological patients date their ailments back to some previous labor or miscarriage. Many of these affections are preventable. It has always seemed unfair to me that women should have to pay a penalty for motherhood in the form of more or less serious infirmities, and I have for many years endeavored to eliminate, as far as possible, the *avoidable* after effects of gestation. I have elsewhere[1] described the appropriate prophylactic and therapeutic measures which will restore the muscular strength of the abdominal wall and the pelvic floor, and Grossman's plea for a better care of the feet in pregnancy now gives me an opportunity to record my own observations, which so closely coincide with his.

The object of the modern obstetrician is not merely the delivery of a living child. A higher valuation of his responsibilities demands of him that the mother, as well, should be restored to perfect health; and this purpose can best be obtained if a prophylactic regime be carried out which considers every part of the maternal organism and prevents, as far as lies in our power, any harm that may come from pregnancy and parturition.

METROPOLITAN BUILDING.

A CASE OF BOTHRIOCEPHALUS INFECTION.*

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BOTHRIOCEPHALUS LATUS is a rare parasite in the United States, as evidenced by the small number of cases in American literature. However, it is thought that there are cases where the presence of the worm has not been discovered, so that perhaps it is not so uncommon as has been supposed. It is interesting to note that several observers, who have had their attention called to the parasite by finding it once, have discovered it in other cases. It should at least be borne in mind when treating foreign born patients, especially Finns and Swedes.

Schauman, in Germany, reported cases in which the worm was harbored from childhood to old age, and cases have been reported in this country where the parasite had apparently existed many years.

It will not be necessary to describe the parasite here, except to point out that it is the largest of those found in humans, and that the separate segments have the sexual pore opening in the median line in distinction from the Tænia, in which it opens on the side. French Switzerland and the Baltic provinces of Russia are the centers of distribution.

Bothriocephalus is acquired by ingesting its plerocercoids with various fresh water fish, in whose internal organs and musculature they live. The fish are not well cooked, or certain portions are eaten raw, and the cycle is thus started in a new host. The development of this so-called "broad tapeworm" is rapid, Braun stating that in some experiments he made the average number of proglottides formed per day averaged 31 to 32 for five weeks, with a length of 8 to 9 cm. The symptoms of the parasite's presence in the alimentary tract are not constant in their character. In many cases they are trifling and again, in others, they are intensely severe. There may be gastric disorders and nervous symptoms, with melancholia; in a number of cases there is severe anemia. Anemia is not a common symptom, however, and is apparently not influenced by the number of parasites, or the duration of the infection. R. L. Wilson reported a case of multiple infection in which there were thirteen worms with an aggregate length of 319 feet; the known duration was over five years, but there was no noticeable anemia. On the other hand, one of Edsall's cases gave a red cell count of 662,000 at one time with a known duration of infection of only six weeks, while the count in the case I am reporting was 651,000 with unknown duration of infection. So the finding of the eggs in the feces is the real diagnostic sign.

The case which forms the basis of this paper is offered, not so much as a curiosity, but for the fact that the presence of the worm was masked by physical symptoms which apparently had no relation to it. Unfortunately death resulted and the parasite was found post mortem—the correct diagnosis having been made, however, a few days previous.

E. F., female, aged 30, admitted to Long Island State Hospital February 18, 1910. Born in Finland; father dead, mother alive and in Finland; two sisters and one brother—one sister is married in California, the other sister had been a patient at Kings Park. Patient came to the United States in December, 1906, and had worked as a domestic servant; when working out seemed to find it hard to get along with people; was cranky and irritable and could not keep a position. Could read and write.

For a year past she had acted and talked queerly; thought people were talking about her and that they had a machine that could know everything concerning her; also heard voices talking to her in her native tongue.

On admission, skin and mucous membranes good color; hemoglobin 85 per cent.; physical examination negative.

Mental Examination: Was quiet and orderly; partially oriented; hallucinations of hearing which could not be described but were annoying—plugged her ears with cotton in endeavoring to stop them. Following admission remained quiet and orderly; hallucinations

[1] The Physical Culture of the Puerperium, *Interstate Medical Journal*, Vol. XVI, 1909, p. 1. The Management of the Puerperium—A Chapter in Preventive Medicine, *Lancet-Clinic*, 1909, Vol. CXI, p. 722.

*A contribution to the William Leonard Worcester Memorial Series of Danvers State Hospital Papers, presented November 19, 1915.

active, and states that she is influenced by a machine affecting various parts of her body. "Sometimes I get very hot in the head; they boil my head." "Make me sick to my stomach." "That is a terrible machine." Continued without change and was transferred to Kings Park State Hospital on May 8, 1911.

In August, 1911, complained of headache and dizziness, and was in bed about ten days; temperature 100.6° to 102.5°. August 17, chest was examined and found negative. August 23, was up and dressed and appeared normal. Mentally no change.

In February, 1912, said, "I am feeling no good—sick all the time—nervous—like tired; can do nothing." Complained very often of headache. In April, complained of headache, and note states, "she looks pale"; some cough, but no expectoration; Von Pirquet test positive. Evening temperature 102°. Some dullness over left apex with a few fine rales. Reported as a case of tuberculosis. September, 1912, vomited and complained of feeling weak. Temperature 104.8°. Blood examination for malaria and Widal negative. Examination of heart showed "mitral insufficiency and endocarditis." Splenic dullness increased; diarrhea. Was treated as a case of typhoid. Made a good recovery from this condition and was up in eight weeks. Gained in weight from 110 lb. in June, 1912, to 136 lb. in March, 1913. Coughs, but there is no expectoration. In June, 1913, said to show good healthy color; physical examination shows infiltration of left upper lobe. Mentally unchanged. In September, 1913, "does not cough or expectorate." There was a gradual loss of weight beginning July, 1914. Temperature ranged from 98.4° to 100.2°. In December, 1914, appeared weaker and spent a few days in bed, but was soon up and in her usual condition.

January 9, 1915, was noted as again showing marked weakness; complains of general malaise with frontal headache, and shows considerable anemia. Vomiting became an annoying symptom. Frequent loose cough, but the anemia and cough seemed out of proportion to the findings in the lungs. January 23, 1915, red cells 651,000—blood smear shows macrocytes, poikilocytes, an occasional myelocyte and nucleated red cell; white cells are diminished in number. Diagnosis of infestation by *Bothriocephalus latus* made. Patient seemed too weak for vermifuge; failure was rapid and death occurred on January 25, 1915.

Necropsy was performed 64 hours post mortem. Body is that of a well developed, fairly well nourished young white female; height 159 cm. Weight 97 lb. No bruises or abrasions; pupils regular in outline—equal—3 mm. in diameter.

Ventral Section: Abdomen is flat; panniculus 1 cm. in thickness; abdominal muscles thin and pale; some fat in greater omentum, which is well developed and covers the contents of the cavity completely; the intestines appear very pale, almost transparent, and are distended with gas; appendix is normal in position and appearance, 5 cm. in length; diaphragm normal; no adhesions or exudate in abdominal cavity.

Thorax is small, but well developed; mammæ pendulous; pectoral muscles thin and pale; costal cartilages show no change. The lungs, with the heart, completely fill the cavity; there are slight adhesions on both sides, but they are easily broken up; no fluid in the pleural cavity.

Pericardium is normal. Heart weighs 380 gms. There is some fat on the surface; the cavities contain a small amount of fluid blood which appears very pale and watery, with no clots; myocardium is pale and flabby; mitral valve shows some thickening along the edges; other valves negative. There is no thickening of the vessel walls and no varicosities. The lymphatic system shows no hyperplasia, or other abnormalities.

Trachea and bronchi show nothing of note Pleura thickened at apices. Right lung weighs 494 gms. The tissue is of about normal appearance; no tubercles are noted in the gross; there is some edema and congestion, but substance crepitates throughout. Left lung weighs 435 gms. It is similar in all respects to the right.

Esophagus normal. The stomach contains a small amount of light colored fluid material; mucous membrane pale; no hemorrhagic areas. Intestines are somewhat distended; walls very pale. On opening the small gut it is found to contain a large *Bothriocephalus latus* measuring 24 feet in length. Microscopic examination of the fluid contents of this portion of the intestine shows many of the ova of this parasite. Large intestine negative. Liver weighs 1,495 gms. Surface is smooth and on section the tissue is pale and appears waxy in consistency. Gall-bladder contains a small amount of normal looking bile; no stones. Pancreas weighs 130 gms.; is large and soft.

Kidneys, weight 320 gms. They are large, soft and light in color. The capsule strip easily; cortex and pyramids are well made out. No fat in the pelvis. Ureters and urinary bladder normal. Uterus and appendages normal.

Spleen weighs 120 gms. The capsule is not thickened and on section the pulp is pale and soft; no increase in trabeculæ. Adrenals weight 25 gms. and appear normal. Thyroid not examined. Pituitary normal.

The scalp is covered with a good growth of light hair; it is not thickened and strips readily from the bone. Calvarium is normal in shape and character. Cranial capacity is 1303 cc. Dura mater weighs 50 gms.—normal. Piaarachnoid is thin and pale, and shows no exudate. Brain weighs 1245 gms. before dissection and 1235 gms. after dissection. Cerebrospinal fluid is not in excess. Vessels show no sclerosis—substance markedly anemic. Cerebrum shows no atrophy, the gyri being well filled out and the surface pattern is regular; ventricles are smooth, and on section there is nothing noteworthy. Cerebellum, pons, and medulla normal in the gross. Spinal cord not removed; upper section normal.

Microscopically, the heart showed slight fatty infiltration. The lungs showed thickened pleura, some infiltration of leucocytic exudate, and much edema. No evidence of tubercles. Liver presented a thickened capsule—much fatty infiltration with some degenerative changes. Spleen, capsule thickened; much increase in the red cell content of the pulp. Pancreas, great amount of fat replacement, with some areas of degeneration. Kidney, capsule thickened; much cloudy swelling of tubular cells. Cerebral cortex, Betz cells showed acute cell changes and there was some degree of satellitosis—deposit of yellow pigment in cell bodies. Cerebellum, nuclei of Purkinje cells are not well made out; otherwise negative. Cord, ependyma of central canal much proliferated; polar cells of anterior horns show loss of granules and nuclei are faint.

The case presents several interesting points. The duration of the life of the parasite is uncertain, but surely it must have existed prior to the patient coming to the United States, or over eight years at the time of her death. Might not the acute attack in the fall of 1912, which was treated as typhoid, have been a toxemia caused by the parasite?

The presence of anemia of such an astounding degree in some cases, and none in others, is a very puzzling condition and one for which no adequate solution has been offered. In this particular case the physical signs in the lungs, together with the temperature, masked the condition in the intestines and in fact that was no symptom of the bothriocephalic infection until the anemia became such a prominent characteristic. There was no diarrhea to point to intestinal disturbance, and no segments of the worm were found in the stools. It is an unfortunate characteristic of the broad tapeworm that it does not give up portions of its anatomy by which it may be identified. No examination was made for the ova.

It is important to remember that in individuals from the Baltic countries, especially, the Bothriocephalus is a frequent parasite and in some cases, perhaps, an examination of the feces for the ova of the worm will clear up a puzzling case. Again, the worm may exist for years and give no apparent symptoms, and then suddenly begin to develop in

its host a severe toxemia. Finally, the patient need not necessarily be a recent arrival in this country to present symptoms of Bothriocephalus infection.

MASSAGE AND EXERCISES IN THE AFTER-CARE OF POLIOMYELITIS.

By FRANCISKA BERG,

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THE treatment of poliomyelitis and the ultimate restoration of function, after the disease has passed the acute stage, depend in large measure upon the special skill and judgment with which exercises and massage movements are administered to the paralyzed parts. The cases presented here are cited to illustrate what it is possible to accomplish by means of scientific massage and body movements administered in co-operation with the medical care of the patient.

CASE I.—A little girl, eighteen months old, living in a town suburban to New York, whose distress had been witnessed by physicians of the metropolis and the community where she lived, was regarded as the most serious case of infantile paralysis that had come under their observation. She had been stricken with the disease at the age of eight months, and was in a pitiful condition when in the summer of 1914 I began my treatment, she being so delicate that it was extremely difficult to handle her. She was lying on her back in braces which covered her body completely from the feet up to the shoulders; the arms and hands were also imprisoned. She was lying in these armor-like enclosures twenty-three hours of the day, and could do little more than move one arm. Her back was as weak as that of a new-born child. The abdominal muscles were also weak. The neck muscles were contracted, so that the shoulders were drawn up to the ears, making the chest narrow and sunken. The lavator scapulæ was paralyzed on the right side, and both deltoid muscles were paralyzed. The arms were partially deprived of function. She could move the right forearm slightly. The shoulder and arm muscles were atrophied. The left arm had so great a pronation contraction that the palm of the hand was turned upward. The right hand had a palmar contraction. Both legs and feet were paralyzed; the legs were rotated outward. The gluteus maximus on the right side was atrophied, giving this part of the body a concave rather than a convex outline. The left knee had a flexion contraction, the left foot so great a supination contraction that the sole was directed upward. The right foot had a great plantar contraction, so that it looked like a clenched fist, and there was a marked contraction of the tendo Achilles.

I treated her for about three months, six days a week, during my summer stay at her home. After my return to New York I had occasion to treat her only two or three times a week for a little while, then leaving her to the care of her mother, whom I had taught a few exercises and light massage movements for the case.

When I left this little patient her back was sufficiently strong to enable her to sit up by her own strength; she could bend her head down to her feet and raise it again, turn over, and move both her forearms and hands, and play with her toys. The contraction of the neck had disappeared and the chest was nicely developed. All the other contractions were greatly bettered, as was also the condition of the abdominal muscles. She could move her legs and feet a little and keep her legs together when placed in the right position. The atrophied gluteus muscle had developed to normal size, and the arm and shoulder muscles had improved a great deal. The general condition of health was excellent.

The parents will now arrange to have the child stay for a longer time in New York and continue the treatment. I have already worked with her one month. When lying on her back with flexed knees and resting on her neck and the soles of her feet, she can now easily raise her body to the highest degree possible in that position. Her feet are so well developed that it is possible for her to maintain the above-mentioned position, lying on her back. She can rotate the legs inward and outward, abduct and adduct them a little, can raise her arms above her head and lower them again, can lift her right arm in its whole length and swing it over to the left side. She can move her left forearm in all directions. The contraction in the left arm has not yet been conquered, but she can without aid pose her hand and keep it in the right position. The other hand is normal. The contraction of the knee is much improved. When lying on her abdomen she can raise her back as high as it is normally possible when resting on the forearms; she can bend and stretch the right knee; the left leg is weaker, but it is probable that in a short time she will be able to do the same movement with that member.

Infantile paralysis leaves its victims more or less crippled and the inactivity of the patient, caused by the paralyzed parts of the body, hampers improvement. Therefore, the first essential is to work up the general circulation by means of breathing exercises, so that the lungs may be filled with fresh air and the stationary air be expelled. This is done by drawing the arms of the patient upward when lying on the back, and moving them slowly downward again under as much voluntary inhalation and exhalation as the patient is able to command. This exercise expands the chest, stretches the spine, and works beneficially upon the muscles of the abdomen. Thereafter, spinal treatment should be given before administering local treatment. One must, in an artificial manner, try to produce the same effect for the patient as a healthy person gets from his daily movements.

The exercises, as well as all the massage movements, must be very carefully done and always specifically with the needs and condition of the patient in view, for otherwise harm rather than good may be done. One must bear in mind this purpose—to build up affected limbs and to improve the general health. A rule in the science of mechanotherapeutics is that it is better to do too little than to do too much. It is, of course, understood that the massage exercises must be highly developed and scientifically applied, in order to be able to restore the function which infantile paralysis has destroyed in its victims. The hand and wrist of the practitioner of massage must be trained somewhat like those of a pianist for acquiring the soft, gentle, and yet strong grasp which is a necessity for obtaining good results.

Scientific massage can give results in infantile paralysis cases that are equalled by no other treatment. It improves the nervous system and the circulation of the blood, principal factors for improving paralyzed limbs, atrophied muscles, and weak joints. Together with the technique of massage go the exercises designed for each particular case, first passive ones that are replaced later by active, free or resisted, exercises when the patient is able to perform them—in concentric and eccentric form, as the muscles may be affected, contracted or elongated.

CASE II.—A patient I had in 1915, a boy nine years old, was stricken with infantile paralysis at the age of two. His right leg and foot were affected. The power of movement was absent and the leg muscles were greatly atrophied, as was also the gluteus maximus. The hip and knee joints were weak. An operation had been performed a few years previously for the purpose of keeping up the dropping foot, and through

this the ankle had become stiff. The child limped badly, mainly because he carried the whole weight of the body upon the strong leg, which caused the knee to bend in walking. He dragged the paralyzed foot after him. The unaffected side had been over-developed through too much use. As he was the only child of well-to-do parents, many things had been tried for seven years in order to restore movement in his affected leg and foot.

After four months' treatment the atrophied gluteus muscle was developed to normal size and the joints were strengthened. The calf muscles developed slowly, but there was considerable improvement. He could walk quite normally with the help of a cane, and go up and down stairs. He could also run, go about on roller skates, and drive a saw machine with the affected foot, the ankle of which had been worked up so that he could move it a little. The toes were very flexible.

Case III.—A young girl, seventeen years of age, had suffered from the effects of infantile paralysis for four years, during which time she had had the best possible care. When I began to treat her the back was so weak that she could not raise herself from a lying position nor sit up without help. Her shoulder joints were weak, also her right arm, which had a thenar atrophied hand. Both legs and feet were affected. The different muscle groups of the legs were pseudohypertrophied, so that these limbs were quite stout, heavy, and shapeless. There was no movement possible in the legs and the feet. Owing to deficient circulation, the lower parts of the legs and the feet were cold and of a dark violet color. She was supported by braces going from the feet up to her waist, and by stays made of steel bands. In a sort of gymnasium that had been especially prepared for her, two bars were erected. When placed between them and resting the hands on the rails, she raised one side of the body and forced the leg forward a step, when resting on the other. In that manner she had tried to learn to walk.

I have treated her three times a week for about four months. She can now sit up of her own strength, which achievement she and her parents have regarded as the great event in her long illness. The different muscle groups of the legs have been freed from superfluous tissue, and the circulation has improved. There is a beginning of rotation in the legs, and when lying face down she can flex and extend the left knee; she will soon do the same with the right one. She can now move her toes, and the shoulders are stronger. She is beginning to walk with unlocked knee joint of the braces.

Case IV.—The following case is not one of poliomyelitis, but it may be of interest in this connection. A boy of six years, the child of well-to-do parents, had been under the best possible care during his long illness. He was a large and strong child at birth, but was overfed by a nurse, and when he was three weeks old he became so ill that his life was despaired of. He lived, but for the following two years it was very difficult to feed him. In consequence, he was far below normal in size and strength. At the age of two he was attacked by dysentery. He survived, but for the next four years a fight had to be made for every ounce the child could gain. He was so weak and emaciated that it was necessary to keep him flat on his back most of the time. When about five and a half years old, his digestion had become almost normal, but the long inactivity had resulted in atrophy of the muscles. He was no taller than a child of three years when I began to treat him. He was then six years old, and could remain on his feet only for a few minutes when resting his arms on his little table. His ankles were so weak that the feet dropped. The abdomen was of an enormous size. He was retarded in speech and could say only ten or twelve words.

The first thing to do was to try and work up the circulation, and through tapotement on the back to reach the various abdominal organs. This vibratory massage movement had so beneficial an effect that it was possible after a few weeks to give light massage of the abdomen itself. After four months' treatment the patient could walk, get in and out of the bed by himself, climb a ladder, and taking hold with both hands of one of the rungs of the ladder, swing his body freely. His muscles developed well, his general state of health became excellent, and he could talk normally as a boy of his age. His abdomen diminished and became normal in size. A year afterwards I heard that he was gaining so rapidly that the probabilities are that by the time he is ten years old he will be normal in size and strength.

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Medicolegal Notes.

Medical and Surgical Service Under Workmen's Compensation Act.—Indiana Workmen's Compensation Act, Section 25, provides for the furnishing by the employer to an injured employee of an attending physician for thirty days after the injury, and thereafter at the employer's option, "Provided, however, unless otherwise ordered by the Industrial Board," and in addition such surgical and hospital service and supplies as may be deemed necessary by said attending physician or the Industrial Board. This proviso is held to be a limitation or qualification of what precedes and not on what follows; and whatever authority is given as to determining the necessity for surgical and hospital services and supplies is lodged in the board and the attending physician. The final determination rests with the board. There is no authority to furnish the surgical and hospital service except during the thirty-day period, and so long thereafter as the employer furnishes a physician. If an emergency arises for either of the services provided for at a time when it is required to be rendered, the employer by mere delay in rendering the service cannot escape liability for any which should and could have been rendered within the period during which it is made his duty to perform it. So, if the board is of opinion that the evidence before it shows the emergency for amputation of an employee's foot arose before the expiration of the thirty days, and that the amputation should and could have been performed before the expiration thereof, and that the employer was responsible for the delay preventing it before such expiration, the board can hold the employer liable for any surgical and hospital service and supplies that might have been furnished within such period, though not furnished till thereafter, the board's determination of which question of fact is conclusive.—Henderson, Indiana Appellate Court, 116 N. E. 315.

The wisdom and fairness of such a provision as the above are justified in other jurisdictions upon the ground that the employer is interested in a speedy and complete recovery of the injured employee in order that it may be relieved from payment of compensation at the earliest moment possible.—Keigher v. General Electric Co., 173 N. Y. App. Div. 207, 158 N. Y. Supp. 939.

Rules for Mutual Benefit Societies.—A member of a mutual benefit society which has authority to amend its constitution and by-laws and change its rates, who has contracted that his contract shall be controlled by all laws then in force or that might thereafter be enacted, is held not entitled to complain of an amendment raising his rate of assessment in the Mississippi case of Neuman v. Supreme Lodge, K. P. L.R.A. 1916C, 1051.

The change by a man, without the knowledge or consent of his wife, of the beneficiary in a mutual benefit certificate upon his life, is held a breach of his antenuptial contract to take out the certificate in her favor, in Ryan v. Boston Letter Carriers' Mut. Ben. Asso., L.R.A. 1916C, 1130.

An Illegal Abortion is an Assault.—According to common law the producing of a criminal abortion resulting in the death of the mother is murder, but an Oregon statute has mitigated this to manslaughter, regarding the death as an involuntary killing of misdirected violence. In affirming a conviction of manslaughter under this statute, the Supreme Court says that the procuring of a criminal abortion involves an assault even when the woman gives consent, since no one can consent to an unlawful act; furthermore the woman cannot consent to the murder of her unborn child. The abortionist has the intention to kill the child and if, in attempting to do so, he also kills the mother, the death is not the result of accident but is the direct consequence of an assault.

Military Medicine.

LETTERS OF AN M. M. R. C.

THE daily routine in the Medical Officers' Training Camp is in no wise different from that of the ordinary recruits. Excuses, excepting those most valid, are of little avail. At five o'clock every morning there is a general stirring among the fifty cots in barrack. The lavatory, situated in a separate shack, though rough in appearance, like all the barracks, is thoroughly up to date in its appointments. There are eight shower baths, on a concrete floor, with hot and cold water attachments. This is the one and only luxury of camp life. At 5.30 A. M. the bugle sounds, and every one must be properly dressed, with hat on, in line. All the various companies of the medical division line up on the company street, between barracks, and face the physical instructor—an army officer—who stands on a raised platform in front. Now begin what is known in the army as "setting-up exercises." They are calisthenics (more or less difficult) in rhythm, by command. In the case of a man who has not kept himself physically fit the twenty-five minutes of setting-up exercises are apt to leave him pretty well blown and in a profuse perspiration. This reminds one of a fact worth here recording, *i.e.* that your kidneys are of absolutely no use from the moment you enter a training camp. You might just as well have them hanging up at home. At the completion of setting-up exercises you are marched into your mess hall for breakfast. This is 6 A. M. This meal consists of coffee, a cereal, and on your tin plate something greasy will appear, reflecting to a certain extent the feelings of your cook. Some seem to get away with this dish by pouring a plenteous supply of molasses over it. Others, more refined in taste, make up on bread and butter. As an incidental expense to camp life, it might here be stated that one of your own regiment is appointed mess sergeant. He does all the purchasing of supplies and paying of help. Each man in the regiment pays a dollar a day to the mess sergeant for his board. If there is anything left over at the end of the month a rebate is made. Between your breakfast, at 6 A. M. and 7, your time is your own after you have dusted and swept out the quarters alongside your cot and trunk. The sweepings all go in small piles in the center aisle, and are collected later on by the barrack orderly of the day (an appointment that each officer must fill during his time of training). Among the various duties of the barrack orderly, besides keeping the place clean all day long, he must keep the ice-water cooler supplied. This is no light task, for after every drill or march the thirsty and sweaty men hover like bees around it. To keep this water tank fresh and clean it must be scalded every day by the orderly. This he does at the kitchen. All sweepings, papers, and trash are thrown into a big box in front of the barrack by the orderly. This is emptied once a day by a wagon and crew for this purpose. Being in barracks all day long, the orderly is the one to take all messages that may come for any one belonging to that barrack. Although every one must perform this duty of barrack orderly once during his stay, it is also used as a punishment. If a man is constantly late in falling in line when orders come, the captain in command of this barrack can order him to orderly duty whenever he wishes. This can be made uncomfortable if he is ordered for such detail on Saturday, for this is the only day in the entire week, except Sunday, when one is allowed a half day off. Most men have something in particular they want to do, perhaps to get into the neighboring town, and this is the only chance they have of doing it.

At 7 o'clock the men assemble in line and the roll is called and special announcements are made and detail duty given out. The men march out on their morning hike four by four. The walk is out one of the country roads, in route step, at a good lively pace. Talking and singing are allowed. The distance they go on this hike depends on the time the first lecture will be called. If there is nothing till 9 A. M., they may be walked six miles, with a rest at distal ends. If the first lecture is at 8 o'clock it will only be two or three miles at a very rapid clip. The end of the morning hike will find every one again in a profuse perspiration. The time between this morning hike and noon is taken up by lectures out of doors, on the Army Manual and Regulations, drilling, map making, gunshot wounds and surgery in war time, sanitation, or some other such subject. This reminds me that each man, on arrival, is presented with six textbooks which cover the subjects on which his lectures will treat. These books do not have to be purchased by the man, but he has to sign a receipt for them and keep them in his possession. They are absolutely essential in making out reports to the Surgeon General and War Department. In time of peace, the Surgeon General and his aides, realizing that the average doctor at a military post had little serious to do, decided that they would make him earn his salt. To this end they devised the present system of procedure, which is as complicated as the maze of Hampton Court. If the slightest detail was not properly complied with the monthly report of the Post Doctor was returned to him for correction or information, and from then on the never-ending correspondence school between that surgeon and the office of the Surgeon General was started. Naturally, his superiors could employ more sarcasm in their letters to him than he to them. It is a safe prognostication that with the influx of Medical Reserves this entire paper system is going to break down, and it is the general opinion among officers that it will be little loss.

We have now come to noon and the midday mess. Once more the company falls promptly into line and marches into the dining hall. Any new announcements for the work of the afternoon are here made. As a rule it is "Be ready to fall in at one o'clock for drill." The drilling is the regulation army drilling of formation. Each company is an entirety, and the only time that all the different medical companies meet is in dress parade, usually held on the Parade Ground of the fort in honor of some visiting celebrity. Naturally, there is considerable rivalry for the oldest companies to outshine each other in military bearing and execution of maneuvers. It is really quite extraordinary what three weeks of intensive training can accomplish in changing the attitude of an individual who by

habit has done none of these things. Each company has its own individual commander, who is either a major or colonel in the Medical Department of the regular army. Acting under him will be a medical officer of the militia who has seen field training. He may outrank the one in command. The captain of your barrack is usually chosen from the same source. The commander of your company is the one who gives the lectures on Military Regulations and drilling. Naturally, there is rivalry on his part that this, his particular company, shall outshine all the others. It is a feather in his cap for any compliment given by the commandant of the post for his particular "lot of boys." Above all these commanders of the Medical Reserve Corps there is one commander to whom the others are responsible.

Instead of regular drilling between one and three o'clock, it may be "litter drilling," in order to perfect an officer handling an ambulance company, which consists of about forty men. Needless to say, this is a most important drill. In it one is taught how to take up and carry a man who is unconscious or wounded. This is not any easy task, and is well nigh impossible to perform if one has not been shown how.

Between three and five there are more lectures, or else parades. Between five and six o'clock the men can do what they wish. It is the usual time for taking to the shower bath and putting on clean things. At six occurs the evening mess, for which you have to fall in line promptly. You may have from now on till taps to yourself, or you may be told to meet Major So-and-So in the company street for an illustrated lecture on such and such. Taps sounds sharply at ten, and as the sound dies away you must be in bed, with all lights in barrack out. This ends the average day in military training camps. Every day in the week is about the same, rain or shine. The only real day of rest is Sunday, and this is rest in its fullest sense.

There is no doubt but that homesickness unrecognized plays a large part in the first week of the enlisted doctor's life in the Medical Training Camp. Nostalgic symptoms are evidenced by self-communion as to the advisability of having allowed his patriotic instincts to bring him to this pass. He recognizes the inviolability of the oath he has given the Government and the futility of his trying to change the situation. This nostalgia is as pronounced in the officers of advanced age, particularly if they are men of family, as in the younger generation. Some never having been accustomed to any discipline, refer their nostalgic blue feelings to restraint as a cause.

Among 99 per cent of the Medical Officers' Reserve Corps this nostalgia has entirely vanished at the end of their first week in camp, and they throw themselves heart and soul into the work before them. With every additional day the esprit de corps mounts degree by degree. Enthusiasm is seen everywhere, and there is no longer a single remaining regret for the step they have taken. This statement is not an exaggeration, and should help persuade the doctor who still hesitates to take the step that his patriotism dictates. If he saw, as we do every day, the boyish faces of the thousands who are throwing in their all for the cause of their country, if he realized as we do how dependent each one of these kids is on our profession to keep him straight and get him back to his mother and father and those that love him as good as he went, if not better—because you, as commanding officer of any ambulance corps, will have a chance of making them better men both morally and physically—if you could see this as we do you would feel yourself inhuman in delaying the answer to this call. You will find many men in these ranks of ours who have given up much more in all ways than you can possibly have to give. There is no feeling of sacrifice, but a great and unending joy, to feel and know that you did as the spirit prompted. It is a heritage that nothing can buy.

The Casualty Clearing Stations.—From the viewpoint of Anthony Bowlby and Cuthbert Wallace the development of the casualty clearing stations has been the most important factor in the creation of a new school of surgery at the front; they have saved many thousands of lives which would have been lost but for the surgical opportunities which they have provided. Before the war the "C.C.S.'s," as these stations are called, appeared only on paper and as untried units, for they did not exist at the time of the South African war. Their equipment was slight and their staff of eight officers, including the command officer and the quartermaster, was less than the staff of a field ambulance. They carried 200 stretchers and were supposed to be able to deal with the same number of patients. The six casualty clearing stations which came with the original Expeditionary Force were decidedly overtaxed; it became evident during the first battle of Ypres that these clearing stations might well be made the nucleus around which to build an efficient organization for much more complete surgical treatment than had been originally planned.

The first change which had to be made in this organization was an increase in the supply of bedsteads with bedding, and the appointment of trained nurses; the next was the addition of more surgical equipment. The selection of special surgeons naturally followed, and before the end of 1914 good surgical work was being done in eight centers, and by the end of 1916 more than fifty casualty stations were at work.

These hospitals, behind the lines along the entire front, must be at or near to railway sidings, so that evacuation by train is easy; they must also be where good roads can connect them with the front, and they must have a good water supply. They are practically arranged in two series, those at the front are at a distance of from six to nine miles from the front trenches, while those of the second line are from three to six miles further back, and act as a reserve during active operations, or as units for special cases during quieter times. The smallest stations accommodate 400 to 500, and the largest from 800 to 1200 patients. Wherever possible these stations are linked in pairs, and take in the wounded alternately. By this plan the wounded are diverted to other casualty stations, and the staff is left free to treat those they have taken in without being disturbed by fresh arrivals.—*British Medical Journal.*

Army Orthopedic Board.—Surgeon-General Gorgas has announced the formation of a new department of Military Orthopedics. This step has been taken because from 30 to 40 per cent. of the casualties of the present war require special orthopedic treatment, and also because from 70 to 75 per cent. of the cases can be restored to military usefulness. Major Elliott G. Brackett, R. M. C., has been appointed Director of Military Orthopedics, with the same headquarters as the Director for the Expeditionary Forces. So much special organization will be required that the office of Director of Military Orthopedics for the Expeditionary Forces has been created, and Major Joel E. Goldthwaite, M. R. C., has been appointed to fill that position. Associated with him will be Major Robert B. Osgood of U. S. Base Hospital No. 5, and Capt. Nathaniel Allison, now with Base Hospital No. 21, will be transferred to this department. Major Osgood will be assigned to report to Col. Robert Jones, Director of Military Orthopedics for the British Expeditionary Forces, for the study of the details of organization and the methods of treatment. Captain Allison will be assigned to similar duty with the French and Italian forces. An Advisory Orthopedic Board has been appointed for the assistance of the directors; it is made up of Dr. Robert W. Lovett of Boston, Dr. Albert H. Freiburg of Cincinnati, Dr. Gwilly Davis of Philadelphia, Dr. F. H. Albee of New York, and Dr. John L. Porter of Chicago.

Gift for Dental Ambulances.—The Preparedness League of American Dentists has received a gift of $10,000 from Mrs. William B. Thompson to equip five dental ambulances for the New York State troops. The ambulances will be tendered to the Government through the Red Cross Society. This is the first large donation that the league has received toward the equipment of the many dental ambulances which it expects to send with the expeditionary forces.

Cooperation Between American and French Red Cross.—A cablegram has been received at the headquarters of the American Red Cross announcing that General Pershing has appointed Major M. P. Grayson Murphy as one of his staff, and that arrangements have been further perfected for caring for American troops en route for the front. It is stated that on the way from the reception camp to the training ground, a journey that takes seventy-two hours, there are six infirmaries and rest stations, each in charge of a nurse, so that no soldier who falls ill on the way will lack attention.

Ethan Allen of New York has been appointed director of the Atlantic Division of the American Red Cross, which includes New York, Connecticut, and New Jersey, having a total of 214 chapters and 668,257 members. He will have entire charge of the Red Cross work in these States.

War and Crime.—A recent report to the New York *Sun* records the doubling of the number of criminal offences committed in the city of Amsterdam, Holland, since the beginning of the war. The police superintendent of that city attributes this in part to mental aberration resulting from the great conflict, and in part to the increased opportunities for smuggling and espionage, to increased poverty, and chronic idleness. Special mention is made of the fact that there is increased criminality among children.

Red Cross May Call More Nurses to Service.—At a conference recently held between the Red Cross Committee on Cooperation, the Red Cross Medical Advisory Board, and committees representing leading nursing associations of the country, estimates were presented showing that approximately 14,000 nurses may be called into war service within the next 18 months. This number should be able to care for an army of 2,000,000 in the field. More than 12,000 are already enrolled in the Red Cross, available for instant service.

Surgical Dressings for Red Cross.—From Washington comes the announcement that all Red Cross chapters in the United States were ordered on July 18 to send in their stock of surgical dressings to meet demands from the Allied front in Europe.

Social Hygiene for Soldiers.—The Surgeon General's Office has announced a program for combating the venereal peril, which has always presented a serious problem when troops have been assembled in the vicinity of a civil community, and which neither the military nor the civil authorities alone have been able to control effectively. The measures proposed provide for the cooperation of the Army Medical Department, the United States Public Health Service, the War Department Commission on Training Camp Activities, civil authorities, and non-official agencies. As the Army Medical Department is limited in its strictly official capacity to measures for the prevention and treatment of venereal disease inside the military encampments, a section has been organized to devote itself to this problem, with an officer in charge of laboratory investigations, one in charge of the medical work, and one in charge of educational and environmental measures and sociological studies. Although the creation of this section is new, the work which it is to do has been carried on for years by the Army. The Public Health Service has been charged with the responsibility for health conditions in civil sanitary districts surrounding military establishments. The work will be done in cooperation with State and local authorities and with the American Red Cross through an advisory board. The Commission on Training Camp Activities is to see that the laws with reference to the elimination of commercialized prostitution, the sale of alcohol and habit-forming drugs, and gambling are enforced, and to provide proper recreation for the soldiers. This part of the work the civil authorities and non-official agencies are to supplement.

Protest Against Drafting Medical Students and Hospital Interns.—At a meeting of the Mayor's Committee on Hospital and Medical Facilities, held at City Hall, New York, on August 15, 1917, the following resolutions were unanimously adopted, and signed by the representatives of over thirty hospitals in New York:

Resolved, That the Mayor's Committee on Hospital and Medical Facilities call the attention of the Secretary of War to the serious consequences to the civilian population of the country, and to the maintenance and operation of the hospitals, of the inclusion of medical students and hospital interns under the act of selective service.

Further Resolved, That the chairman be directed to lay the views of this committee before the proper officials of the Government, and the District Boards

of the State of New York, and to take the necessary steps to bring about the temporary exemption of those students and interns in order to secure a constant supply of medical men to the Army throughout the war and to prevent the embarrassment of hospitals and the consequent serious results to the population of the United States.

Canada's Army Hospitals.—In the military hospitals in Canada there are 8,811 soldiers receiving treatment, 320 new patients having very recently been added to the list of convalescents. The number now in convalescent homes is 7,032, with 1,104 in sanatoriums for the treatment of tuberculosis, and 675 in other institutions, chiefly general hospitals.

Specialists for Cantonments to Be Selected.—The sub-committee of oto-laryngology, working through the Council of National Defense, have sent a questionnaire which would furnish the special training and experience of the men addressed to 6,000 oto-laryngologists, and 2,500 replies have been received. These have been properly filed, and all the necessary blanks for entering the Medical Reserve Corps have been sent to the oto-laryngologists who have signified their willingness to enter this branch of the service. Through the office of the Surgeon General, boards of examining specialists are in the process of selection. The subject of revision of the standard of hearing required for acceptance in the Army has been discussed and recommendations made. Tests for detecting feigned deafness have been selected and submitted for approval. A plan for a special ward in each cantonment hospital for nose, throat, and ear examination has been drawn up, and will be submitted for approval.

Suggestions by the Surgeon General.—The following paragraphs have been added to a letter from the Surgeon General to the chairman of the State committees of the medical section, Council of National Defense: "(1) It is believed that it would be of great advantage to this department if each State committee would make a census of its State, with a view of dividing the medical profession into two classes: (a) those who cannot be spared for Army service because of their importance to the civil community, and (b) those who can be spared. Class (a) should be requested to refrain from offering their services. Class (b), on the contrary, should be encouraged promptly to apply for appointment. (2) The department will not feel called upon to consult the list prepared under paragraph 1 when individual applications are received, since it will be assumed in all cases that the individual offering himself can be spared, and will be at the disposal of the department for such duty as the exigencies of the service may demand. (3) For the purpose of this census the State committee should act as a clearing house for the county committees."

Surgical Dressings for American Naval Vessels.—The Red Cross, upon the request of the Surgeon General of the Navy, has called upon ten of the larger chapters nearest New York to supply at the earliest possible moment surgical dressings for battleships and destroyers. The required consignment of surgical dressings will make a total of more than 600,000. This order is to be filled within ten days. Each chapter will supply the battleship named after that particular State, and others in which they have a geographical interest. Thus the Chicago Chapter will supply the *Chicago* and the *Illinois;* the New York Chapter the *Albany* and the *New York,* etc.

American Ambulance Hospital in Paris.—Mrs. Robert Bacon, chairman of the American Committee of the American Ambulance Hospital in Paris, has issued a statement with reference to the new status of the work. The United States Army has taken over the institution, and it will be operated under the direction of the officers of the Medical Corps. It will henceforth be known as the American Military Hospital. Both the American Red Cross and the original ambulance organization in this country and in France will continue to work in harmony for its maintenance and operation. The institution has 575 beds, and up to August 1 the American contributors had sent $1,300,000. The French military control and regulations will continue with the American officers in charge.

Shelling American Ambulances.—A report brought from the front by a man who has served seven months with the Twelfth Section of the American Ambulance Corps, states that a new feature in the war since the United States has come in is the attack made by the Germans on American ambulances. This witness states that he has seen from twelve to sixteen shots fired at ambulances, but he has not seen the enemy score one hit.

National Census of Nurses.—The Council of National Defense, realizing that as the war progresses the shortage of nurses will become more acute than it is at present, has started a propaganda in cooperation with all the aid associations and national organizations throughout the country that have to do with professional nurses. Through these mediums a census of the visible supply is to be made. It is hoped in this way to learn the number of both trained and untrained nurses and those with special training in such fields as administration, teaching, public health and preventive work, industrial nursing, etc. This census is being obtained through the American Nurses' Association, working through its State associations. The committee reports that those who have first responded to the call for service contain a heavy proportion of nurses trained as executives, teachers, and public health workers, and these should be replaced largely through the colleges for women, through which it is hoped to interest a considerable body of potential nurses whose previous training should fit them for comparatively rapid training, thus enabling them to fill the vacancies which the war has created. Similar efforts are being made among the graduates of high schools and technical schools. Many of the larger hospitals of the country have decided to enlarge their training schools. Felix M. Warburg has aided the work by a gift of $5,000.

Hospital Ships Safeguarded.—The humane Kaiser has graciously sent assurances to the Spanish Government that British hospital ships are hereafter to be protected from attack by German submarines. Under the arrangement a neutral commissioner will be carried on each hospital ship to guarantee that it transports only sick and wounded. Seven Spanish officers have gone to France to act as commissioners on hospital ships.

APPLICATION FOR APPOINTMENT IN THE MEDICAL RESERVE CORPS, UNITED STATES ARMY

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To the Surgeon General, U. S. Army,
Washington, D. C.

Sir:

I hereby make application to be examined for appointment in the Medical Reserve Corps, U. S. Army, and inclose testimonials as to my character and habits.

I certify that to the best of my knowledge and belief I am laboring under no mental or physical infirmity or disability which can interfere with the efficient discharge of any duty which may be required of me if appointed in the Medical Reserve Corps, U. S. Army, and that the answers given to the interrogatories below are true and correct in every respect.

I furtheromre state my willingness to proceed to such point for examination as may be designated by the Surgeon General, with the understanding that the journey entailed thereby must be made at my own expense.

INTERROGATORIES

Where were you born? (Give State and city or county; if foreign born, give country.).....

.....

What is your name *in full* (including your full middle name):.....

What was the date of your birth?.....

When and where were you naturalized? (For applicants of alien birth only).....

Are you married or single?.....Have you any minor children; if so, how many?.....

What is your height in inches?.....Your weight, in pounds?.....

Give the nature and dates of all serious sicknesses and injuries which you have suffered:.....

.....

If either parent, or brother, or sister has died, state cause and age in each case:.....

Do you use intoxicating liquors or narcotics? If so, to what extent?.....

Have you found your health or habits to interfere with your success in civil life?.....

What academy, high school, college, or university have you attended? State periods of attendance from year to year, and whether you were graduated, giving date or dates of graduation:.....

.....

Name and other educational advantage you have had, such as private tuition, foreign travel, etc.:.....

.....

Give all literary or scientific degrees you have taken, if any, names of institutions granting them, and dates:.....

With what ancient or modern languages or branches of science are you acquainted?.....

How many courses of lectures have you attended? Names of colleges and dates:.....

.....

When and where you graduated in medicine?.....

(Fill this out and send it to the Surgeon General, U. S. Army, Washington, D. C.)

Have you been before a State Examining Board? If so, state when, where, and with what result:*.....

.....

Are you a member of any State medical society? If so, give its name.....

Have you had service in a hospital? If so, state where and in what capacity, giving inclusive dates of each kind of service: .....

What clinical experience have you had in dispensary or private practice?.....

.....

Have you paid particular attention to any specialty in medicine; if so, what branch?.....

What opportunities for instruction or practice in operative surgery have you had?.....

.....

Have you previously been an applicant for entry into the United States service? If so, state when, where, and with what result (if rejected, state why).....

Are you a member of the organized militia? If so, state with what organization and in what capacity:

.....

Have you been in the military or naval service of the United States as cadet or otherwise? If so, give inclusive dates of service with each organization, designating it.....

What occupation, if any, have you followed other than that of student or practitioner? .....

What is your present post-office address?.....

What is your permanent residence?.....

Signature.....

The correctness of all the statements made above was subscribed and sworn to by the applicant before me this.....day of.....A.D. 191

[SEAL] .....

*This application must be accompanied by a certificate from the proper official that the applicant is duly registered to practise medicine in the State in which he resides.

Form 149
W. D. S. G. O.
(Revised May 3, 1917)

.....*M.D.*

OF

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APPLICATION FOR APPOINTMENT

IN THE

MEDICAL RESERVE CORPS,
U. S. ARMY

.....*Inclosures*

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

PUBLISHERS

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See fourth page following reading matter for Rates of Subscription and Information for Contributors and Subscribers.

New York, August 25, 1917.

CONSCRIPTION UNNECESSARY.

A GOOD deal has been said lately, pro and con, regarding a proposition to draft physicians for the Medical Reserve Corps, the advocates of the plan alleging that the volunteer system has proved a failure, and that the full complement of medical men necessary to care for the new troops can be obtained only by conscription. While we have no objection to conscription as a principle, and, indeed, regard it as the best way to raise a large army, since it takes in all alike—patriots and would-be slackers, and does not favor the cowards and those who would live under the flag without paying for their privileges—nevertheless we do not want it for the Medical Corps at this time. Had the rule been made at the beginning that selection for the Medical Reserve Corps would be made by draft, it might possibly have been the wiser course, but to resort to conscription now for the reason that the quota of medical officers could be obtained in no other way, that the members of our profession were so lacking in manliness and true patriotism that they had to be kicked into line, would speak ill for us, would, indeed, put a stigma on the medical men of this country that time could not wipe out. We hope, and firmly believe, that this unwelcome step will not be necessary. As we have said before, men with family ties, with wife and children dependent upon their earnings for subsistence, however deep is their love of country, and however strong their desire to make the great sacrifice for her, must take time to provide for the care and maintenance of dear ones during their absence. But they are coming, a thousand a week, and with a little more effort on the part of the medical press (the recruiting officers) and a little fuller realization by us of what the country needs and expects of its medical men, who have always shown themselves ready for sacrifice and to be depended on in times of emergency and stress, the needed twenty-five thousand will be at call.

To those who can go, but are yet hesitating, we would commend a perusal of the letters to the MEDICAL RECORD from a medical reserve officer in one of the training camps. The letters do not treat of a picnic; the training is hard, of course, and one does not dine or sleep as he would in a Fifth Avenue mansion or an expensive hotel, but the company is good, and the men are honest and earnest in their patriotism and in their desire to do their part for their country and their fellows in the newly-filled ranks of the National Army. They are to be, and they are, envied by many who would gladly give themselves if they could be accepted; for it is a rare privilege, and those who cannot be taken know it. The professional experience is one that a medical man under 40 ought to give anything to acquire; the discipline is invaluable, and, however irksome at first, will benefit the man through all his life; the physical training will give a foundation of health that should last its possessor into green old age; and the opportunities that present themselves for the mental, moral, and physical betterment of the young and heedless recruits will, if embraced, fill one with happiness all his days. Then there's the adventure! Does not that appeal to the young physician? If not, he is unfit for his calling.

Our correspondent in the training camp says some men are there who have left motherless children at home; others have given up lucrative practices of perhaps thousands a year to accept a captain's commission with $200 a month; others again, who had begun to practise under the most favorable auspices, have left everything to obey their country's call. What then is to be thought of the young man without ties, and with only the hope of a practice, who lags behind and closes his ears to the cry of the wounded? What will he say, in the years to come, when his boy asks, "Daddy, where were you in the great war?" Will he say, "Oh, I stayed home and made money, so I could marry your mother"? Perhaps, if heredity counts, the boy will think that a good and sufficient answer. We don't believe there are many such among our readers; if there are any, we beg them to think again; their profession has ever been noted for the self-sacrificing spirit of its members, let them beware lest they disgrace it and bring upon it the stigma of conscription by their failure to do their duty. We print again an application blank, which should be filled out at once and sent to the Surgeon General at Washington by any one who is now ready to help in the most glorious cause that has ever been fought for by mankind; even the cause of American independence, the flame which lighted the torch of democracy, pales before the gigantic effort of the freemen of Europe and America to liberate the slaves of a hideous and inhuman autocracy. The man who can help in this is privileged indeed.

THE DECREASE IN DISEASE AMONG THE GERMAN FIGHTING FORCES DURING THE WAR.

IF we reflect that history is replete with instances of powerful invading armies being checked by disease and finally being obliged to give up their attempted conquests, we will not minimize the importance of military medicine to a fighting force.

Certainly the Germans have never failed to realize it. Long before the outbreak of war, their military surgeons knew exactly how the health of an expeditionary force could be preserved, and there is only one reason—albeit a good one—why Paris is not now under the most rigid Teutonic health control. We should expect, therefore, to find the health reports of the German army and navy as representing ideal conditions.

With this in view, let us glance at the figures presented by the *Deutsche medizinische Wochenschrift* in its issues for January 18 and February 15. During the first year of the war, that periodical states, the average monthly incidence of sickness in the army was 120 per 1,000; during the second year of the war it fell to 100. The highest frequence, according to this journal, was that of nervous diseases, 24 per 1,000; the next highest being pleurisy, 7.7 per 1,000. These figures are for the army. In the navy the number of diseases of the digestive tract were given as 56 per 1,000; and diseases of the respiratory organs, 36 per 1,000.

It is rather curious to note that the navy showed a much higher sickness ratio than the army. Thus, compared with the figures given above, it showed an incidence of sickness of 315.15 per 1,000 in the first year and 287.19 in the second year. To compare these figures with those during peace, we find that the average incidence of sickness for the five years preceding the war was 410.86 per 1,000.

Just why there should be such a marked decrease in sickness coincident with the onset of the war is difficult to say. It may be that emotionalism and the sense of being strung up to the highest point, which always occurs when a nation is at war, has prevented, to some extent, the habit of reporting sick from minor ailments. Such, at least, has been the case among the civilian population of the countries at war. Just as the call to battle may make a soldier forget a headache, toothache, or other annoyance of the kind, and plunge into the fray, so the feeling that the army is in active service, liable to be called into the fighting at any moment, makes the individual soldier hesitate to report hemorrhoids, hernias, varicoceles, and so on; his feeling being that these things can be attended to at any time.

Germany also reports a decided decrease in neurasthenia since the outbreak of the war. Of course, here we must consider that even among the neurologists, neurasthenia means one of two or more different things, depending on what school he follows, and that among the profession at large the term has been used to cover a multitude of symptoms and conditions. The chief connotation probably is a state where the patient suffers from fatiguability, insomnia, worry, and various transient subjective symptoms. It is roughly assumed that because there may be no organic basis found for these symptoms and because they may clear up for no apparent reason, they are all imaginary, and the doctor is too much inclined to look upon the patient with scorn, sometimes rather ill-concealed. The fact, however, that the frequency of neurasthenia dwindles so greatly on the occasion of a great national crisis is highly significant. It means that the neurasthenic has found an interest outside of himself. He is stimulated by an emotion which sinks into desuetude in peaceful times, namely, patriotism, and bends all his energies to serving his country. Thus his symptoms disappear.

So in Germany we find in both the army and navy a marked decrease in disease as a whole, but especially in minor ailments; whether this will be duplicated or not in our own forces remains to be seen.

THE DRAFTING OF MEDICAL STUDENTS AND HOSPITAL INTERNS.

THE Mayor's Committee on National Defense, through its subcommittee on Hospital and Medical Facilities, is doing a true work of national defense in its endeavor to prevent a cutting off of the supply of doctors by the draft. The conscription law makes no provision for exempting medical students and hospital interns, and one need not reason deeply to see that this omission, unless it can be remedied, will speedily produce a shortage in physicians that will affect injuriously not only the civilian population, but the army as well.

It would have been well could the framers of the law have been advised of the experience of our allies in this respect. At the beginning of the war England accepted as volunteers, and France conscripted, a large number of medical students, but within a year the unwisdom of this step became painfully apparent, and the students in the trenches and training camps were picked out and sent back to their studies. The same mistake is now to be made here, unless the Washington authorities can be convinced that it would be a fatal blunder. The Provost Marshal General seems to doubt the figures showing the havoc the draft will work in the supply of physicians, but Dr. Goldwater, the chairman of the committee on Hospital and Medical Facilities, is untiring in his exertions, and has succeeded in interesting the President and the Secretary of War, and has shown them that not only will the number of new physicians be reduced by the conscription of the senior students, but that the hospitals will suffer severely by the drafting of their interns. The Surgeon General, acting under instructions from the Secretary of War, is investigating the actual effect the draft will have on the student body and the hospital interns, and Drs. Wm. H. Welch and Victor C. Vaughan, both of whom are attached to General Gorgas' staff as special advisers, are directing the official investigation, and will have a hand in the framing of relief measures.

It is unthinkable that no remedy will be found to avert this peril. It may be that the law can be obeyed and at the same time the students be kept at their studies, by accepting them for service and then granting them furloughs until the completion of their education. Then, if the war continues, they can be assigned to the Medical Reserve Corps.

ESPUNDIA, BLASTOMYCOSIS, AND THE "SYPHILIS OF THE INCAS."

In a valuable monograph by Escomel on leishmaniasis (Buenos Aires, 1917) we note some photographs of ancient Peruvian statuettes with mutilations of the face, which, if we mistake not, have already been made to serve as documentary proof of the existence of a destructive type of syphilis in the prehistoric Peruvians. The author, who does not even mention the possibility of this disease in this connection, feels quite justified in the belief that such lesions were due to espundia, a clinical type of leishmaniasis. He compares these figurines with present day patients who show the very same type of mutilation; and infers that espundia is a disease of remote antiquity in South America. Very similar in clinical expression to espundia and sometimes associated with it is a form of blastomycosis. Aside from the different causation the two affections are readily differentiated by the treatment test; for while espundia is favorably influenced by arsenic (salvarsan) and antimony, blastomycosis has no treatment other than surgical.

Leishmaniasis occurs in the entire Western Hemisphere south of the Rio Grande river although it does not reach the dignity of a serious folk malady until it arrives at the latitude of Bolivia, Peru, and Brazil. It now begins to receive special local designations, such as espundia (in Peru), Bahia button, Baurú ulcer, buba, uta and even frambesia and pian. Escomel shows that the earliest descriptions of frambesia in South America must have included espundia while the word buba has at various times done duty for syphilis, frambesia, and in fact the entire group of destructive lesions about the face and elsewhere. Blastomycosis is much more restricted geographically and has its chief incidence in Peru, Bolivia, and parts of Brazil. The only directions laid down by Escomel for excluding syphilis, yaws, etc., in diagnosis refer to bacteriology and treatment. Syphilis and yaws, in addition to serological and bacteriological criteria, yield rapidly to salvarsan, much more rapidly and thoroughly than does espundia. Neither the latter nor blastomycosis is spread by venereal contact, although both begin as a so-called "chancre" and exhibit not only secondary manifestations but perhaps even others which could be termed tertiary. The term "secondary" applies primarily to lesions involving the mucosæ, which are never attacked primarily. The initial lesions are probably due to the bites of insect carriers on exposed areas. In theory at least and from analogy and animal experiment the particular species of leishmania and blastomyces can attack the viscera.

It is of course possible that syphilis existed among the ancient Peruvians, but the work of Escomel shows plainly that the facial mutilations in the native pottery figures point at the outset to espundia or blastomycosis and that one link in the chain of evidence for syphilis is thereby broken or at least weakened. The labors of Cruz, Chagas, Escomel, and other eminent South American bacteriologists and parasitologists has already done much for the history of pathology. This school of scientists seems at present little concerned with the vague past but doubtless the time will come for clearing up certain problems of disease by a research into historical archives.

Genesis of Malaria.

The mere presence of the freshly inoculated plasmodium in the human blood is not, *per se*, sufficient to set up malaria, but the so inoculated subject becomes forthwith a carrier of the disease. When the disease does develop it is after an incubation period of from 10 to 15 days. In a valuable article by Garin, abstracted in the *Journal de médecine et de chirurgie pratiques* for July 25 this aspect of malaria is thoroughly considered as based upon studies at the Macedonian front. Of a large number of soldiers who carried the plasmodium in the blood, from 60 to 80 per cent. showed no infection, and were able to render normal service. Repeated examinations showed that these men had acted as hosts over long periods of time. For an infection to occur, the plasmodium must multiply rapidly in the blood and destroy many erythrocytes, and this form of immunity which is so commonly in evidence means that some factor inhibits the multiplication of the microparasite in the blood. It is, of course, possible that instead of a natural immunity there is a rapidily improvised defence in which some antibody is enabled to dissolve the parasites through the formation of a lysin. The result is a partial acquired immunity and the lysin therefore behaves as a "natural quinine." When men become infected there must be a *tertium quid*—either muscular fatigue, exposure to the sun, alcoholic intoxication, wounds, or surgical interventions. Experience teaches us that these factors can each and all favor the development of malarial infection, and this fact connotes injury to the defensive forces, as already outlined. A new and important factor has come to light on the Eastern Front, to wit: chloroform anesthesia, which is known to be prejudicial to the hepatic functions. Since the sequence, chloroform-malaria, has been established, ether anesthesia has been substituted. Antityphoid inoculation may or may not predispose to an acute malarial explosion. The month of November must be mentioned in this connection as a factor, although the effect of cold weather on the mosquito cuts off the source of infection. Exposure to cold and damp, irrespective of the month, appears also to damage the natural defence and determine an outbreak of the disease.

Malingering

The European war will doubtless increase the old literature of simulation, artifacts, malingering, and allied subjects manyfold. Doubtless the twins, Slacking and Simulation, are a necessary offspring of military conscription. The monotony of articles on this subject is wearisome, for there is no limit to the possibilities of this form of playing possum. It is said, doubtless with more or less truth, that a physician whose training has been chiefly military

is prone to look on his civilian patients as at least potential malingerers. In *Il Policlinico* of June 3 there appears a symposium on simulation. In the first place, Professor Ascarelli contributes an illustrated paper on self-inflicted injuries, which he terms autolesions. These comprise eschars, ulcers, abscesses, contusions, etc., produced by various caustics and other means on the hands, feet, and legs. The ear is also a favorite locality for the production of these lesions. This article is followed by one from Professor Condorelli-Francaviglia on conjunctivitis produced by the seeds of the castor oil plant, which contain ricin, a notable irritant. Professor Bilancioni follows with an article on detection of the simulator of bilateral deafness.

News of the Week.

The Mortality Rates and the Hot Wave.—The *Weekly Bulletin* of the Health Department of New York City makes a comparison of the death rates of the weeks ending July 28 and August 4, and finds a difference of 955 deaths, which it believes are attributable to the excessive heat of the week ending August 4. It also makes a comparison of temperature, humidity, and mortality rates with the excessively hot week ending July 6, 1901, and finds that the death rate at that time was more than twice as great as during the week just passed. The deaths reported as directly due to sunstroke or heat prostration during the hot week ending July 6, 1901, numbered 989 as against 358 for the recent hot week. The number of horses that succumbed to the heat was unprecedented. In ordinary periods, about 200 dead horses are removed from the streets each week, while during the week ending August 4, 776 were removed.

July Street Accidents.—There were, according to the official report of the Police Department, 2,461 accidents in the streets of New York during July, with 2,718 persons killed or injured. This was an increase over June. The number of deaths for July was 53 males and 21 females, as against 48 males and 9 females in June. During July, Saturday showed the largest number of accidents of any day in the week, and accidents were most numerous between five and six o'clock in the afternoon.

Infantile Paralysis in Pennsylvania.—On August 13, the presence of infantile paralysis in two sections of Pennsylvania was reported to the State Department of Health. Twenty-one cases were reported at Newcastle and the vicinity, and 34 in Lancaster County.

Straus Memorial.—At a recent meeting in the offices of the East Side Protective Association a committee was chosen to formulate plans for the erection of a suitable memorial to Nathan Straus in appreciation of his twenty-five years' service to the children of New York City in furnishing free milk through his milk stations. The memorial is to be erected in Seward Park, Hester and Essex Streets.

Municipal Meals in Hamburg.—A report to the *New York Times* states that more than 180,000 residents of Hamburg are now being fed at the municipal soup kitchens, owing to the difficulties of obtaining food for individual households. In April, May, and June, between 230,000 and 240,000 persons daily visited the kitchens for their meals, and it is expected that the number will again increase during the coming winter. These figures do not take into consideration school children fed at the school canteens. The death rate during the month of June was 49 per cent. higher than the birth rate. The excess of deaths has fallen at the present time to about 30 per cent. higher than the birth rate.

Bequests.—Mount Sinai Hospital and Montefiore Home and Hospital, New York, and Zion Home, Buffalo, are each the recipients of $1,000 under the will of Norbert Gunzburger.

Venereal Clinics Extended.—The Department of Health of New York City has established Venereal Advisory Clinics in each of its four Health Centers of the Borough of Queens. Each clinic has two consultation days a week. The medical advisor will consult only with those applicants who are not under the care of a physician and who come to the Health Department seeking advice regarding venereal diseases. Under no circumstances will patients be interviewed who are sent by physicians or private institutions for the Wassermann and complement fixation tests, unless request for advice be made by the physician or institution sending the patient. All applicants are given a circular of information regarding venereal diseases and a card of instructions regarding syphilis and gonorrhea. It is promised that the histories taken are kept confidential.

Dr. S. R. Klein, formerly professor of histology and embryology at Fordham Medical School, has been appointed assistant superintendent, pathologist and roentgenologist to the Waldheim Park Sanatorium, Oconomowoc, Wis.

Rear Admiral Charles F. Stokes, U. S. N., retired, has resigned the position of medical director of the Warwick Farm for Drug Addicts.

Dr. Aristine P. Munn-Recht has been appointed as the first dean of women at New York University.

Albert Calmette, director of the Pasteur Institute at Lille, and founder of the Pasteur Institute in Indo-China, has been called to Metchnikoff's vacant place at the Pasteur Institute in Paris.

Bribe Takers Punished.—Two members of a local exemption board in New York City, a physician and a druggist, have been sent to the Federal prison at Atlanta for two years for having accepted money from drafted men to pronounce them medically unfit.

The Clinical Congress of Surgeons of North America, which was scheduled to hold its annual meeting in New York, has changed its plans. Preliminary plans have been made for a "War Convention" to be held in Chicago during the week of October 22.

The American Public Health Association Congress that was to have been held in New Orleans in December has decided to meet in Washington, D. C. This is because war hygiene is a subject of such importance at the present time that the congress believes it can better help solve the war problems from the sanitary standpoint by making this change.

Alabama Medical Association Adopts Re-

ciprocity Agreement.—At a meeting of the Alabama Medical Association, held in Montgomery on August 4, a reciprocity agreement was adopted whereby licensed physicians of the States of Ohio, Arkansas, Louisiana, Pennsylvania, Kentucky, Oklahoma, and Mississippi, may practice in Alabama, or Alabama physicians may practice in any of these States. The provisions are that the physicians in such a case must present credentials, must have passed his State examination, must have practiced medicine two years, must be a member of the medical society of his State, and must be a graduate of a Class A medical college.

French Embargo on Magnesia.—The American Consul General at Paris has sent the following cablegram: "Decree of August 7, published August 9, prohibits export, etc., from to-day of magnesia and carbonate of magnesia." The decree is subject to the usual exceptions.

Obituary Notes.—Dr. HENRY FREEMAN WALKER died from heart disease at his summer home in Pittsford, Vt, on August 12, at the age of 80 years. He was a graduate of the College of Physicians and Surgeons, New York, a member of the New York Academy of Medicine, and consulting physician to St. Luke's Hospital. He retired from active practice in New York City several years ago.

Dr. HOSEA ELLSWORTH WALKER, a graduate of Bellevue Hospital Medical College, in 1892, and visiting physician to St. Vincent's Hospital, died at his home at Fort Wadsworth, Staten Island, N. Y., on August 16, aged 52 years.

Dr. RALPH B. GRISWOLD, a graduate of the Eclectic Medical College, Cincinnati, in 1857, died at his home in Banksville, N. Y., on August 1.

Dr. ALBERT L. BINGHAM, a graduate of the University of Vermont in 1875, died at his home in Williston, Vt., after a lingering illness, on August 6, at the age of 64 years.

Dr. LEVI P. ESSLINGER of New Market, Ala., a graduate of the Birmingham Medical College in 1903, died after a surgical operation in a Nashville hospital, on August 6, aged 40 years.

Dr. WILLIAM LOWNDES WELLS died of pneumonia at his home in New Rochelle, N. Y., on August 17, at the age of 87 years. He was a graduate of the College of Physicians and Surgeons and of Heidelberg University, in 1852, served as a surgeon in the Union Army during the Civil War, and was afterward associated with Dr. Janeway and Dr. Thomas Addis Emmet. He retired from active practice about twenty years ago.

Correspondence.

OUR LETTER FROM PARIS.

(From Our Regular Correspondent.)

REGIONAL ANESTHESIA

PARIS, July 17, 1917.

PROBABLY there is no ten years in the history of surgery that show the variety and extent of progress that has been made evident since the outbreak of the present great war, and one of the innovations that promises lasting good is the steadily growing practice of regional and local anesthesia replacing the use of ether and chloroform.

For thirty years Professor Réclus of the Paris Faculté preached and practised local anesthesia. His method consisted in infiltrating the tissues upon which he proposed to operate, with a feeble solution of cocaine and proceeding with his operation. The chief inconvenience of this procedure is that often the effect of the anesthetic does not last long enough to complete the operative procedure, and the operator must arrest his work to reinject and insensibilize the field; this form of anesthesia is, however, well known and much practised in France, and out of it has grown the idea, and from that the experimental investigation which has perfected regional anesthesia.

My friend and colleague, Dr. Victor Pauchet, professor at the Amiens Medical School and at present head of two services of war surgery in Paris, is one of the leading exponents of this new procedure. He is a man of charming presence, one of the ablest of the present-day operators, and Americans are welcomed to his operations and afforded every facility to study his methods and especially his anesthesia by injection, which he can explain as well in English as in French.

The knowledge and practice of regional anesthesia have progressed to the extent that the method covers every anatomical area and under its influence all of the major as well as the most delicate of the minor operations are permitted. By its practice we have overcome the noticeable shock following the operations upon the vital organs so frequently met with after the use of the ethylic compounds. The nausea and vomiting which sometimes endures for forty-eight hours after an operation and is a prominent factor in the depression of the vital force, and, when the strength of the patient has been wasted to the last degree before submitting to operative interference, is often the determinating cause of death, is done away with. Regional anesthesia differs wholly from the method of Réclus, in that it is a form of anesthesia that its name implies, whereas it consists in injecting the nerve at its point of origin or along the trunk near the point of origin, and as a consequence all of the field supplied by such nerve is rendered insensible.

Réclus' method presents the inconvenience that frequently the effect of the local anesthesia subsides and the operator has to interrupt his operation to reinject and insensibilize the tissues before proceeding; whereas in regional anesthesia the effect of the injections endures for one and one-half to two hours, long enough to complete the most complicated of operations. There is no danger to the life of the patient from the effects of the injections, while it sometimes happens that the subject dies under the influence of general narcosis.

The effects that sometimes appear as complications in the lungs, liver, and kidneys following general narcosis, are absent in regional anesthesia and in this respect the superiority of regional anesthesia over ether and chloroform is made strikingly apparent in operations in the presence of chronic icterus or of renal insufficiency; and equally the advantages of regional anesthesia in respect to shock are pronounced when comparison is made between a series of cases of cancer of the stomach operated upon under narcosis and under anesthesia by injection.

Operations upon the respiratory tract or in the

near neighborhood are greatly facilitated. The patient assumes any position desired, being fully conscious; he can at will arrest his breathing, suppress a cough, or expectorate if needs be. This is a valuable aid to operations upon the pleura, larynx, neck, etc.

Regional anesthesia is, of course, very well known in America, but it has not made as rapid progress there as in Europe, because, I think, of lack of precise knowledge regarding the details of its regional application and technique, and because an idea prevails that it requires a special knowledge and aptitude for its application, whereas in Paris the injections are made for the operator by the interns and hospital nurses.

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Progress of Medical Science.

Boston Medical and Surgical Journal.

August 9, 1917.

1. The Country Doctor and the Hospital. Nathaniel W. Faxon.
2. A Study of the Urines of Picric Acid Workers. F. O. West.
3. An Epidemic of Dysentery at the Boston State Hospital. Mary Elizabeth Morse and Geneva Tryon.
4. A Year's Work with the Wassermann Test. Francis H. Slack, Philip Castleman, and Karl R. Bailey.

2. A Study of the Urines of Picric Acid Workers.—F. O. West states that the medical complaints of men engaged in the manufacture of picric acid having been treated in a general way, this investigation conducted by him was undertaken to determine the truth of the popular belief that the kidneys are seriously affected in those constantly exposed to this substance. The employes examined were working under hygienic conditions as far as suitable buildings, hours, and care were concerned. Examinations were made on the urines of the entire crew of picric acid workers, including machine operators, packers, men handling the dried powder, and the steam fitters whose duties were confined to this department. The crew was made up of both whites and negroes. The length of service varied from one to eighteen months. On careful questioning no evidence of a symptom-complex was found that could be attributed to picric acid poisoning. The urines were examined for the presence of albumin and picric acid. The following tests were used for the detection of albumin: heat and acetic acid with filtered urine. Picric acid: three tests were applied to all urines—white wool, copper sulphate, and potassium cyanide. The result of this investigation tends to show that picric acid may be manufactured without great hazard to the employee, provided the work is carried on under proper conditions and the men are subjected to rigid medical supervision. Of 86 urines examined for the presence of albumin, 3 gave the "slightest possible trace" at the end of employment, whereas it was not detected at the outset. Nevertheless, these three men had never been affected by any of the substances they were handling; while many men not given the test had been repeatedly treated, one of this latter class having nearly died from the effects of fume poisoning. In addition to the examination for albumin, 57 of these urines were tested for the presence of picric acid, and three were positive. Unfortunately, the value of this information is open to suspicion, on account of possible contamination. If the picric acid had been excreted in the urine in these cases, the writer found no evidence of its having caused renal irritation.

New York Medical Journal.

August 11, 1917.

1. Present Day Aspects of Laryngeal Tuberculosis. Hubert Arrowsmith.
2. The Primitive Medicine Man's Virtues. (Concluded.) Jonathan Wright.
3. Diagnosis of Early Cancer of the Stomach. Anthony Bassler.
4. Diagnostic Teeth. Percy Willard Roberts.
5. Prophylactic Inoculation in Tetanus. J. Rudis-Jicinsky.
6. The Functional Neuroses. Adolph Stern.
7. Island Flaps. J. F. S. Esser.
8. Hallux Valgus. Joseph E. Fuld.
9. A Case of Double Strangulated Femoral Hernia. Wesley J. Woolston.

4. Diagnostic Teeth.—Percy Willard Roberts states that there is abundant evidence that the value of the teeth as an aid in the diagnosis of certain morbid states, notably bone and joint lesions, is very much underrated. He has observed during the last few years numerous cases of inherited syphilis which had undergone long periods of treatment based upon incorrect diagnosis and in which inspection of the teeth with an intelligent interpretation of the findings would have given a clue to the true pathology and shortened immeasurably the period of invalidism. Unfortunately anomalies of the teeth are usually looked upon as the special charge of the dental surgeon, their clinical significance being little understood. Outside of the classical Hutchinson teeth, not a great deal is known among medical men about other forms of syphilitic teeth. That the abnormal tooth formations seen in hereditary syphilis are not merely an expression of a general dystrophy, but are more often the result of local inflammatory disturbance, due to the immediate presence of the spirochetes, is suggested by the fact that the organisms have been recovered from the dental structures of the dead fetus. Syphilitic activity must correspond, not to the period of eruption of the teeth, but to the time during which they are undergoing calcification. The first permanent molars begin to dentify during the sixth month of intrauterine life and the incisors and canines during the first three months after birth. In addition to the recognized syphilitic tooth conditions as described by Hutchinson, Fournier, Moon, and others, there are other anomalies of form and arrangement of the teeth frequently seen in inherited syphilis which may have an important bearing on clinical diagnosis in both medicine and surgery. Fournier estimates that fully 80 per cent. of these conditions are produced by syphilis and the balance by other causes which may be unknown, but from which syphilis cannot be definitely excluded. Absence of dental units is a common form together with symmetrical erosions of various kinds, anomalies of spacing, white sulci, and the tendency to early decay. The writer emphasizes the value of an otherwise trivial dental anomaly as a clue to the pathology of an active lesion elsewhere in the body. Particular attention is called to abnormal spacing between the two upper central incisors, which, when occurring alone, has not been regarded as of diagnostic significance. The fact remains that it is so often present in recognized cases of syphilis. It may be the only dental irregularity in a subject of inherited syphilis and has in Roberts' experience been the means on many occasions of detecting syphilis which had been for years overlooked. Eleven cases are cited showing the presence of this condition in both boys and girls and adults. In conclusion, let it be repeated that the typical Hutchinson tooth, with which we are all familiar, is but one of many types of dental deformity produced by inherited syphilis. The very nature of the disease, most active as it is during the period of tooth formation, may produce an infinite variety of abnormal dental shapes and arrangements, the presence of any one of which when associated with disease in other parts of the body should arouse suspicion as to the pathology of the active process where positive evidence of its nonsyphilitic origin is lacking. To ignore these signals of hereditary taint which nature has placed so conspicuously before us is to invite diagnostic disaster.

Journal of the American Medical Association.

August 11, 1917.

1. Establishment, Maintenance, and Reinstitution of Breast Feeding. J. P. Sedgwick.
2. The Technique of Wetnurse Management in Institutions. Isaac A. Abt.
3. Problems Connected with the Collection and Production of Human Milk. B. Raymond Hoobler.
4. Electrocardiographic Changes Associated with Myocardial Involvement, with Special Reference to Prognosis. Bernard S. Oppenheimer and Marcus A. Rothschild.
5. Hookworm Infection as a Medicomilitary Consideration: Recent Experiences with Southern Troops During Mobilization on the Mexican Border. George B. Foster, Jr., and Charles G. Sinclair.
6. Acute Pancreatitis. John B. Deaver.
7. Nephritis from the Standpoint of Urea Excretion. Franklin C. McLean.
8. Dietetic Treatment of Nephritis Controlled by Chemical Examination of the Blood. Arthur F. Chace and Anton R. Rose.

9. The Nature and Treatment of Chronic Parenchymatous Nephritis (Nephrosis). Albert A. Epstein.
10. A Comparison of the Percussion and Roentgen-Ray Findings after Injection of the Pericardium. Roger S. Morris and Ellis R. Bader.
11. Evolution of Cancer of the Breast. Parker Syms.
12. Intubation of the Larynx: An Analysis of Three Hundred and Fifty Cases in Private Practice. Henry James Cartin.
13. A Case of Hemihypertrophy with Increased Sugar Tolerance. Hyman Cohen.
14. The Surgical Significance of Gastric Hemorrhage. Donald C. Balfour.

1. **Establishment, Maintenance, and Reinstitution of Breast Feeding.**—J. P. Sedgwick. (See MEDICAL RECORD, June 9, 1917, p. 1009.)

2. **The Technique of Wetnurse Management in Institutions.**—Isaac A. Abt. (See MEDICAL RECORD, June 9, 1917, p. 1010.)

3. **Problems Connected with the Production and Collection of Human Milk.**—B. Raymond Hoobler. (See MEDICAL RECORD, June 9, 1917, p. 1011.)

4. **Electrocardiographic Changes Associated with Myocardial Involvement, with Special Reference to Prognosis.**—Bernard S. Oppenheimer and Marcus A. Rothschild. (See MEDICAL RECORD, June 16, 1917, p. 1076-77.)

6. **Acute Pancreatitis.**—John B. Deaver. (See MEDICAL RECORD, June 16, 1917, p. 1062.)

7. **Nephritis from the Standpoint of Urea Excretion.**—Franklin C. McLean. (See MEDICAL RECORD, June 23, 1917, p. 1114.)

8. **Dietetic Treatment of Nephritis, Controlled by the Chemical Examination of the Blood.**—Arthur F. Chace and A. R. Rose. (See MEDICAL RECORD, June 23, 1917, p. 1114.)

9. **The Nature and Treatment of Chronic Parenchymatous Nephritis (Nephrosis).**—Albert A. Epstein. (See MEDICAL RECORD, June 23, 1917, p. 1115.)

10. **A Comparison of the Percussion and Roentgen-Ray Findings After Injection of the Pericardium.**—Roger S. Morris and Ellis R. Bader. (See MEDICAL RECORD, June 16, 1917, p. 1076.)

12. **Intubation of the Larynx: An Analysis of Three Hundred and Fifty Cases in Private Practice.**—Henry James Cartin points out that laryngeal diphtheria, requiring intubation, has been considered by most pediatricians as a disease for hospital treatment. It is because of this belief that he decided to present an analysis of 350 cases occurring in private practice in the hopes that results obtained under the most adverse conditions may lead to more general use of this operation when hospital facilities are lacking. Johnstown, Pa., where the treatments were carried out, is the center of vast steel and mining industries which attract a large population of laboring people of both native and foreign birth. The homes of many of these are overcrowded and living conditions are unhygienic, resulting in many of the children having chronic catarrhal conditions of the upper respiratory tract. There is concealment of disease through fear of quarantine, and exposure to disease through ignorance of contagion and indifference to it. These conditions made a fertile field for epidemics of laryngeal diphtheria during the years 1905-1917. The increase in the number of cases intubated is due primarily to the epidemics and secondarily to increasing knowledge among the physicians of the success of the operation so that each child was given the chance of intubation if needed. The conditions for operation were far from satisfactory. For operating, the kitchen table, bed, or two chairs were used; in one case the door. The light was always poor. A parent, neighbor, or physician usually held the child. The physician, through interest in the operation, frequently failed to hold the child properly. The other helpers failed through nervousness. His results have given him the following facts: (1) No patient needing intubation should be denied the chance to live because of lack of hospital facilities. (2) Overcrowding of homes, unhygienic surroundings, concealment of disease, and exposure to contagion are responsible for the epidemics. (3) Lack of trained assistants need not deter one from operating. (4) The use of a tube larger than that indicated for a given age gives better results. (5) Early intubation with large doses of antitoxin reduces the mortality. (6) Wearing the tube five days resulted in fewer reintubations. (7) It appears that special diet and methods of feeding are unnecessary. (8) Reintubation does not seem to affect phonation permanently.

The Lancet.

July 21, 1917.

1. A Report on the Treatment of 102 Carriers of Amebic Dysentery with Emetine Bismuth Iodide. W. Waddell, C. Banks, H. Watson, and W. O. Redman King.
2. The Effect of Trinitrotoluene upon the Blood. P. N. Panton
3. War Surgery in Serbia: Penetrating Wounds of the Abdomen. Fergus Armstrong.
4. Some Observations on Trench Fever. E. R. Grieveson.
5. The Premeningitis Rash of Cerebrospinal Fever. C. P. Symonds.

1. **A Report on the Treatment of 102 Carriers of Amebic Dysentery with Emetine Bismuth Iodide.**—W. Waddell, C. Banks, H. Watson, and W. O. Redman King state that the cases dealt with were discovered to be carriers of *Entameba histolytica* in the course of the ordinary routine examinations of feces at the hospital where the examinations were carried out; none of them were found to be carriers of dysentery bacilli. They were all treated with emetine bismuth iodide, and the results were such as to demand publication, as this is the first time, as far as the investigators know, that the drug has been tested on such a large scale. The treatment has had the advantage of being carried out under the supervision of one medical officer at a place where the necessary protozoological examinations could be made on the spot. The results of the treatment are as follows: (1) Emetine bismuth iodide is much more effective than emetine hydrochloride in the treatment of carriers of *Entameba histolytica*, but about 20 to 25 per cent. of failures may occur. (2) The intensely irritating properties of the drug in many cases are a drawback in its general application. (3) The definite failure to cure 19 out of the 102 cases treated at Barton may perhaps be in part due to the form of the drug employed (a keratin-coated tabloid). (4) It is improbable that there were many relapses later than those discovered; and as several of the cases had only eight or nine doses instead of 12, it seems likely that less than 36 grains may be effective. (5) It is advisable to keep cases under observation for not less than 14 days after treatment, and to examine them not less than four times during that period if relapses are to be detected. (6) The drug is without appreciable effect upon the intestinal flagellates, but has an effect, usually temporary, on *Entameba coli*.

5. **The Premeningitic Rash of Cerebrospinal Fever.**—C. P. Symonds states that various observers have noted that there may be an erythematous rash in cerebrospinal fever. Rolleston, in a recently published series of 95 cases, mentioned it as occurring in 5, while in another 5 there was a so-called rose rash; but no one, as far as Symonds is aware, has remarked upon the time relations of this eruption (a) to the onset of the illness, and (b) the first symptoms of meningitis. In a fair experience of the disease (about 50 cases) he has seen this erythematous rash in three cases; it was in each instance observed very early after the onset, and before there were any symptoms of meningitis to suggest the diagnosis, so that it is perhaps worth recording the details. Three cases are given. In Case I, where the patient was under observation from the onset, there was a profuse rash to be seen six hours later, which had disappeared four hours after it had first been observed. This case, a private, aged 32 years, was in the hospital for five days for dyspepsia; there were no physical signs of organic disease. At 2 A. M. he woke up with a fit of shivering, complained of headache, vomited, and was restless. His temperature later in the morning rose to 102°, and when examined at 10 A. M. he showed a profuse rash on the chest, abdomen, and back. This rash consisted of erythematous spots of about the size of the finger nail, which faded on pressure, and were just distinctly papular to the touch. There were no physical signs except a little sticky pharyngitis. Kernig's sign and neck stiffness were not present. Later in the morning his rash began to fade on the trunk, and to appear on the arms and legs, and by 2 P. M. had disappeared altogether. At 3 P. M. a specialist diagnosed the case as one of malaria. At 5 P. M. the patient was irritable, complained of pain in the back of the neck, and showed

a positive Kernig's sign. Lumbar puncture performed at 7 P. M. yielded fairly turbid fluid under pressure, containing meningococci and pus cells. In Case III the erythematous rash was present twelve hours after the onset and had almost disappeared six hours later. In Case II the probability is that there was primarily a local meningococcal infection of the throat and nasopharynx, and that this became a general infection after the patient's admission to the hospital. Twelve hours fater the onset of illness the rash was observed and seven hours later the fine, typical rash had replaced the first one, and the patient had developed signs of meningitis. Probably in all three cases the rash had made its appearance and faded away within twenty-four hours of the onset of the general infection, and it was certainly a striking feature of each case before meningeal symptoms suggested the diagnosis. These cases tend to confirm the hypothesis already advanced by investigators that there is a septicemic stage in cerebrospinal fever which precedes the meningitis.

British Medical Journal.

July 21, 1917

1. The Clinical Organization of the Medical Profession. C. O. Hawthorne.
2. The Antiseptic Properties of Acriflavine and Proflavine, and Brilliant Green. With Special Reference to Suitability for Wound Therapy. C. H. Browning, R. Gulbransen, and L. H. D. Thornton.
3. Medical and Surgical Notes from Mesopotamia. G. Grey Turner.
4. A Case of Acholuric Jaundice. W. H. McKinstry.

3. Medical and Surgical Notes from Mesopotamia.—G. Grey Turner gives a résumé of some of the disease conditions encountered among the troops in Mesopotamia. The cases coming under the heading "Effects of Heat," though interesting, were depressing and disappointing, for so very often treatment was unavailing. He states that he shall not soon forget the stream of patients in June and July who were hurried to the bath house, nor the occasion when nearly a dozen stertorous patients lay in the open air along the side of the creek, many of whom went to make up the sixteen funerals that left the hospital the next day. These men were not weaklings, but often big, strong fellows who might be expected to be the last to go under. Nearly every case illustrated the importance of prophylaxis and of early treatment, and those that developed in hospital often recovered as the result of prompt measures to reduce the temperature. But the heat regulating centers are so much deranged that relapses are common, and there can be no doubt that anybody who has suffered from a severe attack should be sent out of the country. Postmortem examinations in these cases were disappointing, the appearances were not uniform or characteristic, and there was much less cerebral or meningeal mischief (to the naked eye) than was expected. The congestion of the internal viscera which was always found was only a consequence of the slow process of dying from coma. Turner further states that there is a great deal of work to be done on these cases, and until their minute pathology and chemico-pathology is better understood the methods of treatment must be empirical and haphazard. Prophylaxis is the most important thing, and the responsibility for the transport and care of troops coming fresh to a moist, hot climate like Basra in May, June and July, must always be great. Every detail must be attended to, and the soldiers must be tended like ignorant children, and no point is too small or trivial to be neglected. As a result of conversations with men who had suffered from the effects of heat in its various forms, Turner is satisfied that those who tolerate heat badly at home should not be sent to this climate. New troops, and especially their officers, coming to tropical countries, should be educated as to the precautions necessary. Newcomers revel in the sun and suffer; they should be told that the sun is an enemy to be avoided, that the head and back of the neck should be covered, and that advantage should be taken of every little bit of shade. He concludes by stating that it takes some time before one instinctively walks at a funeral pace and seeks the most trivial of shades. Men should never leave camp without their water-bottles, and every care should be taken to avoid exhaustion.

Le Progrès Médical.

July 21, 1917.

Adrenal Dyspepsia.—Loeper, Beuzard and Wagner first mention the gastrointestinal troubles of Addison's disease, such as almost permanent anorexia, atonic dyspepsia, and constipation, with occasional exacerbations of vomiting and gastric and intestinal crises. These symptoms may appear in a restricted degree in the overworked and in the convalescent soldier as a result of adrenal insufficiency. Adrenal dyspepsia is not very painful in type. At any time from a half hour to two hours after eating we note the presence of aerophagia and gastric distention. Constipation is persistent and obstinate, with occasional reactionary crises of diarrhea. Paroxysms of colic and vomiting are rarely seen. There is often much emaciation proceeding from lack of aliment due in turn to permanent anorexia. There is absolutely nothing to implicate the adrenals. Analyses of stomach contents and stools, and the *x*-ray, bring out nothing characteristic. There is often low blood pressure, which could readily be the result of the condition, and not necessarily due to adrenal hypofunction. This is equally true of Sergent's white line. Asthenia is not extreme and melanoderma seldom present. Certainty is only found in blood analyses and in the results of treatment. The former are naturally attended by difficulties and are unnecessary when the treatment test is so readily applicable. Injections daily, or every other day, of a half or one milligram of adrenalin often are productive of the most surprising results, even although in many cases no benefit accrues. The third injection may be followed by complete restitution of function. In such cases we see the blood pressure rise and the asthenia disappear; and there seems no room for doubt that there is such a malady as "capsular dyspepsia," and that we have cured it. The mechanism is still obscure, because we do not know to what extent the sympathetic and cerebrospinal nervous systems, smooth and striped muscle, and glandular cells are individually acted upon by the drug.

Butyric Dyspepsia.—Chevrel has studied this subject in the young child in connection with mucous gastritis and pylorospasm. Cantley, the English pediatrist, has been a pioneer in the study of a condition which can simulate pyloric stenosis. It appears to be determined by an unbalanced and defective diet, too rich in fats, and improves when this dietetic fault is corrected. The author narrates the case of a nursling who took the breast well but could not gain weight. Artificial feeding produced no better result, no matter how varied. The patient often vomited the food and alternated between constipation and diarrhea. Examination for pyloric stenosis gave negative results. Butyric acid odor was apparent in the vomitus. When about four months old the child was losing weight. Among the food articles tested were homogenized milk, rennetized skim milk, legume purées, milk cut with mineral waters, panada, buttermilk, casein (fresh cheese) in sweetened milk, etc. All of these fat-free foods were ill borne. The baby was now a typical athreptic, with grave outlook for recovery. At this juncture it was noted that an immense amount of mucus was being vomited, and lavage was begun, with most striking results. Vomiting ceased, the diet at the time comprising rennetized skim milk and new cheese. Upon this food, with occasional lavage, weight was rapidly put on.

Journal de Médecine de Paris.

June, 1917.

Familial Appendicitis and Hereditary Syphilis.—Gaucher and Brenet report the following episode: A ten year old girl presented herself for pain in the side, and was found to have appendicitis. It was learned that she had been cured two years before of an interstitial keratitis with mercury. Her physique was excellent, save for slight evidences of lymphatism. There were further stigmata suggesting syphilis, and a positive Wassermann. There had been eight children in her family, patient the seventh. One older sister died at 18 years, had had chronic appendicitis, and another died at 20 of perforative appendicitis. A third died at 15 years of appendix-peritonitis. Two boys

died early in life, causes inconsequential. There is another sister, age 13, who has been operated on for appendicitis. The youngest of the family, a boy, died early in life, no cause stated. Parents both known to have had syphilis. This is Gaucher's fourth syphilitic family in which appendicitis is known to have developed in familial incidence; and these do not include others in which appendicitis developed in the third generation of syphilitics.

Silent Peritonitis and Sudden Death.—Minet describes three cases of this sequence. I. A soldier, aged forty-six, was found dead in his bed at 2 A. M. The evening before he had gone to the regiment surgeon complaining of painful urination. Pus and albumin were found in the urine, and he was told to await a complete analysis. His comrades said that he had seemed well the day before, had eaten dinner as usual, and gone to bed at the regular hour. The cadaver showed no sign of violence. Examination of encephalon and thoracic cavity negative. When the abdomen was opened about a quart of reddish fluid escaped. The peritoneum of the abdominal wall and intestines was covered with abundant false membranes. The small intestine was constricted at one point. One kidney presented a tuberculous nodule. The bladder was filled with pus. II. This soldier was also aged forty-five, and consulted the surgeon for cough and dyspnea of recent onset. He was at once interned and his chest found to be the seat of extensive râles for which numerous wet cups were applied. Neither these nor cardiac stimulants arrested the symptoms, and patient died next day. As he had been exposed to dinitrophenol it was held that death had been caused by edema of the lungs. The cadaver showed intense icteric hue. The head and throat showed no lesions. The lungs showed marked congestion but no edema. There was recent pericarditis and the cardiac cavities were filled with coagulated blood. The abdomen was filled with pus and false membranes. The appendix was constricted and its free end filled with pus in which lay a fecal concrement. Patient also presented the large white kidney. III. This was an old case in a civilian who had been kicked in the abdomen during a fight. He was able to walk a short distance to his home, where he made out a complaint. He went to work as usual next day. On the fourth day, after a little malaise, he vomited, collapsed, and death ensued. Autopsy showed no evidence of external violence (the assailant was acquitted of manslaughter) but there was an enormous amount of pus and fecal matter in the abdomen due to a double rupture of the small intestine.

Revue médicale de la Suisse romande.

June, 1917.

Experimental Researches on the Cytologic Formula of Serous Effusions in the Tuberculous.—Golay, assistant of Professor D'Espine in the Geneva pediatric clinique, has attempted to determine whether or not serous effusions in the tuberculous have a characteristic cytologic formula. The first patient to be tested was a boy of 13 who had a fibrocaseous tuberculosis of the right apex. He developed symptoms of meningitis, but the spinal punctate was sterile. Meanwhile it became evident that a pneumococeus pneumonia was in evolution. This ended favorably by crisis. The memingitis symptoms persisted for a short time and then subsided. The punctate was still sterile. The cell count of the punctate had shown much variation. At the onset of the meningeal symptoms there were 300 elements, almost entirely lymphocytes in the Nageotte chamber with albumin 0.25 per 1,000. After the pneumonia crisis there were 120 lymphocytes with albumin same as before. After complete recovery there were 3.4 elements per mm., albumin 0.15 per 1,000. The investigation was then transferred to rabbits of two groups, healthy and tuberculized. The principal difference noted was during the early hours of the experiment when the tuberculized animals showed a relatively larger presence of mononuclears. This corresponds in a measure to the cell counts of blister fluids in sound and tuberculous subjects, the latter showing from 14 to 20 per cent. more mononuclears than the former. This holds good for fibrocaseous phthisis, not for advanced cavitary phthisis with secondary infection.

Poisoning by Rhubarb Leaves.—Maillart relates an episode in the belief that it is almost unique—familial poisoning with the leaves of garden rhubarb — which had been eaten as a part of spinach dish. The author refused to believe that the symptoms could have been due to rhubarb leaves. On investigation he found that such a sequence is on record with two fatal cases. The conditions were the same—rhubarb leaves had been eaten with others as "greens." The author then investigated his own cases carefully. The parents, their four children—from 8 to 13 years of age—and the domestics, all ate the greens together and a few hours later developed a violent diarrhea. All recovered rapidly excepting the father, who continued to suffer with digestive disturbances, somnolence and prostration. When seen 8 days after the intoxication his nutrition seemed intact and nothing was found on examination until the urine was reached when 2¾ per 1,000 albumin was revealed. Although the patient made a good recovery, it was evident that he had passed through an epithelial nephritis. An old lesion of the kidneys could be excluded. This association of gastric, nervous and renal disturbance points at once to oxalic acid poisoning. One of the fatal cases, which occurred in an English clergyman, was proved to have been due to the ingestion of rhubarb leaves which contained 1½ per 1,000 of potassium oxalate, a toxic salt of oxalic acid.

Correspondenz Blatt für Schweizer Aerzte.

July 14, 1917.

Influenza Meningitis.—Tobler speaks of the not infrequent association of suppurative meningitis with influenza. We do not as a rule know whether this complication is due to Pfeiffer's bacillus or one of the ordinary pyogenics. In seeking to throw light on this subject the author studied a case in great detail. The patient was an infant 5 months old with congenital syphilis. It passed safely through a sharp attack of influenza and then underwent an inunction cure. Some weeks after recovery from influenza meningeal symptoms suddenly appeared. Culture tests of the spinal punctates were negative throughout but hemoculture yielded Pfeiffer's bacillus. Despite the threatening character of the meningeal sequela death occurred apparently from intercurrent acute peritonitis. Autopsy revealed purulent basal meningitis of base and convexity with an accumulation of pus in the peritoneal cavity along with ordinary adhesive peritonitis. In pus from both sources Pfeiffer's bacillus was found under the microscope in advance of cultures. This case goes to reinforce a certain number of others on record, chiefly in young infants, in which the meningeal complication or sequela was evidently not due to mixed infection. In such cases the meningitis is doubtless not due to metastasis but to direct extension of the infection.

Attempts at Cure of Amnesia by Means of Free Association and Hypnosis.—Rorschach relates this case: A soldier sent home on furlough did not return on time. Investigation led to his discovery in a beer cellar in a state of mental confusion and amnesia. Removed to the hospital he was able to remember up to a certain hour on the first day of his furlough when apparently he had met with an accident. He was able to give a good history of himself and family, and had never before been in a twilight state although there may have been an unmotivated tendency in boyhood to wander. He had always been alcohol-intolerant and two glasses of beer were enough to rob him of self control. Once he had had an unmotivated attack of weeping. His record as a soldier was good save on one occasion when he had failed to get up in the morning. When interned he was pale, complained of headache, was alternately euphoric and anxious, and showed numerous peculiarities of behavior. He was first tested with ordinary association (Jung-Riklin) which was at least 93 per cent. internal. Great uniformity was shown, and the total results pointed strongly to epileptic association. Free association tests *per se* could throw no light on the amnesia and the patient was then hypnotized. Under hypnosis certain things were remembered but there were many gaps and posthypnotic suggestion failed completely. It seemed beyond doubt, by the character of the recollections, that during the twilight state patient had been in a delirium which by its content suggested an organic brain disease.

Book Reviews.

Diagnosis From Ocular Symptoms, By Matthias Lanckton Foster, M.D., F.A.C.S. Member of the American Ophthalmological Society; Ophthalmic Surgeon to the New Rochelle Hospital; First Lieutenant in the Medical Reserve Corps, United States Army. Price, $6 net. New York: Rebman Co. 1917.

This book is not really so bulky as it appears at first sight, being printed on light paper; the print is large and clear. Personally we regret the absence of illustrations. The book is one for students and practitioners and is well adapted to their requirements. So many important eye conditions are overlooked by the internist whose attention is elsewhere—a trigeminal neuralgia, for example, is in his mind rather than a possible glaucoma—that frequent reference to Foster's work cannot but be of great benefit to the practitioner. It is equivalent to having ever before one the lecture of a specialist adapted to the comprehension of the student. Like all teachers, Foster occasionally stresses subjects others might slur somewhat and vice versa. Thus in discussing occlusion of the central artery of the retina (p. 368) he merely mentions the "cherry red spot" which is the diagnostic point and should be emphasized to the general practitioner. But these are minor points and the book is, as a whole, so well considered that it must be regarded as a valuable addition to the practitioner's library. We predict an early second edition.

Diseases of Children; A Manual for Students and Practitioners, By George M. Tuttle, M.D., Clinical Professor of Pediatrics, Washington University Medical School; Consulting Physician, St. Louis Children's Hospital; Attending Physician, St. Luke's Hospital; Consulting Pediatrician, St. Louis Maternity Hospital, and Phelps G. Hurford, M. D. Pediatrician, St. Louis Lutheran Hospital, Assistant in Pediatrics, Washington University Medical School; Physician to Out-patients, Pediatric Clinic of Washington University; Associate Physician, St. Louis Hospital for Infectious Diseases. Third edition, thoroughly revised and enlarged. Illustrated with forty-seven engravings and three plates. Price, $3.50 net. Philadelphia and New York; Lea & Febriger, 1917.

This book professes to be for students and practitioners and fulfills this requirement admirably. It covers the entire ground of pediatrics in a concise, but complete manner. We have seen much larger works that were not so valuable to the general practitioner who has to dig for the essential information which in the present volume is served up, stripped of non-essentials. It is, in fact, the best book of its size dealing with pediatrics we have ever seen. A few minor faults must be noted, however. The arrangement might be criticized, thus, all gastrointestinal disorders might have been considered together, diarrhoea, for example, instead of being regarded as a symptom of several disorders, is treated first as a clinical entity and then there is unavoidable repetition in other parts of the book. In the section devoted to infant feeding—that *bête noir* of all who write on pediatrics—too much stress is put upon the mathematics of obtaining definite percentages and too little upon the interpretation of results. This book also advocates the use of limewater, a procedure which has been relegated to the scrapheap by most pediatrists. The book is a handy size and printing and binding are good. For some unknown reason, the first page of text is numbered 17.

Text Book of Ophthalmology. By Hofrat Ernest Fuchs, Professor of Ophthalmology in the University of Vienna. Authorized Translation from the Twelfth German Edition. Completely Revised and Reset with Numerous Additions Specially Supplied by the Author and Otherwise Much Enlarged by Alexander Duane, M.D., Surgeon Emeritus Knapp Memorial Hospital, New York. Fifth Edition. Price, $7.00. Philadelphia and London: J. B. Lippincott & Company, 1917.

The new edition of Fuchs forms a volume of 1067 pages. The work has been completely revised and greatly added to by the author and by his able colaborator, Dr. Duane. The many additions made and the resetting of the text brings the work thoroughly up to date and makes the subject matter much more easily accessible than was the case in former editions. Many illustrations have also been added. The work, as it now stands, is very comprehensive and is one of the best, if not the best, for the practicing ophthalmologist, in the English language.

Part I is devoted to a consideration of general physiology, general pathology and general therapeutics of the eye. Part II has to do with the examination of the eye. Part III with diseases of the eye. Part IV anomalies of refraction and accommodation and Part V with operations.

A work of this kind is of necessity the result of many years of labor and the degree of excellency now attained can only come through repeated and careful revisions and additions. The work needs no commendation farther than to say that the last edition is far superior to its very excellent predecessors.

Glaucoma. A Handbook for the General Practitioner. By Robert Henry Elliot, M.D., B.S. London, Sc. DD., F.R.C., Evg., etc., Lieut. Colonel, I.M.S. (retired). Late Superintendent of the Government Ophthalmic Hospital, Madras; Late Professor of Ophthalmology Medical College, Madras; and Late Fellow of the University of Madras; Honorary Fellow of the American Academy of Ophthalmology and Oti-Laryngology. Price, $1.50. New York: Paul B. Hoeber, 1917.

This volume of 60 pages is forcefully written by an author of very extensive experience who has made glaucoma a special study for many years. "The book is addressed to the busy practitioner in the hope (1) that it will put him on his guard so that he may not overlook cases of glaucoma when he meets them, (2) that it will teach him to make sure of his diagnosis in case of doubt and (3) that it will serve to indicate to him the latest lines along which the treatment of the disease is conducted today." Secondary, juvenile and congenital glaucoma in addition to simple and congestive glaucoma are considered; there are numerous illustrations in the text. The book is a very creditable production and is deserving of careful perusal.

Clinical and Laboratory Technic. By H. L. McNeil, A.B., M.D., Adjunct Professor of Medicine and Instructor in Physical Diagnosis, University of Texas Medical School, Galveston, Texas. Illustrated. Price, $1.00. St. Louis: C. V. Mosby Company, 1916.

In the author's own words the aim of this book is to present in as simple and practical a manner as possible the triad of history taking, physical diagnosis, and laboratory analysis, because it is through the application of these three diagnostic procedures, with an ability to weigh and judge the outcome, that the scientific practitioner of medicine today interprets, alleviates or cures those who come to him for the proper knowledge and assistance he must of necessity possess. It is therefore to be understood that this little work is not written for beginners, but for those who are already schooled in the principles and practice of medicine.

With a few exceptions all of the laboratory tests presented have been and are used as a routine measure in the medical clinics of the John Sealy Hospital. These exceptions are, of course, analyses of the gastric and duodenal contents, the chemical examinations of the stools, blood cultures, Widal's. With the exception, too, of the technique which is given for the examination of the fresh gastric contents and duodenal contents, and of the technique for the detection of the pancreatic ferments in the duodenal contents and stools, in suspected cases of the pancreas, nothing is offered which is not found in other books on the same subject; as the author further states, the only difference between this book and many others being that all theory is omitted from its pages and only strictly practical details are given. The tests are also given in the systematic way in which they should be carried out in private practice.

Aside from the clearness, briefness, and solidity of the subject matter presented, the manner of presentation should train those practitioners, who have a tendency to work in a slipshod, headless, albeit scientific manner, to think and establish correct, systematic habits in their daily routine examinations with their patients.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Section on Pediatrics.

Stated Meeting, Held May 10, 1917.

Dr. Roger H. Dennett in the Chair.

The Aural Complications of the Exanthemata. — Dr. Henry Lounides Lynah read this paper. The percentage of acute suppurative otitis media in the exanthemata was governed by the degree of severity and the duration of the nasopharyngeal lesion at the outset of the disease. In diphtheria, even when the throat lesion was severe or the nasopharyngeal or glandular type, it was rather rare to meet with aural complications. The percentage of aural infections in this disease clinically varied from 2 to 4 per cent., the greatest number occurring in the intubated cases. A few years ago it was the custom to feed all the intubated cases by the gavage method; the percentage of otitic complications at that time was about four times as high as at the present time. Since these methods had been discontinued aural complications were almost unheard of. He had yet to see an adult with diphtheria develop a mastoid. In scarlet fever the percentage of aural infection was seldom below 10 per cent. and might even be as high as 30 per cent. The great majority of these complications in scarlet fever occurred early in the disease. The tonsils and adenoids were a constant source of infection and reinfection during convalescence and this accounted for aural complications occurring late in the disease. The early aural infections occurred in the postnasal and glandular type of scarlet fever in contrast to the small number of infections which occurred in the similar type of diphtheria. In measles the percentage of aural infections was usually from 10 to 12 per cent. The greatest percentage of infections occurred in the catarrhal and postcatarrhal stages and seldom later than the end of the second week. In a study of the cardinal symptoms of aural complications in the exanthemata taken collectively, it was not so much to the symptoms that were present, as to the absence of symptoms that he would direct attention. Pain was frequently masked at the onset and as a constant sign was rather unreliable. The temperature was invariably high at the onset in all severe types of scarlet fever and measles, and the otitic complications seemed to have no more influence on the temperature curve than the necrotic throat lesion or cervical glands. In many instances subperiosteal abscesses might develop with no rise in temperature, but it was not infrequent in scarlet fever and measles to find extensive destruction of the mastoid process and the temperature not be elevated about 99° F. The temperature curve, while usually an important symptom, was frequently subject to wide variations. The appearance of the drum membrane in the ordinary catarrhal type was little different from that seen in the ordinary infections. Marked retraction was far more frequent than bulging in the severe cases early in the disease, but when middle ear infection took place the membrane tympani presented a peculiar purplish gray color. Sagging of the posterior-superior wall of the canal was a fairly constant sign. The character and duration of the discharge and the appearance of the drum membrane as to sloughing and persisting sagging of the canal wall were the most reliable signs indicative of mastoid involvement. The preventive measures were the removal of the tonsils and adenoids. The polyvalent serum had apparently done good and was worthy of further trial. Nose and throat irrigations should not be blamed for the high percentage of aural complications; they might be a cause, but when carefully performed seemed to have little influence on the otitic complications. The treatment of these conditions was purely by surgical methods. Early and free incision of the drum membrane was indicated when there was the slightest sign of congestion and always preferable to spontaneous rupture. It had been his observations that had convinced him that early operation in mastoid disease was absolutely contraindicated in the case of many complications. He had been practising conservative measures in all of his many complicated cases and had had a very low mortality.

Dr. Henry Koplik asked Dr. Lynah if he had made use of an examination of the ocular fundi in cases in which both ears were involved and it was difficult to determine on which side there was sinus involvement. This examination was sometimes very useful, as one might find hyperemia and choked disc on the side that was involved. He supposed there would always be a strife between the otologist and the pediatrician with reference to operating on severe cases of otitis in babies; in these severe cases, whether they were primary or secondary to some one of the exanthemata, there must be some involvement of the mastoid and the only question seemed to be whether they should drain from in front or behind. These children usually got well after free and repeated incisions of the posterior wall and incision down to the bottom of the canal. The average otologist was satisfied with a small incision. In his hospital service free incisions were made and it was very seldom that they had to do a mastoid operation.

Dr. Henry Heiman said he wished to register his protest against the too frequent and promiscuous incision of red drums. He formerly permitted the incision of these ears by the consultant whenever he advised this procedure, and he used to have three or four mastoids a year. Now, when he did not allow the consultant to dictate in so many of his cases, he did not have more than one mastoid in ten or twelve years. There must be something radically wrong in doing a free and early incision; they had found that if they waited and managed their cases on common sense lines the children got well in most instances, excepting where there was intense pain and bulging. He had been ultra-conservative and had had no reason to regret it.

Dr. Lynah, in closing, said that in answer to Dr. Koplik's question as to whether the ocular fundi were examined, he might say that the fundi were examined in the case with the positive blood culture, but no papillitis was noted in either disc. It had been their experience that papillitis was a sign of sinus thrombosis, but no choked disc was present in the case recorded. Of course, some of the cases recovered after the free incision of the drum membrane and mastoid operation was not necessary, but in others frequent incisions were necessary and even then proper drainage was not established. It seemed to make little difference as to the size of the incisions or whether a posterior triangular cut was made; all of them had a tendency to close and leave only a pin point opening, causing damming back of the drainage and finally one had to do a mastoid operation. He did not believe, however, in doing a mastoid operation on every case that showed one or two symptoms, but was speaking of the cases that required many incisions to establish drainage. In these cases drainage was never established until mastoidectomy was performed. As to the early incisions of the slightly reddened drum membrane, it had been his experience that the slightest redness of the drum membrane called for immediate and free incision rather than allow spontaneous rupture. Dr. Lynah related the history of a patient seen in private practice in which the cause of infection was the Friedlander bacillus and in which he made the incision of the drum membrane on the two symptoms of constant irritability and inability to sleep; the conditions found made it evident that had this not been done the patient would have developed meningitis. In this instance the incision was fortunately made in time and the life of the patient saved.

Systematic Boarding Out versus Institutions for Infants.—Dr. Henry Dwight Chapin presented this paper in which he showed that the statistics covering the past three years, which had been compiled under the supervision of the State Board of Charities, demonstrated the high mortality of infants in institutions and compared these with the results obtained by the Speedwell Society, which for the past fifteen years had been boarding out infants at Morristown, N. J. The records of the Speedwell Society showed that for the past year there was a mortality of 16 per cent. among a class of marasmatic babies under six months, all of which would probably have died under institutional care. Dr. Chapin emphasized the importance of in-

dividual care and fresh air for these infants and described the details of the work, laying special emphasis on the importance of constant daily supervision of the babies by a trained nurse under direction of a physician. He also showed that financially the boarding out system was more economical than institutional care. (See MEDICAL RECORD, June 17, 1916, p. 1081.)

The Care of the City's Dependent Children.—Hon. J. A. KINGSBURY, Commissioner of Public Charities, said that they had inaugurated on March 1, 1917, a policy which would result in a more marked diminution of the infant death rate than had been seen in many years. In 1916, 16,000 infants died in New York City. They ordinarily committed eighty-seven babies a month without question; the mothers simply gave their babies up by surrender. The State Board of Charities required that the Commissioner of Charities should see that the dependent child got a chance to develop into a strong, normal man or woman, but the law also required that they investigate the circumstances of every proposed commitment to find out whether the child was a public charge, whether the parents had settled in the city, and whether they were able to support it. Some controversy grew out of the question whether these children were properly committed and they made an investigation into this. The investigation showed that in some of the institutions the children had vermin, were overworked and underfed. He said he could now report that the children were no longer overworked and underfed, that they were no longer sitting on backless benches and eating from coverless tables and walking lock-step. Since last October the children under eight years of age had been given to foster homes and not to institutions. About 4000 children had been placed in temporary homes. The number of children in institutions had been about 24,000; it was now about 20,000. If their present program could be continued, within four or five years they would have reduced the infant population of institutions to 10,000. Practically all normal children were going to be placed in normal homes. They were also planning an investigation of the children at present in institutions for the purpose of classifying them. Children whose parents had died of tuberculosis would be placed in open-air schools, the cripples would be put together, as would the blind, etc. There were 15,000 normal children in institutions that needed normal homes and there were about 15,000 mentally defective children that were a burden and constant source of trouble to their parents who should be in institutions and segregated. The nearer the baby could be kept to its mother's breast the better chance it had for life, health, and strength; if they did not leave the baby with its mother, its chance was gone. The death rate of New York was going down this summer, for which the milk stations, the Department of Health, and other agencies would take the credit, but it really would be because they were putting children in homes where they could receive a mother's care.

The Care of Sick Children in the Home.—MISS LILIAN D. WALD spoke of the Visiting Nurses' Service of the Henry Street Settlement and said that in 1916 their service had cared for 29,015 cases, 33 per cent. of which was referred to them by physicians. A very small percentage came from various agencies. Next to the largest percentage of their cases came from the Metropolitan Life Insurance Company. With regard to the possibility of education in the homes, it had been their experience that they almost never found these mothers unteachable, if they knew how to approach them, used their own terms in making explanations, and using their own utensils with which they were familiar. They were conducting an economical visiting hospital. Nearly 30,000 people had found it to their advantage to have a nurse accessible, and these were not alone the very poor, but people on small salaries. Their hospital extended from the Battery to Yonkers and they hoped to extend its services to Richmond and Queens. The records showed that they cared for 3,988 cases of pneumonia last year with a mortality of 8.6 per cent. Of this number, 70 per cent. were children under five years of age.

Report of Committee on "A Proper Basis for a Law to Prevent Overcrowding in Institutions and Hospitals for Children."—Dr. THOMAS S. SOUTHWORTH, Dr. WILLIAM L. STOWELL and Dr. PHILLIP VAN INGEN made this report, which was presented by Dr. Southworth. This committee was appointed by the Section on Pediatrics in response to a request from the Executive Secretary of the Public Health Committee of the New York Academy of Medicine to render an opinion as to what constituted a proper basis for a law to prevent overcrowding, which was prejudicial to the health of children, and as to the advisability of changing the present law. An examination of the present law seemed to show that it was designed to apply to dormitories or sleeping quarters of older children and that there was no evidence that the framers of the law had in mind its application to infants, whose nutrition and susceptibility to disease called for the best possible care and hygienic surroundings, differing in no essential respect from those obtaining in hospital wards. That hospitals were specifically exempted by the law strongly supported this view. It had, however, for many years been applied to such infant wards in institutions. While specifying 600 cubic feet as a minimum, the law gave any local board of health the power, in any ward where the opportunities for ventilation were judged sufficient, to reduce this allowance for each occupant of the ward to any degree which they approved. Under this clause the space required per inmate had been reduced in many institutions for infants to about 500 cubic feet and printed and written permits were issued which must be displayed in the wards. The Monthly Bulletin of the New York Board of Health, August, 1916, stated that anything below 500 cubic feet per person was insufficient for an office worker, who was obliged to remain indoors practically throughout the year. These adult workers had opportunities to get more fresh air during the non-working hours. Institutional infants throughout a considerable part of the year remained commonly in the same crib and ward practically continuously during the entire twenty-four hours, and their attendants helped to vitiate the air of the ward. Three main factors entered into the question of cubic space per infant in a ward: (a) Space to afford reasonably pure air for respiration; (b) space to allow sufficient separation of the cribs in order to minimize air-borne infections; (c) space to avoid the overcrowding which operated to reduce the individual care which could be given to each infant by a limited number of nurses and attendants. Metabolic requirements of the infant were relatively much greater than those of the adult and there was need of a proportionately greater amount of oxygen. The metabolic experiments of Vierordt and others made it clear that the respiratory needs were but a single factor. Equally important were the temperature, humidity, and barometric pressure, and motion of the air in determining the heat expenditure of the body. Experience had shown that while breast fed babies might do fairly well under conditions of overcrowding which were fatal to bottle fed babies, the artificially fed babies required a maximum of space in order to thrive. For respiratory purposes an adult needed 30 cubic feet per minute of fresh air. Modern hospitals for adults required 1,800 to 2,000 cubic feet, with more for infection cases. Inquiry showed that pediatrists generally felt that children should have 1,000 to 1,500 cubic feet available, and these amounts provided in the modern hospitals for infants. The present law referred to ventilation free and adequate as if it were the simplest matter in the world. Mechanical methods of ventilation were admittedly unreliable. It was absurd to base cubic space for infants, permitted by law, upon standards so low that to prevent their being injurious to the infants they just be supplemented by measures which were often notoriously absent or neglected in common practice, and which up to the present time there had been no adequate method or power for enforcing. When one considered the stress now laid by pediatrists upon the part played by ward infections in the morbidity and mortality of infants when gathered together in numbers, the present proximity of cribs permitted by the law was to be condemned. If every infant were allowed a minimum of 100 square feet of floor space, equivalent to 1,000 feet of cubic space or more, according to the height of the ceiling, this distance of six feet could be approximated. In view of the foregoing

the Committee further reported that the present sections of the State law should be repealed or superseded and new sections enacted, making separate provisions for institutions in whose dormitories older children above the run-about age spent their sleeping hours. Also separate provision should be made for all wards containing artificially fed infants under fifteen months of age, all such wards being considered as hospital wards, whether the infants therein be nominally admitted or rated as well or sick infants. The law should provide for the installation in all wards of devices for window ventilation which should be practicable at all seasons when the windows were closed and should provide for frequent inspections to observe and enforce their use. Six hundred cubic feet as a general basis for babies, sick or well, nursed or bottle-fed, was too small. Two feet separation of the beds was too small to reasonably minimize cross infections. Pediatrists were of the opinion that 1,000 to 1,500 cubic feet were needed. When the standard was based on cubic space alone the above should be required. Cubic space was not a complete standard. Ventliation was important.

Dr. MAURICE FISHBERG said that for years he had been interested in social medical work, and medical sociology had always held an interest. Miss Wald had obtained most remarkable results in caring for sick children in the poorer sections of the city, where the people were living in badly ventilated tenements, many of them vermin-ridden. The Visiting Nurses' Service had obtained most remarkable results in caring for sick children in the poorer sections of the city, where they were living in badly ventilated tenements. It was noteworthy that given 100 cases of pneumonia in infants and children cared for in the best modern hospitals at least 33 per cent. would die. When they compared this with the low mortality rate obtained by the special care given by these nurses in the homes of the children, they would feel convinced that such work would not only save New York, but it would save the world. They would also come to realize that proper ventilation was by no means the only factor in the proper care of sick children. Dr. Chapin had rendered a service to the country; he had been a true pioneer in this work, which was not appreciated to the extent it deserved. The outcome of the present war would be a great reduction of immigration; the people at home would be needed. The birth rate in the United States had declined almost to the extermination of the native stock. The immigrants had supplied the birth rate until now. In orphan asylums the children, compared with children in the tenements, were much inferior both physically and mentally. The Municipal Research Bureau of this city sent an anthropologist from Columbia University to investigate 1,000 children and they were found to be four years retarded in physical development in height and weight, as compared with poor children taken at random on the lower East Side. He had made careful examinations on children discharged from institutions and found that they were shy, and feared people, and probably had a mental development of about three to six years behind that of children who had developed normally. Dr. Chapin was doing a most remarkable work when he kept dependent children out of institutions. If one went by Miss Wald's figures, she should be more encouraged by the medical profession.

Dr. ALFRED F. HESS said that what they wished to bring out was that if they wished to compare these two systems, the institutional care of children and the boarding-out plan, they must compare them at the same level. It was not fair to take a composite list of figures from the worst institutions and compare them with the figures, for instance, of the Sage Foundation babies' experiment or with the results of the Speedwell Society's work. In going over the records of twelve or thirteen years of the Speedwell work, they found that there was a mortality of 33.3 per cent. in children under six months of age and of 13 per cent. between six and twelve months. During the last year the mortality had been 16 per cent. for the babies under six months of age. The cases had been very few in number, not more than fifty in a whole year, which was hardly an experiment that could be considered as applicable to New York City. There were only twenty-seven cases treated under one year. That was all very well, but could not be compared with the cases here in institutions. He did not know whether it would be applicable if they took 1,000 cases and boarded them out properly. Or, again, take the Sage Foundation, where there were only ten babies for each physician and yet giving a mortality of 46 per cent. That was not a fair comparison.

Dr. CHAPIN said that Dr. Hess failed to mention the cases of gonorrheal vaginitis, scarlet fever, and other infections contracted in institutions and these he would like to hear about. During the earlier years he had sent out all kinds of diarrheas and toxic conditions and there was not a single case of that kind that would not have died in an institution. He did not board out babies as some institutions did, giving them to some poor woman and then seeing them once a year. His mortality certainly compared very favorably with the 100 per cent. of this class in institutions. Boarding out should be systematized and properly managed. If one took marasmus babies and boarded them out and got a mortality of only 16 per cent. under six months, they were doing very well; also the morbidity was a thing of great importance. In over 1000 cases he had had only three cases of measles in five years and then the disease had not spread to others. They knew that measles was often followed by tuberculosis in feeble children. Dr. Hess confessed that they did have gonorrheal vaginitis in their institutions and yet they did not take in children having this infection. The child that had vaginitis at home did not spread the disease, but when they had this in institutions it was spread. That was just the crux of the whole situation.

Dr. HESS said that gonorrheal vaginitis was not a disease of institutions, but one that was found throughout the tenements. Such cases did not come from institutions, but from the homes. As a result of their rejections, the population of their institution was two-thirds boys and one-third girls. With regard to measles this disease was acquired at home as well as in the institutions.

Commissioner KINGSBURY said that in his remarks he was not referring to the boarding-out system *versus* institutional care, but he simply wished to emphasize the matter of providing means whereby children could be left with their mothers. It was true that the institutions to which they had referred did board out children and they were seen but once a year. That form of boarding out children was only jumping from the frying pan into the fire. He did not wish to see children boarded out unless they were given as intensive care and supervision as Dr. Chapin had described.

SECTION ON MEDICINE.

Stated Meeting, Held May 15, 1917.

DR. HARLOW BROOKS IN THE CHAIR.

The subject of the evening was "War and Medicine."

Introductory Remarks.—Colonel CHARLES RICHARDS, Department Surgeon, U. S. A., made this address. He stated that the people in general did not realize the very serious condition which confronted our country at the present time. The population of the United States did not realize the extent to which present conditions would influence our future. This lack of a full realization of the situation was due in part to our form of Government and in part due to the fact that we were isolated from foreign countries and our general policy had always been one of non-interference with foreign affairs. But now this had changed and we had become really a world power, and it behooved us to prepare for what was about to come to us most surely. So far as military affairs were concerned we were entirely unprepared. Our standing army was at its minimum limit. So far as medical officers were concerned the regular allowance was 0.7 per cent. of the enlisted troops. If the army was increased to 500,000 now there would be required 3500 medical officers and that would mean that there were needed 2000 not in the regular army. If an additional army of 500,000 was raised at the end of six months that meant a need of 3500 additional medical officers. Colonel Richards stated that the main thing

he wished to impress on his hearers was the necessity of every doctor in the country doing his share in this crisis. It made no difference what his age or his circumstances were, it was due the country that he should do his share. The younger medical men should go forward with the troops at the front. In order to do this they must be efficiently trained. Within a few weeks something like 1000 people would go to France to establish base hospitals. The condition in Europe was a very precarious one. Democracy was in danger; if we were going to maintain the spirit of Democracy we must see to it that all the younger men should come forward and volunteer their services and that the older men should stand ready to give their services at home in caring for the troops at home, caring for those sent back from the front, and in taking the places of younger men so that they might be free to go to the front. Every specialist would find a place where his talents could be used. The problem of placing each man in that place which he was best fitted to fill was the one that they now had to solve; he did not know just how this was to be done, but felt that the way would be found. Medical men were apt to think that because of their lack of military training they could be of little use, but he wished to disabuse them of this idea. Men with the mental training of those in the medical profession could soon acquire some knowledge of military sanitation and administration and other necessary requirements. The younger men could pick up the detail of the work quicker than the older ones. In closing, Dr. Richards said: "All I can say is to plead with you to do your share to maintain the spirit of liberty that exists in all of us if it is only brought out."

Tuberculosis and War.—Dr. MAURICE FISHBERG read this paper in which he pointed out that in histories of the epidemics during and after wars no mention had ever been made of tuberculosis as being excessively prevalent. Neither the soldiers, nor the non-combatants were reported as suffering or dying from tuberculosis in larger numbers than would be expected under peace conditions. This fact alone should lead us to expect no increase in the morbidity and mortality from tuberculosis during the present great war in Europe. Available evidence, published by those who, because of their exceptional opportunities for observation of soldiers at the front, were competent to express an opinion on the subject, showed clearly that there had been no change in the morbidity and mortality rates from this disease in England, France, Germany, Austria-Hungary, Russia and Italy. Dr. Fishberg brought together considerable statistical material in substantiation of this contention. He showed that the large number of consumptives was only absolute; when considered in relation to the large number of men engaged in the battlefield, the proportion was quite small. Even in France, where the number of soldiers discharged from service because of tuberculosis had been estimated at 150,000, this must not be considered an excessive number. Among 6,000,000 or more adult males, mostly between 20 and 35 years of age, in the army of France during the past three years, 150,000 constitute but 2.5 per cent., and this was rather low for peace time, especially for France, where the morbidity and mortality from this disease had been higher than in other civilized countries. He also quoted figures from William Osler's writings that in England there had not been observed an increase in the tuberculosis morbidity and mortality since the war began. It was Dr. Fishberg's opinion that in evaluating the fitness for military service examiners should not reject individuals because of a history of past attack of tuberculosis, or of having been patients in sanatoriums. His main reasons were that a substantial proportion of sanatorium patients had never been sick with phthisis; a larger proportion had been affected with the abortive form of the disease and had completely recovered, and many who had suffered from the chronic forms of the disease recovered to such an extent as to be considered completely cured and fit for any human task, including military service. Only symptoms of active disease, especially fever, tachycardia, dyspnea, emaciation, excessive cough and expectoration should be considered valid causes for rejection. He quoted experiences of military surgeons in the field, and in hospitals in Europe, to the effect that many soldiers who had suffered from tuberculosis before they entered the war had made brave and good soldiers, and had returned from the field healthier than when they enlisted for service. Nor had it been observed that active military duty was more liable to reactivate latent or dormant tuberculosis processes; many affected with quiescent disease had done well. It was extremely rare that gun shot wounds of the chest when the patients survive the injury, should develop tuberculosis, nor was it common that injuries to bones or joints inflicted during warfare should terminate in, or be infected with, tuberculosis. Dr. Fishberg stated that the problem of tuberculous infection of soldiers need not be considered seriously. Despite the large number of tuberculous soldiers in the European armies, those entitled to an opinion had not seen cases of tuberculous infection acquired while serving during the present war. His reasons were: Most adults had been infected with tubercle bacilli during childhood, and had thus been immunized against exogenic reinfection with the same virus, and they were just as safe in the army as in civil life. In nearly all tuberculous soldiers discovered in the European armies it was ascertained that they had already been affected with the disease before enlistment. Reactivation of old, dormant lesions occurred in civil life; it was doubtful whether it was more likely to occur in military life.

Medical Experience in South-Eastern Europe. — Dr. GEORGE BAEHR related the history of the expedition sent out from Mount Sinai Hospital in 1915 and which worked officially under the American Red Cross. He explained that their original plan had been to limit their work to Serbia, but after the invasion of that country they had gone to Bulgaria, Volhynia (Russia), and Galicia at the invitation of the Bulgarian and Austro-Hungarian governments. (See MEDICAL RECORD, Feb. 17. 1917, p. 300.) The military operations that had necessitated their various changes of location had brought them into contact with the ways in which medical affairs were conducted by the French, the British, the Austro-Hungarians, and the Germans. Their experience had therefore been very interesting and varied. They had had the opportunity of studying bacillary dysentery, amebic dysentery, and typhus fever, as well as other fevers. Of particular interest was an outbreak of typhoid fever among the New Zealand troops at Gallipoli, though these troops had been vaccinated against typhoid fever. The Canadian and Australian troops were equally exposed to the disease but did not contract it. There was probably a mistake made in the manufacture of the vaccines; at least it was quite evident that it did not confer an equal degree of immunization to that employed in vaccinating the other troops. Other diseases with which they came in contact were Malta fever, sand-fly fever, and relapsing fever. The Malta fever was not widespread, but they saw a few cases in which the diagnosis was made by the cultures and the agglutination tests. The sand-fly fever was very interesting. It began with high temperature, oftentimes a chill, flushed eyes and face, and headache. It could not be differentiated at first, but on the third day a crisis would occur and a rapid recovery would ensue. These patients practically always recovered and there were no sequellæ except occasionally neuritic pain which might persist for several weeks. This disease was widespread. Then there was relapsing fever which was one of the commonest diseases met with. At one time or another about 95 per cent. of the staff of the Lady Paget Hospital had it. Salvarsan in small doses was a very effective treatment. Sometimes a second dose was needed; that was when there was a secondary attack after an acute attack. Of typhoid fever they had seen only a little owing to the various methods of immunization. The American vaccine made by Dr. Castellani was largely employed. This was a tetravaccine made of typhoid, paratyphoid A and B, and cholera bacilli. No cholera was met in 1914 and 1915, excepting a few cases that occurred in outlying districts. In Russia there were a considerable number of typhoid fever cases among the vaccinated, but they usually ran a mild course. A point of significance in the diagnosis of typhoid fever was that in those who had been vaccinated against typhoid and who subsequently developed febrile

disease, the Widal became positive. An interesting point in the administration of medical affairs in the German and Austro-Hungarian armies was that the sanitary service was divorced from the rest of the medical service. There was a Sanitary Commission, practically an army board of health, whose function was the control of contagious diseases. Powers were lodged with the head of this department which made him particularly independent. He controlled twelve hospitals for contagious diseases and others for quarantine purposes. Other members of this sanitary commission were scattered through the country, and were responsible for the health of villages. These men were usually clinicians, and it was their duty if they found a case of smallpox or other contagious disease to see that it was sent to a contagious hospital, and that all who had come into contact with it were quarantined. There was no doubt that in the control of typhus fever this method had been of great value. In this connection it was well to emphasize the point that while in their endeavors to stimulate enlistment they had been calling for bacteriologists and surgeons, attention had not been sufficiently directed to the need for clinicians in the army. The clinician formed a very important part in the solution of the problems that an army anywhere would be called upon to face.

The Civilian Practitioner and His Relations to the Military Service.—Colonel W. S. TERRIBERY, Chief Surgeon, National Guard of New York, made this address, in which he said that as we had already been told, this country was facing a crisis the most serious since the Civil War and in many ways more serious. The first element of the people to realize this was the medical profession. In Great Britain and France the medical profession were used up; two and one-half years of war had demoralized them and broken them down and their need for help was urgent. This brought him to the main point and that was the great need of medical men at the present time. With a regular army of 250,000 and a conscripted army of 1,000,000 men there would be need of 8,500 medical officers and in addition there would be needed men to maintain 25 per cent. of the medical force of Great Britain and 50 per cent. of the medical force of France. This made the number of medical officers needed simply appalling. It should be remembered that this was the irreducible minimum of 0.7 per cent. of the army that was allowed for medical service. If we divided this number into one-half we would need something over 4,000 doctors at the present time. For the conscripted army there were as yet practically no medical men provided. Of the absolute need for these men there could be no doubt. Everyone in a position to know realized that the medical department was one of the most important, if not the most important, departments of an army, for upon its efficiency depended the economy of men. The military sanitary corps was the one part of the army that was conservative and not destructive. To make this part of the army effective meant that medical officers coming into the army must learn a new specialty, military hygiene. It was not a specialty that could be learned to any extent from books or from reading. The men who were conducting this sanitary work must not only continue to do the practical work, but must train the men coming into the service in this new specialty, and furthermore the majority of men coming into the service would be needed as sanitarians. Men in every specialty would be needed; the problem, as had been said, was to find where each man would be most serviceable. A way of organizing and coordinating their efforts so that this end might be attained was urgently needed. The need of medical men among the civil population would still remain. The general population must also be well cared for or they would become less willing to support the Government. Hence the physician who did his part in caring for the civil population was also rendering a service to his country. Another matter to be brought to mind was that there would be a vast number of men to be examined in the work of recruiting. In obtaining 150,000 recruits it was probable that double that number of men would have to be examined. This meant that the services of almost every doctor would be required. This work required also a special knack. Physical fitness did not necessarily mean absolute soundness in every particular. Sometimes those with certain subsidiary deviations from the standard were better fitted than others who showed no deviation from this standard. The permissible deviations from the standard had to be learned by the examiner. With reference to tuberculosis it might be said that hitherto this disease had not been a great factor in the army, there being not more than about five men per thousand who developed this disease in the army, yet every medical man in the army had seen these cases develop and when this occurred the victim was a source of infection to others, it was advisable to exclude those men who were reasonably sure to develop active tuberculosis. It required men specially qualified to tell them which men should be thrown out. Valuable men were sometimes thrown out on a suspicion of tuberculosis and others were thrown out for flat foot, varicose veins, etc. One had to be guided by the rule of reason, and that meant that the specialists in civil practice would have to tell them where to draw the line. This brought them again to the problem of coordinating their efforts so that everybody might give to his country the service that he was best fitted to give. The important point was that everybody should do "his bit" in this war. The men who were older or physically unfit for active service might do the hospital work of younger men and thus release them for active service. The active young men should learn military sanitation and go to the front, while the older men should be in the base hospitals on the lines of communication, and in the hospitals at home. It must be borne in mind that the medical profession was going to do its part; its members had never been "slackers."

Medical Experiences in the Balkans. — Dr. HARRY PLOTZ told of his experiences in the Balkans, confining himself more particularly to his experiences with typhus fever. He stated that when they arrived at Belgrade the large epidemic of 1915 was practically ended but typhus fever was endemic in Turkey and Bulgaria and was often confused with relapsing fever and typhoid fever. No one knew how the epidemic of 1915 started, but following the capture of 70,000 Austrians by the Serbs, these captives were huddled together in barracks and before it was recognized the epidemic of typhus had spread from one camp to another, like wildfire. They had two hospitals, the one at Belgrade and the Lady Paget Hospital at Vistent. At Belgrade where there were accommodations for 500 patients they had 2,000 and it was all the staff could do each day simply to go through the hospital and pick out the dead and bury them in trenches. It was estimated that 135,000 persons died during that epidemic. Forty of the seventy thousand Austrian prisoners died. Of 400 doctors 200 died. The American expedition arrived late and as the warm weather was coming on the epidemic was about over. It happened that they were then taken prisoners and taken into Russia and they got back just as the epidemic in Roumania was beginning. During the occupation of Bulgaria by the British and the French many deserters from the Bulgarian army and many of the peasants scattered back into the country through the villages, and after the French and British retired they were brought back, and it was found on examining them that they had come from villages where typhus had raged during the previous year. In that way the epidemic of 1915 started. The disease, however, was not as severe as it had been the previous year. In 1914 the mortality was calculated at 60 per cent.; in 1915 at 11 per cent. They had in all 10,000 cases in 1915. The most important factor in connection with typhus fever was the louse. The problem of preventing or controlling typhus fever was a problem of delousing the people. The German way of handling the problem was effective. If a case of typhus was discovered in a village the patient was isolated and deloused and the village was quarantined for three weeks. At the front their rule was that every man should spend one hour every day delousing himself. They also had another method. They had a small three-room house where men went to be deloused. A man undressed in one room, sent his clothes into the second room to be steamed, and went into the third room where his hair was cut and he was bathed. The only articles of clothing not disinfected were the shoes. Thousands along the frontiers were deloused in this way. Before leaving for home their part" went to

Salonica and while there learned that a Turkish doctor conceived the idea that he might vaccinate against typhus by using the blood of typhus patients. He made 200 of these inoculations and got a mortality of 59 per cent. In their experience with vaccination against typhus they had vaccinated physicians, nurses, orderlies, and others coming in contact with typhus fever. There were of these about 10,000 in all; among these vaccinated individuals only six contracted the disease. After vaccination was instituted they had had no louse infections.

Dr. N. S. JARVIS said he was particularly impressed by the earnest, honest, and logical remarks of Colonel Richards. He had been forty years in the army; had been all over the world, and there was no doubt but that he was right when he spoke of the danger that confronted our country. Dr. Jarvis spoke of his experience at the headquarters of the Royal Army Medical Corps in London and of the members of that body as being the finest specimens of medical men he had ever met. Yet if reports were true, 75 per cent. of those men had suffered casualties and been put out of service. He related the experience of one young Australian doctor who was the only one left in a British hospital to care for 1,500 wounded men. In referring to Dr. Fishberg's paper Dr. Jarvis stated that tuberculosis in the regular army was a different problem from what it was in a conscripted army. They took much more care in examining men for the regular army than for a conscripted army. He thought it important that they should eliminate men who might possibly be tuberculous. Dr. Terribery had spoken of making the assignments of medical men according to their special fitness for certain lines of work. The great need of the army at the present time was not so much for specialists as for general practitioners.

Dr. LOUIS LIVINGSTON SEAMAN said he supposed the discussion was to be on food. There was one point he wished to bring out. At the time of the Russian-Japanese war, during the siege of Port Arthur, it was interesting to recall that the Russian army, on an animal diet, had at one time 19,000 cases of scurvy while at the same time the Japanese army was suffering from the diametrically opposite disease, beriberi, as a result of a rice diet. In other respects the conditions of these armies were similar. This furnished a marvelous example of the result of nutrition on an army. There were two foods the practical value of which should be emphasized in considering the problem of nutrition as it affected an army. These were smoked beef, which, with its considerable amount of gristle, was very nutritious and would stand any climate, and the other was rice, which was one of the cheapest and best of foods. Dr. Jarvis's remarks about the general practitioner should be emphasized. The general practitioner was needed in the army more than anywhere else. The specialist was of course of great service in the hospitals, but on the front lines the general practitioner was the man for the place.

Dr. L. T. LEWALD stated that he had had experience in examining recruits. Seven years ago the acting Surgeon General had brought out the fact that one-third of the cases of tuberculosis occurred in the first year after enlistment, and it was frequently impossible at the time of examination to detect latent infection. Being interested in the establishment of an *x*-ray department at Columbus, Dr. LeWald said he had asked permission to examine all the recruits by the *x*-ray. He had made this same request of Dr. Biggs about a week ago in connection with the examination of State troops. Dr. Biggs had undertaken to allow him to try this method out with the State troops. If they got the proof that the latent infections could be detected by the *x*-ray they would have made a great step forward in excluding such men, as it would save the country a great deal of money that would otherwise have to be expended in the care of tuberculous soldiers and in pensions. Experience in the detection of latent infections by means of the Roentgen rays in civil practice left no doubt in the speaker's mind as to the great value of this procedure.

Colonel RICHARDS closed with a further plea for enlistment on the part of all medical men, but especially the younger men. He urged the older men to exert every effort to appeal to the younger ones to offer their services in this time of need.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading, but it must be with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

THE MODERN MILK PROBLEM—IN SANITATION, ECONOMICS, AND AGRICULTURE. By J. SCOTT MACNUTT. 258 pages. Illustrated. Published by The Macmillan Co., New York. Price, $2 net.

NERVOUS AND MENTAL DISEASE MONOGRAPH SERIES No. 20. VAGOTONIA, A CLINICAL STUDY IN VEGETATIVE NEUROLOGY. By DR. HANS EPPINGER and DR. LEO HESS of Vienna. Second revised and corrected edition. Published by Nervous & Mental Disease Publishing Co., New York. Price, $1. 93 pages. Illustrated.

HANDBOOK OF GYNECOLOGY. For Students and Practitioners. By HENRY FOSTER LEWIS, A.B., M.D., and ALFRED DE ROULET, B.Sc., M.S., M.D. With 177 illustrations and 452 pages. Published by C. V. Mosby Co., St. Louis, Mo. 1917.

SHELL SHOCK AND ITS LESSONS. By G. ELLIOT SMITH, M.A., M.D., F.R.C.P., F.R.S., and T. H. PEAR, B.Sc. 135 pages. Published by Longmans, Green & Co., New York. Price, $1 net.

THE SURGICAL CLINICS OF CHICAGO. June, 1917. Vol. I, No. 3, with 70 illustrations. 679 pages. Published by W. B. Saunders Co., Philadelphia and London. Published bi-monthly. (Six numbers to a year.) Price per year, $10.

SCIENCE AND LEARNING IN FRANCE. With a Survey of Opportunities for American Students in French Universities. An Appreciation by American Scholars. 453 pages. Illustrated. Publshed by The Society for American Fellowships in French Universities. 1917. Printed by R. R. Donnelley & Sons Co., Chicago, Ill.

THE PRACTICAL MEDICINE SERIES. Comprising ten volumes on the Year's Progress in Medicine and Surgery. Under the general editorial charge of CHARLES L. MIX, A.M., M.D. Vol. III. THE EYE, EAR, NOSE AND THROAT. Edited by Casey A. Wood, C.M., M.D., D.C.L., Albert H. Andrews, M.D., and George E. Shambaugh, M.D. Series 1917. 372 pages. Illustrated. Published by the Year Book Publishers, Chicago, Ill.

A TEXT-BOOK OF FIRST AID AND EMERGENCY TREATMENT. By A. C. BURNHAM, M.D. 307 pages and 160 engravings and 2 plates. Published by Lea & Febiger, Philadelphia and New York. 1917. Price, $2 net.

UNIVERSITY OF IOWA MONOGRAPHS. STUDIES IN MEDICINE. Vol. I, No. 10. First Series No. 1, September, 1917. Collected Studies and Reports. Published by the University. Issued monthly throughout the year. Price, 40 cents.

THE ELEMENTS OF THE SCIENCE OF NUTRITION. Third revised edition, enlarged. By GRAHAM LUSK, Ph.D., Sc.D., F.R.S. Octavo of 641 pages. Illustrated. Price, cloth, $4.50 net. Published by W. B. Saunders Co., Philadelphia and London.

FOOD PREPAREDNESS FOR THE UNITED STATES. By CHARLES O'BRIEN. 118 pages. Published by Little, Brown & Co., Boston, Mass. 1917.

CONGENITAL WORD-BLINDNESS. By JAMES HINSHELWOOD, M.A., M.D., F.R.C.P.S. Glasgow. 112 pages. Illustrated. Price, 4 shillings. Published by H. K. Lewis & Co., Ltd., London. 1917.

DANGERS IN NECK WEAR. By WALTER G. WALFORD, M.D. 171 pages. Price, 4 shillings net. Published by H. K. Lewis & Co., Ltd., London. 1917.

PHYSICAL EXERCISES FOR INVALIDS AND CONVALESCENTS. By EDWARD H. OCHSNER, B.S., M.D., F.A.C.S. 54 pages. Illustrated. Published by C. V. Mosby Co., St. Louis, Mo. 1917. Price, 75 cents.

ROENTGEN TECHNIC (DIAGNOSTIC). By NORMAN C. PRINCE, M.D. With 71 original illustrations and 140 pages. Published by C. V. Mosby Co., St. Louis, Mo. 1917. Price, $2.

CORNELL UNIVERSITY MEDICAL BULLETIN. Vol. VI. April, 1917. No. 4. Studies from the Department of Surgery, including Urology, Gynecology, Laryngology and Ophthalmology. Published by Cornell University, New York.

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Original Articles.

A CONSIDERATION OF THE MERITS OF MEDICAL AND OF SURGICAL TREATMENT RESPECTIVELY IN PEPTIC ULCER.*

BY J. N. HALL, M.D.,

DENVER, COLORADO.

UNFORTUNATELY, physicians, like other men, too frequently tend to see one side of the shield only, and this tendency is perhaps as conspicuous in the decision regarding the method of treatment of peptic ulcer as in any other medical problem.

I should say at once that in my opinion there are definite and positive advantages and disadvantages pertaining to medical and to surgical treatment in various cases, and the course to be followed in any given case should be decided upon only after careful consideration of these factors.

Let us consider first the various types of ulcer, as viewed from a therapeutic standpoint, especially as to the possibility of cure by either mode of treatment. Nearly all clinicians would agree that an acute ulcer with little infiltration about its base may be expected to heal if it can be placed at relative rest, and freed from the corrosive action of an oftentimes overstrong gastric juice, and so maintained for a period of several weeks. Freedom from serious cicatricial contraction and from notable adhesions may be expected in such cases, so that, practically speaking, a complete restitution is attainable.

At the opposite extreme we may place the chronic ulcers with thickened base, oftentimes with extensive adhesions, and in the more serious cases with such chronic perforative processes as involve even excavation into the liver, or penetration of a portion of this organ or of the pancreas for example, into the cavity of the stomach through the large perforative opening, with, naturally, the most extensive and firm adhesions roundabout. Only a hopeless optimist could look for favorable results in these cases from medical treatment, for even with the best of surgery the outlook is none too favorable.

Between these two types we may place the majority of ulcers coming under the observation of the internist. The milder ones, with history of a short course in many cases, with no notable thickening, adhesions, or deformity of the canal (when these features can fortunately be determined), are certainly "medical ulcers" at the start, and many of them may be either cured, so far as we may determine this point clinically, or at least rendered free from symptoms by medical treatment. Those not faring so well may yet be subjected to exploration.

In general, ulcers showing the roentgenological signs of a protected perforation present such extensive adhesions and such crippling of the motor functions of the stomach that I have commonly assigned them at once to the surgeon.

In case of ulcer at or near the pylorus, of long standing and with marked food retention, Sippy claims entire cure in many cases by medical treatment. Provided the cicatricial contraction be not extreme, and that adhesions be trivial, we may grant this claim in many cases. There should be, in my opinion, no objection to a trial of medical treatment, but the improvement should be fairly prompt and decisive, as, fortunately, it generally is. The dangers of permanent pyloric blocking must not be overlooked, nor the chance of later hourglass stomach, nor the more tragic development of malignancy, which we so often find in these cases.

I think much more latitude is to be allowed in the use of medical treatment, in case of gastric ulcer, than in that of the duodenal type. The results of medical treatment in the latter, in my experience, have been much less certain, and the dangers of hemorrhage and of perforation much more to be feared. On the other hand, the lessened likelihood of cancer is to be given due weight in the decision.

To some extent the social status of the patient may influence us. If the subject must work daily for a living, the need of an attempt to secure a prompt and complete cure may decide us in favor of surgical intervention, while those who can afford to spend most of their time and much of their energy in nursing a diseased stomach may at least postpone such a course.

In general, we may mention as *advantages of medical treatment:*

1. Avoidance of immediate operative and anesthetic dangers. As in many other problems of life, certain individuals prefer to take years of lesser risk than hours of greater hazard. In no patients do we see better illustrations of this tendency than in those with peptic ulcer.

2. Avoidance of danger of occurrence of "vicious circle," later jejunal ulcer, postoperative adhesions, ventral hernia, etc.

3. In many cases, an advantage of medical treatment lies in the fact that work may often be continued at least in part during the medication.

4. Avoidance of the postoperative pain and abdominal distress appeals to many sensitive patients with peculiar force in favor of the medical treatment.

*President's address at eighteenth annual meeting of the American Therapeutic Society, held in New York, June 1 and 2, 1917.

Next, we may speak of the *advantages of surgical treatment:*

1. We should place first the overwhelming advantage of knowing precisely what we are treating. This factor should not be estimated too lightly by the therapeutic enthusiast, for all who have seen many of these cases upon the operating table can recall instances of supposed ulcer in which no ulcer existed, but in which the symptoms were due to chronic appendicitis, to gallstones, to adhesions about the gallbladder, to Treitz's hernia, to kinking of the duodenum because of anatomical aberrations, to adhesion of the gastric wall to the abdominal parietes at the site of a long-healed ulcer, etc. I think it is within the bounds of prudence to state that, in a very material proportion of the cases of ulcer and supposed ulcer coming to operation, even when they have been in the hands of the most eminent men of the profession, such failures of exact diagnosis are discovered and always will be discovered, since they are oftentimes wholly unavoidable even with the most intelligent use of all our present means of diagnosis. In other words, we may often determine very definitely that a lesion of some type exists, interfering seriously with gastric function, but the exact character of the lesion may not be susceptible of diagnosis. In this connection I quote from a previous paper:

"There are certain unusual conditions within the abdomen incapable of preoperative diagnosis, so far as I know, which may simulate ulcer so closely that years of medical treatment are submitted to in certain instances. Thus I have encountered pinching of the pylorus and duodenum in Treitz's hernia, as mentioned above; compression of the duodenum by the superior mesenteric vessels, with dilatation of its proximal portion; kinking of the viscus by adhesions about the gallbladder and pressure on it by gallstone, and distortion from various causes, bringing about partial obstruction. In some of these cases the diagnosis of ulcer seemed to rest on a solid foundation, since pain, hyperacidity, vomiting, hematemesis, dilatation of the stomach, rigidity and tenderness were present, but medical treatment was of little or no avail in any."

I have records of three cases, all treated for a time as ulcer, and in my opinion extremely difficult to differentiate from this condition. Yet all three were due to congenital anomaly in the position of the duodenum, and all were cured promptly by operation. It is a great advantage of surgical exploration that such a condition may be recognized and efficiently treated, while diagnosis is probably impossible by the usual clinical and roentgenological methods. Without giving the case histories, it will suffice to say that two of the patients had had the appendix removed without relief. All had the persistent sour stomach so commonly noted in ulcer. Two had daily and the third occasional vomiting. Hematemesis had occurred in one, and all three had long been confined to bed. Food relief was noted in one, and in one the stomach was much dilated. In all three marked tenderness and moderate rigidity were present at the epigastrium, and in all three a fairly high gastric acidity was found. In two of the cases complete relief was given by correction of the angulation of the duodenum caused by its anomalous position, and in the third by gastroenterostomy.

Because of the infrequent recognition of these cases I think it well to offer in detail the anatomical findings as given me in two instances by Dr. Leonard Freeman, and in the third by Dr. C. E. Tennant:

Case I.—"The duodenum ran directly downward, beneath the transverse mesocolon; then turning to the left it passed under the superior mesenteric vessels, well below the mesocolon, and appeared upon the left aspect of the mesentery of the small bowel. A strong band of connective tissue from the mesentery dragged a loop of the first portion of the jejunum upward to a point just above the place of emergence of the duodenum, in such a manner as to sharply kink the bowel. Above this kink the duodenum was dilated, as was also the stomach to a moderate degree. The pyloric opening was unusually large."

Case II.—"The condition represented a well-marked congenital anomaly. The duodenum did not, as it normally should, pass above the colon and beneath the stomach and emerge into the free peritoneal cavity through the mesentery of the transverse colon to the left of the spinal column. Instead of this it ran directly downward and through the colonic mesentery to the right of the spine. It then turned squarely to the left, crossed the vertebræ beneath the superior mesenteric vessels, and was looped up by firm adhesions (Treitz's ligament) to the point where it normally should have emerged; thus kinking it acutely, like a rubber tube hung over a nail, and producing a partial obstruction which gave rise to stasis and to marked proximal dilatation."

Case III.—"The stomach was of normal size and position and there were no scars about the pylorus. The duodenum, however, was quite as large as the transverse colon, and the terminal portion did not make its exit through the fossa duodenojejunalis. After considerable search the jejunum was found lying directly over and to the right of the vertebral bodies and its anatomical relation to the superior mesenteric vessels much the same as when the ascending portion of the duodenum is at the fossa duodenojejunalis on the left side of the vertebral bodies. There seemed to be no undue constriction at the ligament of Treitz, which was transposed to the right side of the spine, but crossing the bodies of the vertebræ were the mesenteric vessels directly over the transverse portion of the duodenum. Assuming that this transposition of the terminal third of the duodenum was responsible for the dilatation of the duodenum and the persistent vomiting, a gastrojejunostomy was made."

In another case, which had recently been subjected to a prolonged course of antisyphilitic treatment by a genito-urinary surgeon, the supposed ulcer symptoms were found to be due to a gumma of the liver, with extensive adhesions at the exact site of the pain and tenderness.

2. The chance of finding incipient and curable cancer of the stomach by exploration when the diagnosis of ulcer is apparently well established, should not be forgotten. In 6.4 per cent. of my first 93 cases of ulcer coming to operation, reported in 1911, cancer was demonstrated. Enough cures may be obtained in these cases by radical surgical procedure wholly to offset perhaps the usual mortality of operative intervention.

3. Even if the diagnosis of ulcer has been correctly made, there are many chances that a complication, as, for example, gallbladder disease, chronic appendicitis, Lane's kink, etc., may exist. Such complication is discoverable upon operation only, in many cases. I certainly think we are justified in taking the position that no medical treatment of gastric ulcer is justifiable in the average case if a definitely established chronic appendicitis is demonstrable. The ulcer may heal, but the same

pyloric spasm and hyperacidity which resulted from the appendical lesion, and which presumably caused the first ulcer, will probably cause a second one when the patient returns to his ordinary occupation and diet. The same reasoning should apply in case of many other complicating affections.

In one case a diagnosis was made of a previous ulcer, presumably healed, and of a new one at the pylorus. The scar of the former was found several inches from the pylorus, but the later symptoms were due to the intermittent pinching of the pylorus and duodenum in a Treitz's hernia, this being severe enough to cause hematemesis on several occasions. I do not think the differentiation from ulcer was possible, yet medical treatment would obviously have been futile.

4. The avoidance of many serious complications of ulcer should be credited upon the surgical side:

First, we should mention cancer, while less serious are permanent pyloric stenosis, extensive adhesions, gallbladder and pancreatic disease, hourglass stomach, perforation, hemorrhage, subphrenic abscess, and a whole train of complications which are worse than the original disease.

The danger of perforation is not to be disregarded. In my first 116 operated cases, 4 gastric and 4 duodenal ulcers perforated acutely. There were many instances of chronic perforation, so often indistinguishable from simple adhesions that the exact number cannot be stated.

The frequency and gravity of hourglass stomach from chronic ulcer must not be underestimated. This complication was present in 5 of the 116 cases above quoted, the stomach being trilocular in one instance.

5. Operation often enables us to remedy some annoying trouble which, in case of a so-called medical cure, will persist and render the patient a semi-invalid. As an example I will mention the small omental hernia so frequently found associated with peptic ulcer, and so often overlooked. It not infrequently causes as much distress as the ulcer, and is probably to some extent a causative factor in some cases. Adhesions to the anterior abdominal wall often occur, and after ulcer is healed still cause much distress.

6. By operation we occasionally preserve the patient from disaster by the avoidance of perforation, which we find imminent when the abdomen is opened. I have several times seen the peritoneal surface over the ulcer already covered with flakes of lymph. The difference between the light mortality of simple gastroenterostomy in such cases with repair of the ulcer and that after perforation has occurred, is to be considered.

7. In lingering cases the advantage of the decisiveness of surgical procedure contrasted with the long-drawn-out course of medical treatment is to be properly estimated.

The *disadvantages of medical treatment* may be mentioned as follows:

1. Uncertainty of diagnosis, as already mentioned. Let no one underestimate the danger of incorrect or incomplete diagnosis in these cases, no matter how skillful the attendant. One of Leube's supposed ulcers recovered promptly after 25 years of suffering when his appendix was removed, under my care, and the stomach was found entirely normal. I have seen a score of more or less similar cases.

2. Frequent complete failure of medical treatment.

3. Likelihood of relapse. Probably more cases relapse than remain well, if they return to the usual habits of life. This certainly does not hold in cases well treated surgically, so far as my observation goes.

4. Danger of hemorrhage and perforation. We may hope to dismiss these dangers, after operation, in nearly all cases.

5. Fear of development of the invalid habit, of chronic nervous prostration, chronic nephritis, arteriosclerosis, generally lowered resistance, with tendency to the development of tuberculosis or other chronic disease. The danger of the morphine habit is appreciable.

6. Under medical treatment we have the constant fear that malignant disease may develop. The presence of a high gastric acidity is not to be taken as evidence that cancer does not already exist, as I have learned to my sorrow.

7. The complications heretofore mentioned, and embolism, thrombosis, parotitis, phlebitis, etc., are too frequently encountered under medical treatment. We may repeat here that nearly all the mortality in peptic ulcer comes in some way from some complication. Obstruction by the ulcer, or by adhesions, of the biliary and pancreatic ducts is a serious possibility.

8. There are, unfortunately, many instances of subphrenic abscess, empyema, pyopneumothorax, septic pericarditis, mediastinitis, etc., which result as late complications of slowly perforating ulcers, their origin often wholly unrecognized.

Disadvantages of surgical treatment:

1. Danger of operation and of anesthetic. In good hands the mortality of perhaps one to three per cent., considering the seriousness of the disease under treatment, is to be regarded as justifiable.

2. Subsequent development of adhesions, vicious circle, jejunal ulcer, etc. These dangers are much lessened under modern surgical measures.

Gastrojejunal ulcers are generally conceded to be surgical, since they are so commonly dependent upon the use at the performance of the gastroenterostomy of a non-absorbable suture material which fails to come away. The less frequent jejunal ulcers are more amenable to medical treatment.

We should, then, weigh carefully the matter of the certainty of the diagnosis, the probability of relief by medical treatment, or of complete cure in favorable cases, the chances of relapse, the favorable or unfavorable physical condition of the patient, the danger of cancer, the possibility of relieving some complicating trouble by operation, the favorable or unfavorable occupation and surroundings of the patient, and, to some extent, the patient's desires. There should be no bias in the medical mind in favor of one line of treatment or another, excepting as it is based upon all of the above considerations.

METROPOLITAN BUILDING.

Repopulation of France.—Tayle insists that every Frenchman between thirty and fifty must have at least three children or be taxed to raise the children of others in the same social class to balance the deficit. Such a tax would be known as *l'impôt de génération.*—*Le Progrès Médical.*

AN HYPOTHESIS REGARDING THE PHYSICO-CHEMICAL NATURE OF CANCER.

By EDWARD PERCY ROBINSON, M.D.,

NEW YORK.

A PAPER entitled, "Biopsy and Cancer—A Review," by Dr. William Seaman Bainbridge, in the MEDICAL RECORD of April 23, 1917, suggests the timeliness of boldly questioning the efficacy of surgery in the treatment of carcinoma. Good reason exists for believing that in this particular field the surgeon, having been weighed in the balance and found wanting, should stand aside to give the hitherto discredited physician another chance to propose measures of relief.

The clinical history of cancerous growth in general may be summarized as follows: A hyperemia of any part of the body is set up either by an injury, toxic products from bacteria or from chemical substances. The hyperemia is followed by inflammation, this sets into action the processes of proliferation. Proliferation and growth continue up to a certain point governed by the condition of the plasma, after a certain time the process of cell division becomes disturbed and irregular in its nuclear division, the cytoplasm no longer dividing with the nucleus. This condition incites in the cytoplasm its property of making new chemical substances, which prevent further growth of the new species of cell and at the same time serves to cause necrosis.

All organs physiologically active in proliferation, and those abundantly vascularized, particularly the digestive organs, are most liable to cancer degeneration.

The frequency with which the generative organs of the female are afflicted with cancer cannot be due to mere chance, but must depend upon some existing factor. It is a remarkable fact that the breasts and the uterus seem to be the sites by preference for cancerous involvement, while the corresponding organs of the male are rarely thus affected. The reason for this may be outlined as follows: The female being a reproductive animal, it is reasonable to assume that the cells of her body, and particularly those of the productive organs, are endowed with greater power of proliferation than are those of the male. This function of cell proliferation would naturally exhibit greater activity in the uterus and the mammary glands than in other organs of the body. From the period of menstruation up to the time of the menopause, and perhaps some time after that, the cells of these organs undergo changes every twenty-eight days. The uterus becomes engorged and proliferation of the endometrium and of the body is proportionately active. The mammary glands show sympathetic changes and are more or less tender. If active proliferation is not actually present there is some hyperplasia of the cellular tissue, which subsequently resolves as soon as the period of menstruation terminates.

The breasts are particularly exposed to injury or irritation, produced by blows or even by pressure or friction from the clothing. The uterus, likewise, may suffer irritation from a lacerated cervix, or by absorption of toxic products from the rectum.

Improper elimination of effete products of the body by their toxic action on tissues must undoubtedly produce irritation followed by hyperemia, and if this condition persists a passive inflammation ensues. Starting from this condition it can be readily seen how proliferation might be excessively stimulated and the gradual formation of a circumscribed tumor developed. The frequency with which constipation is observed to accompany tumors and cancers of the uterus arouses suspicion that this association is not accidental, and tends to lend weight to the inference that cancer is a constitutional disease and not a simple local affection.

More reason for suspecting that the cause of cancer may be found in the constitution of the plasma is shown by the frequency with which organs having an abundant blood supply are affected. For example, the statistics compiled by the Department of Health of New York City show that cancer has increased remarkably in the past five years, those organs highly vascularized heading the list. The stomach and the liver show an increase from 31.4 to 33.8 per cent., the female generative organs from 12.3 to 13.3 per cent., the peritoneum and intestines from 11.6 to 13.3 per cent., the breasts from 7.7 to 8.5 per cent., while the skin is proportionately low, being only 1.3 to 1.7 per cent. The combination then of a large blood supply, active metabolism and physiological cell proliferation would seem to be predisposing causes to cancer.

Tumors are composed of the same types of cells as those normally existing in the body, and are derived from the latter by a proliferation of pre-existing cells. The cells of malignant tumors do not possess a characteristic structure or appearance, and there is nothing pathognomonic in the appearance of single cells. To determine the nature of a tumor, particularly cancer, it is necessary to consider the general structure, the gross appearance, and the clinical history in order to arrive at a definite opinion, and microscopic examination aids the diagnosis best when the tissue to be examined is taken from peripheral portions of the tumor.

No appreciable advantage is gained by a knowledge of the particular type of cell tissue which has assumed the character of a tumor, the existence of metaplasia is often recognized, nor can a degree of malignancy be determined by the character of the cells or their types. Bainbridge in his article in the MEDICAL RECORD, April 28, 1917, quotes Bloodgood as saying, "I have submitted over sixty borderline cases to a number of pathologists, and have found that in not a single one has there been a uniform agreement as to whether the lesion was benign or malignant." A tumor at its inception is not primarily a cancer and may never become one. Tumors are classified as benign and malignant; and it is known that any benign tumor may become malignant. It can be reasonably asked what brings about this virulence, a state of being capable of remissions and exacerbations and even spontaneous disappearance? It is hardly conceivable that the cells of the tumor are by themselves capable of this whimsical behavior, but must depend on the influence of some other agent for the change they acquire, and the only logical place that this can be looked for is in the chemical constitution of the plasma. For it must be admitted that a cell cannot act independently of the plasma in which it lives.

It has not infrequently happened, after an operation for the removal of a benign tumor, that malig-

nancy has developed in adjacent cells not included in the extirpation of the mass. From this it would seem that the traumatism inflicted upon the tissues by the operation had stimulated the growth of the cells lying dormant yet malignant. This transition may be brought about in the cells through their inherent property of proliferation as the first step toward repair in healing the wound, and the attempt at repair may have occurred at the same time that the cells were passing from the stage of benignancy into that of malignancy, with the result that their mode of division was interfered with and a depraved type of cell resulted. At what stage of mitosis this change occurs is merely conjectural and immaterial, but it is evident that the cells are beginning to lose their property of specialization.

Prof. F. H. Pike makes the following statement: "A single organism can grow and develop only up to a certain point, limited by its degree of specialization. That further progress may be made, the individual life must cease and give place to a successor."

Is it unreasonable to suppose that a tumor cell is one in which its degree of specialization has been interfered with and is incapable of further progress? If its method of division is not normally adhered to, it may be incapable of proliferating a daughter cell with parental characteristics, and in all probability will then take on the characteristics of a vegetative type returning to a primitive form and liquifying.

The property, inherent in the cytoplasm of the cell, of making new chemical substances, makes it quite probable that all growth is controlled by the cell and not by the plasma, as some have thought. As stated by Delafield and Prudden, "Different parts of the cell have special functions to perform. Thus, the nucleus presides over the constructive metabolism or assimilative process of the cell and furnishes the physical basis upon which the transmission of hereditary characters depends. The cytoplasm of the body, on the other hand, is concerned in those phases of metabolism which result in the liberation of energy in movements of various kinds and in the formation of new chemical substances."

Were it not for the controlling influence of the cell upon development, animals would grow into enormous shapes, vegetation would smother the earth, and the tops of trees would reach beyond the clouds.

Admitting that the cell possesses the property of controlling growth, it can be understood why some tumors, after having reached a certain size, cease to grow, and it must be assumed that a change has come about in the chemical constitution of the plasma, for unless this has happened the cytoplasm could not consistently manufacture new chemical substances.

During the thirty years in which cancer has been under investigation much has been learned regarding the things which do not cause it, but the direct etiology remains a mystery. The suspicion that the disease was produced by bacteria or parasites has been shown to be unfounded, and the belief that an injury preceded the development of cancer has not been conclusively proven, although traumatism is most certainly not an inert factor. So far the field of investigation has been well gone over and seemingly every corner has received attention, with perhaps the exception of the blood, which is indeed the most important source from which nearly all pathological conditions arise.

If it is asked, "What is the difference in the chemical composition of the plasma of a normal human being and that of one afflicted with cancer?" the question remains unanswered.

It has been suggested that from the chromosomes and their abnormalities may be derived an intelligible theory of the origin of tumors. The old view that the proliferative capacity of the cells is increased because of the presence of a formative stimulus may be correct, but what the nature of this stimulus may be and how it may effect the mechanism of the cell remain obscure.

"The trend of modern biological research," states Joseph McFarland, "seems to be irresistibly toward the explanation of all vital phenomena on a physico-chemical basis. The striking parallelism that has been shown to exist in the properties and reactions of colloidal and crystalloidal matter in vitro and in the living organism lead to the assumption that protoplasm may be looked upon as consisting of an extremely complex solution of interacting and interdependent colloids and crystalloids, and therefore that the phenomena of life are manifestations of colloidal and crystalloidal interactions of a peculiarly organized solution. We imagine this solution to consist mainly of proteins with various organic and inorganic substances. The constant presence of protein, fat, carbohydrate, and inorganic salts, together with the existence of protein-fat, protein-carbohydrate, and protein-inorganic salt combinations, justifies the belief that not only such substances, but also such combinations are absolutely essential to the existence of life.

"The very important fact that the physical nutritive, or toxic properties of given substances may be greatly altered by a very slight change in the arrangement of the atoms or groups of molecules may be assumed to be conclusive evidence that a trifling modification in the chemical constitution of a vital substance may give rise to a profound alteration in its physiological properties. This coupled with the fact that the differences in centesimal composition have proved very inadequate to explain the differences in the phenomena of living matter, implies that a much greater degree of importance is to be attached to peculiarities of chemical constitution than is usually recognized.

"The possibility," continues the same author, "of an inconceivable number of constitutional differences in any given protein is instanced in the fact that the serum albumen molecule may, as has been estimated, have as many as one thousand million sterio-isomers. If we assume that serum globulin, myo-albumin, and other of the highest proteins may have a similar number, and that if the simpler proteins and the fats and the carbohydrates, and perhaps other complex organic substances, may each have only a fraction of this number, it can readily be conceived how, primarily, by differences in chemical constitution of vital substances and secondarily, by differences in chemical composition, there might be brought about all these differences which serve to characterize genera, species, and individuals. Furthermore, since the factors which give rise to constitutional changes in one vital sub-

stance would probably operate at the same time to cause related changes in certain others, the alterations in one may logically be assumed to serve as a common index of all. In accordance with the foregoing statement it can readily be understood how environment, for instance, might so effect the individual's metabolic processes as to give rise to modifications of the constitutions of certain corresponding proteins and other vital molecules which, even though they be of too subtle a character for the chemist to detect by his present methods, may nevertheless be sufficient to cause not only physiological and morphological differentiations in the individual, but also become manifested physiologically and morphologically in the offspring."

Regarding the hppothesis of Cohnheim that "all true tumors arise in faulty embryonal development," why should nature delay the development of an embryonal cell until adult life of the individual had been reached, a period of forty or more years, at which time tumors usually develop in those susceptible to them? Because a cell is embryonal and is present in adult tissue there is no reason to infer that nature will suspend the operation of her laws governing the development of cells. Every embryonal cell must conform to the degree of development for which it was specialized, that is, grow to maturity and proliferate. If for some reason this is not accomplished it cannot remain indefinitely as an embryonal cell, but will be removed by phagocytic action.

"No one," according to Delafield and Prudden, "has seen the postulated, strayed, or dormant cell of Cohnheim." But such cells have been seen in tissues at certain stages of inflammation, and also during the healing of wounds. If, as has been observed, embryonal cells are sometimes found in tumors, may not their presence be a result of the inflammation which accompanies and precedes a tumor, and furthermore, if tumors are dependent upon injury or irritation for their inception, the presence of embryonal cells in them would seem to be a necessary sequence rather than that they were in evidence as a result of some adventitious event. And, again, it is possible that environment might so affect the individual's metabolic processes that differentiations, both physiological and morphological, may become manifested and account for the presence of atypical cells sometimes found in tumors of different structure, for example, adrenal cells in tumors of the kidney, or cells of sarcoma mingling with those of cancer.

The simple act of planting a twig in the ground illustrates how, through environment, certain morphological differentiations can occur in a cell. The bark of the twig, for example, consists of cells accustomed to the influences of sunlight and atmospheric conditions, but when the twig is planted these same cells adapt themselves to the changed conditions and become root cells, performing a function for which they were not originally designed. "Very remarkable is the case of the brine-shrimp Artemia, as observed and described by Schmankewitsch. One species of the crustacean, *Artemia salina*, lives in brackish water, while *A. milhausenii* inhabits water which is much salter. They have always been regarded as distinct species, differing in the form of the tail-lobes and the character of the spines they bear. And yet, by gradually altering the saltness of the water, either of them was transformed into the other in the course of a few generations. So long as the altered conditions remained the same the change of form was maintained." Accordingly, if it can be reasonably assumed that there is little or no difference between the cell of the protophyta and that of the protozoa similar changes should occur in both, and it may be possible through environment to alter the physiological properties of certain vital molecules to such a degree that atypical cells may become manifested in tissues of different structure. It may be assuming too much to say that this is more than supposition or theory, but nevertheless the term vegetation has been applied to plant-like fungoid neoplasms, or to pathologic tissues of luxuriant growth resembling fungus, to the shaggy appearance of a villous cancer, to arachnoid tufts and villous neoplasms on the pleura and other serous membrance and to adenoid tissue, and their morphological appearance and manner of becoming soft or sloughing resembles to some degree the characteristics of vegetable matter at the stage of rotting. It may be within the bounds of conjecture to assume that the animal cell may possess the property of transmutibility, and, at some period of its existence under certain conditions, return to a vegetable type of cell; a reversionary metamorphosis. The biological relation between the vegetable and the animal kingdoms is so close that from the very beginning a single cell of either one resembles the other, and, in the more advanced forms of life. their manner of existence and their dissolution are remarkably similar. In fact this similarity is found to exist even in pathological conditions such as shock, infections, manner of healing in wounds, parasitic diseases, necrosis, and degeneration of the cell tissues resembling cancer.

In the experiments conducted by Dr. F. C. Wood on explants or tissue cultures, he makes mention of the fact that, "When the tumor is ground up and passed through a Berkefeld filter No. 5, which is impermeable to the *B. prodigiosus*, the resulting fluid is capable of giving rise to a new tumor when inoculated into a susceptible fowl. The obvious interpretation of the phenomenon is that the tumor is transmitted by an invisible and filterable virus." But the fact should be noted that success of the experiment depends upon the fowl being susceptible, or in other words, the fowl must possess an idiosyncrasy; but it cannot be assumed that this idiosyncrasy is similar to that held by the human for chemicals, nor that the tumor is in all respects identical with human cancer, and in the conclusions reached from other experiments Dr. Wood further remarks: "We evidently have here a tumor of an entirely different type from anything known in human oncology." From the technique employed in the above experiment it can be inferred that no living organism exists in the filtered fluid and that the virus must be of a chemical nature.

From the supposed contagiousness of this chemical virus it might be possible to formulate a theory which could be applied to the transmission of cancer by metastasis. For example, a detached tumor cell having traveled by a route offering the least resistance, either a blood vessel or lymph channel, finds lodgment in some favorable location. In its cytoplasm is the active chemical constituent of cancer.

The cells with which it comes in contact in its new location are in a susceptible state and already contain in their bodies the elements, though latent, which would in time determine their passing into a cancerous condition. The presence of the detached cell in their midst, with fully developed virus, serves to activate this latency and they break down; this process being conducted from one cell to another until a fully developed metastatic cancer is unfolded. The fact, however, that metastatic tumors may develop in other parts of the body not in direct communitcation with the blood and lymph channels of the original tumor must lead to the belief that the general constitution of the entire body is cancerous, and that the active agent which started the first tumor is still present in the circulation and capable of giving rise to another.

That the blood and lymph passages leading from the tumor should be by preference the sites of new cancer formations is due no doubt to the presence of the virus in the blood, which, coming in contact with the walls of these vessels, excites the cells into degeneracy.

The invariable presence of the thickened walls of blood and lymph vessels leading from well developed tumors, and resembling somewhat the extended legs and claws of a crab, probably gave rise to the derivation of the word cancer.

In a late brochure (1914) Dr. L. Duncan Bulkley says: "It has been clearly demonstrated that cancer is a disease of civilization, increasing amongst those peoples who previously had been free from it, in proportion as they become associated with those who are more highly civilized, and as they have adopted their customs, and manners of life, and diet, this has been shown in regard to negroes before and after the Civil War, and also as to primitive people in India, Africa, Mexico, Brazil, etc."

The question naturally arises, what can there be other than diet in more highly civilized people that would cause cancer in inferior races that associate with them and, if it is possible to exclude any other factor, the next question which follows is, what can there be in the diet of civilized people which is not found to excess in the foods of primitive peoples? Dr. Bulkley further says that "Williams (in 'The Natural History of Cancer') has collected from all sources the greatest amount of evidence that cancer is relatively rare, and often really unknown, as reported by competent observers, amongst aborigines in the interior of many countries, who live on the products of the vegetable kingdom, with little if any meat secured in hunting." "During a recent extended trip," the same authority continues, "through the Far East I was unable to see or even hear of any cancer, although I met a large number of medical men and made inquiries regarding the same, and visited hospitals with a total of many thousands of patients, in Japan, China, Korea, the Philippines, India, Siam, and Egypt, I met the same response, that cancer was rarely seen among those vegetarian peoples."

That diet has a remarkably beneficial influence upon cancer has been demonstrated by evidence and by observation of competent medical men. "Cancer has repeatedly been observed to disappear spontaneously" (Bulkley). Suspicion has been directed to protein as having some possible cause in the development of cancer from the fact the disease has increased in proportion to the increase in the consumption of meat. However, protein compounds, similar to each other, are widely distributed in the animal and vegetable kingdoms. They are formed by plants, the animal organism receiving them in food, assimilating and metamorphosing them. It is not consistent with facts that protein is capable of causing cancer when eaten in meat, but the same substance, although identical, is curative when vegetables are eaten. Is it not more probable that the improvement observed in cancer patients fed on a vegetable diet is due to the absence of something usually present in a meat diet?

Ehrlich claims that "A tumor in order to grow continuously in an animal requires certain specific substances which permit of its growth, the nature of these substances being unknown; if they are not present the tumor does not grow; when they are exhausted the tumor undergoes spontaneous regression."

The truth of this is self evident from the fact that nothing can grow unless it receives nourishment suitable to its growth, and a tumor must, in order to grow, receive nourishment from the blood, as has been demonstrated by experiments dealing with the transplanting of tumors in chickens and in mice, which show that vascularization must occur in the graft or it will not grow. Accordingly, we may be justified in suspecting that the chemical agents on which its growth depends exist in the blood.

What then may we suppose to be this something, usually present in the meat diet, of universal and increased use in the diet of civilized peoples? Is it not possible that in the profundities and intricacies of scientific investigation we have overlooked the one thing whose simplicity and familiarity have obscured our vision? This something, this one thing in the judgment of the writer, is sodium chloride. In the study of cancer, no one to my knowledge has taken into consideration the possibility of a chemical constitution of the plasma being an agent in the cause of cancer, if not a direct cause. To repeat what has just been said above, "The very important fact that the physical, nutritive, or toxic properties of given substances may be greatly altered by a very slight change in the arrangement of the atoms or groups of molecules may be assumed to be conclusive evidence that a trifling modification in the chemical constitution of a vital substance may give rise even to a profound alteration in its physiological properties."

Granting the truth of this, may we not by an excessive use of salt in our daily food bring about a modification of the chemical constitution of the blood sufficient to cause a profound alteration in its physiological properties?

The plasma is a fluid which must necessarily differ in its quantitative chemical constitution from day to day, never being stable for any length of time. This fickle condition is due to the compositions of the various foods eaten and by the different proportions of salt added to them. At one period the salt content might be very low, and after a meal of salt foods the percentage of salt may rise considerably beyond the normal sufficiently to cause intense thirst.

These occasional variations are not competent to produce any marked effect upon the organism of

youth, but as time goes on the constant use of salt, extending probably over a period of fifty years, must have some influence on the tissues of the body.

The animal economy is capable of an enormous degree of adaptability, it is able to withstand extreme changes in environment, and indeed demands variations, not only in food, but in climate. It is well known that a long continued diet of any one kind of food is prone to induce functional disturbances, such as scurvy for example, and this is also in the use of chemicals or drugs. It is hardly necessary to illustrate this with clinical instances, as every physician is familiar with the pathological conditions of the tissues for example, of the alcoholic, users of morphine or cocaine, and in geophagism.

It is reasonable to assume that tissue changes would occur when the prolonged and excessive use of a chemical, such as sodium chloride, had been indulged in for a considerable number of years. This immoderate use would undoubtedly bring about a modification of the plasma which might be sufficiently potent to exert a deleterious influence on the normal mitosis of the cells. In keeping with this hypothesis is the observation of the frequency of cancer in advanced life, and its almost total absence in infancy and childhood.

If carcinoma were a condition produced by an independent act of the cell at some stage of its division during active proliferation, its appearance should be manifested at any period of life; it should commence with the embryo and be rampant during puberty, the period in which the greatest possible demand is made upon the proliferating functions of every cell in the body. But this is not so, for cancer of an embryo is unknown, and such disease has not been observed in infancy except as sarcoma.

It is a remarkable fact that cancer is fifty per cent. more prevalent in women than in men, and coincidently the percentage of salt in the blood is slightly higher in women than in men. This difference cannot be attributed to chance, but must be looked upon as a circumstance for which nature has a definite reason.

Is it probable that the function of proliferation is influenced by the presence of sodium chloride in the blood? Experiments made by Alexis Carrel and his associates with skin tissue immersed in salt solution, have demonstrated that proliferation could be artificially stimulated and that the rate of growth was influenced by the strength of the solution. It may not be possible to state exactly what the formative stimulus which students of oncology have surmised to exist as the incentive to cancer degeneration, but it can be inferred to be of a chemical nature, and if, by eliminating all other chemical substances which compose the human body, suspicion points to chloride of sodium, it is logical to assume that such a formative stimulus may be found therein.

That salt plays some part in proliferation may be assumed from the fact that animal life is more prolific and abundant in marine waters than is the case with similar species of life inhabiting fresh water streams and lakes. We may recall the autofertilization observed in experiments with sea urchins.

There is no chemical substance in the universe which enters into the body fluids of man in as large an amount as common salt. Of all the substances found in the plasma it heads the list, being from three to four parts per thousand, while few of the other substances are over one part per thousand.

If the adjustment of plant life to the animal is considered from the viewpoint of nature it will be observed that, with the exception of poisonous plants, all the chemical constituents of vegetation have been arranged in proportions best suited to the requirements of the animals that must exist upon them, and to prevent the possibility of an overabundance of any one constituent accumulating in the plasma, a variety of vegetable life was adapted. In our diet, consisting in the main of animal and of vegetable tissues, the proportions of their chemical constituents are left undisturbed, but there is one chemical constituent whose proportion is artificially increased and that is sodium chloride.

We are familiar with the peculiar idiosyncrasies which exist in some individuals for certain foods or drugs, and it is true that what may be food for one person often causes functional disturbances in another. With the elements belonging to the halogen group certain decided idiosyncrasies are commonly observed. For example, when iodine or bromine are administered internally symptoms known respectively as iodism and bromism become manifested in those who possess such an idiosyncrasy. Now the group consists of four elements, namely, iodine, bromine, chlorine and flourine. These elements, which are so closely allied, are all of them powerful disinfectants and irritants, and it could be assumed, that because of this close relation, certain analogous symptoms, which might be termed chlorism, might become manifested in those persons who are excessive users of salt, appearing as an exalted form of cell proliferation or tumor.

The regularity with which cancer occurs in successive generations in some families has given rise to the supposition of heredity. But that a disease capable of transmission of hereditary influence should be delayed until forty or fifty years of life have been reached seems contrary to the general accepted view of heredity. It is more probable that an idiosyncrasy to chlorine is transmitted by the ancestors, and not until the subject has reached middle life, at which time the deleterious influence of an excessive use of salt would have made its presence felt upon the physiological functions of the cells, does cancer develop.

If the chemical properties of the three elements under consideration can be assumed to be similar it may be possible, theoretically, to determine by an examination of the plasma whether a subject, giving a history of cancer in the ancestors, is liable to develop the disease. An excess of salt beyond the normal physiological quantity could be detected by simple tests, and if on the administration of either iodine or bromine evidences of an idiosyncrasy for one or the other are seen it might be safe to infer that the subject is in danger of developing cancer. Of course, as with iodine and bromine, not every patient exhibits symptoms of iodism or bromism, and in fact it requires a lapse of time before such symptoms do appear; and so with chlorine, which is a natural element of the plasma in contradistinction to iodine and bromine, symptoms of chlorism would require years in consuming salt before they would be observed.

If cancer can be shown to be due to the chemical constitution of the blood, the belief held by some that the disease is communicable is without foundation, and it must be looked upon as a purely personal disease inflicted upon the individual by his or her own wilful or ignorant disregard for the moderate use of salt. Theoretically, in order to transmit cancer it would first be necessary to find a subject in whom an idiosyncrasy for salt existed and who at the same time had an active inflammatory condition of some part of the body; into this hyperemic tissue the filtered fluid obtained from macerated cancer tissue might be injected, and a true cancer should develop as a result.

Salt is present in all animal and vegetable tissues, and is a necessary substance in the life and health of animals and of men, but civilization has acquired the habit of using salt on foods to a degree far greater than was possible or even known to peoples of ancient times. Impossible in those days, as the manufacture of salt was practically unknown, and its consumption was in proportion to its scarcity. It may be stated here that cancer was unknown in ages past, and no doubt Aesculapias and other physicians of his period would have made mention of it had the disease come under their observations. However, if cancer has followed civilization, so has the consumption of salt kept pace.

Meat to be palatable must be salted to a degree greater than that which is normally found in the tissues of the animal, and while salt is found in both the animal and vegetable kingdoms, meat contains a much higher percentage than is found in the ordinary list of vegetables used as food. It might be mentioned that the canning industry has been the means of largely increasing the consumption of salt through the variety of foods put up in cans, and that this enterprise is entirely one of civilization. The number of foods savoured with salt can best be realized by enumerating the few in which salt does not enter. Salt, whether eaten on foods, or in canned meats, must eventually find its way into the plasma and increase the saline content of this fluid to a degree higher than that in which the cells were normally intended to live. Furthermore, its inordinate use puts upon the excretory organs an extra burden of removing the excess from the system, the kidneys being the main organs to do the largest portion of this task. The chlorides of the urine are almost an exact measure of the same substances taken in with the food and amount to about 154 to 246 grs. in twenty-four hours. About 150 to 180 grs. are excreted by the kidneys every twenty-four hours beside that found in feces, perspiration, and the tears. The amount of urea excreted by the kidneys varies from about 308 to 617 grs. in the same period. Does it not seem rather unwise to compel the system to excrete an artificially added chemical in almost the same amount as the normal quantity of the products of combustion of the entire body represented in urea?

To summarize all that has been said regarding cancer: Any pathological state of the body must arise from the action of organic, inorganic, or traumatic influences. In cancer, organic and traumatic influences have been eliminated as causes. Considering the inorganic agents as causes all have been eliminated, leaving one only which appears to be the most active cause and this is sodium chloride.

To produce cancer successfully the subject must have inherited an antipathy to chlorine. The manifestation arrives some time during middle life of the individual.

The influence of salt on proliferation and on metamorphosis has been demonstrated. As for hereditary tendencies to cancerous growths, may the part played by heredity in cancer not lie in transmitting to the offspring an antipathy to chlorine?

To the honest sceptic who quite properly characterizes these reflections and suggestions as merely theorizing, the assurance may be extended that, theory though this may be, it is a theory susceptible of indisputable proof. It remains for those members of the profession in control of clinical facilities to conduct dietary experiments by segregating and submitting to a saltless diet certain patients, comparing their condition after a reasonable lapse of time. Regression in cancerous growth in an appreciably larger percentage of those patients on the saltless diet than of those not so treated, would surely be a fact of significance—a fact capable of unlimited confirmation through further experiment.

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THE THERAPEUTICS OF URANIUM NITRATE.*

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Uranium, a mineral long known in pitch-blende, was isolated in 1789. It was so named from the Greek οὐρανός, the sky, in allusion to the planet Uranus. Uranii nitras,—uranium nitrate,—of the ninth edition of the United States Pharmacopœia contains not less than 98 per cent. of uranyl nitrate $UO_2(NO_3)_2CH_2O = 502.62$.

Source.—From pitch-blende which is an impure uranoso-uranic oxide or from uranite. Either of these, finely powdered, is treated with nitric acid, and various associated metals as lead, barium, bismuth, iron, zinc, radium, and polonium having been removed, uranium nitrate is crystallized from an aqueous solution.

Characters.—Light yellow prisms; odorless and having a bitter, astringent taste; somewhat efflorescent; radio-active, emitting alpha rays and producing a new radio-active element known as uranium-x, resembling thorium, and which emits beta and gamma rays.

Solubility.—In 1.2 parts of water at 25° C. (77° F.); freely soluble in alcohol or ether.

Impurities.—Alkaline earths, heavy metals, iron, manganese, zinc, uranous compounds, sulphates.

Dose, 0.01 gm. = 10 milligm. (1/6 gr.).

Action of Uranium Nitrate.—Uranium nitrate is less radio-active than metallic uranium and some of its salts, but probably this effect is overshadowed by the other manifestations produced by this substance. Its systemic action is similar to that of other metals with an especial paralytic effect on respiration. It is very corrosive and highly toxic.

*Read before the American Therapeutic Society at its eighteenth annual meeting at New York City, June 2, 1917.

Kidneys.—In considerable doses in some animals, when injected intravenously, it produces degeneration, necrosis and desquamation of the tubular and glomerular epithelium with characteristic hyaline droplets in the wall of the capillaries of the glomerular tufts, which are not found in other vessels of the kidney or in other organs. There is, however, no hematuria, in spite of the marked congestion. It generally sets up an albuminuria and glycosuria with possibly an acetonuria, with torpor, somnolence, paralysis, collapse and coma. The glycosuria often develops upon the second or third day of intravenous injection. This may be due to increased permeability of the kidney, for it may appear without any hyperglycemia, indeed uranium salts may even relieve an hyperglycemia if this should be due to a diminished permeability of the kidney. On the other hand, it may of itself produce a hyperglycemia, even if the kidneys be excised, thus pointing to an action which is entirely outside of the kidneys.

The excretion of albumin runs fairly parallel to that of glucose. It has also been noted that nephritic glycosuria and hyperglycemia occur after the administration of many substances, which are toxic as regards the kidneys, such as cantharides, which increases permeability of renal vessels, and chromium, tellurium, mercury, and aloin which cause lesions of the tubular epithelium. The urine is usually alkaline and slightly increased in quantity and in specific gravity for a short period; then it is diminished and when coma supervenes, anuria from obstruction of the tubules by edema and desquamation of cells, is complete. The coma is usually without convulsions unless they are of uremic origin. Repeated injections of small doses result in chronic interstitial nephritis with fibrous changes similar to the chronic diffuse nephritis found in man, but not identical with it for it is not associated with arterial lesions.

The toxicity of uranium salts is probably associated with acidosis because the administration of sodium carbonate lessens this and, as well, diminishes the degeneration of the renal epithelium. The oxaluria present indicates the poisonous effect of uranium and, with the emaciation, denotes impaired nutrition.

Blood.—The blood is rendered less coagulable, although it is not known by what means this is brought about. It also interferes with the restoration of the volume in the blood after saline infusion.

Respiration.—This is at first increased in rate and later becomes slower, while the pulse becomes more rapid, the blood pressure is raised through stimulation of the vasomotor center, and as asphyxia supervenes the temperature is subnormal. Respiratory paralysis causes death.

Alimentary Tract.—There is likely to be thirst, nausea, and vomiting with constipation and later diarrhea. It inhibits the production of ptyalin, pepsin, and trypsin, and its deleterious effects on digestion appear after hypodermatic as well as after oral administration.

Nervous System.—The somnolence, weakness of muscles, and paralysis are usually not marked until a few days before the death of the animals subjected to experimentation.

Anasarca.—As early as 1854 Leconte noted a peculiar dropsy resulting from the administration of uranium salts and this was again studied by Richter in 1904. The anasarcous and ascitic fluid is highly albuminous and is a transudation into serous cavities and into the tissues and may even affect the *fetus in utero*, as was noted in 1905 by Bibergill. This condition is not explicable on the theory of nephritis resulting in anuria, but is probably one due to an altered permeability of the walls of the capillaries, according to the observations of Richter in 1904. This occurs only when animals have been freely supplied with water, otherwise anuria without dropsy will supervene.

In all the animal experimentation it has been noted that dogs, especially the older ones, were more resistant to the action of uranium salts than were rabbits. So far as animal experimentation has gone the intravenous administration of uranium salts produces a characteristic nephritis, glycosuria, and a peculiar edema.

The action of uranium salts seems to have attracted the interest of laboratory workers for a considerable period of time. Among those who have contributed to the pharmacology may be mentioned: 1824, Gmelin; 1851, Leconte; 1888, Chittenden; 1889, Chittenden and Lambert; 1890, Woroschresky; 1904, Richter; 1905, Bibergill; 1906, Fleckseder; 1907, Fleckseder, Hemmeke, Myerstein; 1909, Dickson; 1910, Jackson; 1911, Smith, Pollak, Christian; 1912, Dickson, MacNider; 1913, Franke, MacNider, O'Hare; 1914, MacNider, Myer, Lozzati; 1916, MacNider, Bogart, Underhill, and Mendel.

Therapeutics of Uranium Nitrate.—It has been used in England as a spray for the throat in 2 per cent. solution, with caution, for various conditions.

In 1895 Samuel West published the results of his observation of two patients suffering from diabetes mellitus; one a lad of twenty-two years, the other a woman of forty-five years. Later in the same year he added the records of one hospital and some other patients, but without complete details. He employed at first uranium nitrate and the double chloride of quinine and uranium, but finding no difference between the two salts, finally decided upon the former as equally efficacious. He was apparently familiar with the observations of Chittenden upon the inhibition of the activity of ptyalin after small doses of the drug and in larger quantity its effect upon pepsin and trypsin. He found that the drug, when administered by the mouth, acted slowly and that small doses (one-sixth of a grain) were as efficacious as larger ones (one grain), and finally that some tolerance of the remedy was apparently established.

He concluded that the general effects were as follows: After a short time all patients reported that their thirst was greatly relieved and that the frequency of urination and the quantity of urine was greatly reduced. If the sugar is largely influenced by diet the remedy is most useful on account of its physiological effect in digestion. If dieting and ordinary treatment have produced all the results of which they are capable, further improvement takes place after the administration of uranium ntrate. This result may be due to the slowing of digestion of starches and some forms of albumin, and the remedy may be especially useful in controlling excessive pancreatic digestion.

No uranium is found in the urine, probably because none gets into the general circulation. It may, however, pass from the intestines to the liver and, having been excreted in the bile, again pass into the intestines. Although the author recognizes the fact that when it gets into the blood after hypodermatic injection it is an active poison, he believes that when introduced into the stomach it is not toxic because of its imperfect solubility and absorption. He reports that he has administered from fifteen to twenty grains, thrice daily, without symptoms of gastric irritation.

His method of administration was as follows: Commence with a small dose—one or two grains—and increase slowly after an interval of a few days until the desired effects are produced. The remedy is best given freely diluted with water, after food. He never observed any disturbance of digestion nor irritation of the stomach or of the bowels, nor that its prolonged administration caused glycosuria. The statements made by other authors, that it reduces hemoglobin and therefore the oxygenating power of the blood, were apparently not confirmed by the author, since he makes no mention of such results.

In the treatment of diabetes mellitus I have long since abandoned a strict antidiabetic diet excepting for experimental purposes while determining the character and severity of the disease, which should be considered rather as a symptom-complex of which persistent glycosuria, polyuria, thirst, emaciation, and weakness are prominent manifestations. On a diet as near normally balanced as is possible, due regard being paid to total quantity of food-intake, the dangers of excess of proteids, as indicanuria, purinemia and autointoxication on the one hand, and from lack of sufficient carbohydrates, as acetonuria and coma, on the other, are avoided. If the nutrition of the patient can be maintained, infections such as tuberculosis and septic conditions, as well as gangrene, are exceedingly rare. So far as drugs are concerned their use is largely symptomatic; the opiates, and particularly codeine, the organic bases and nitrogen-benzene derivatives, especially antipyrine, and the volatile oils acting chiefly on the central nervous system, as valerian, all have their uses but are not to be considered as constituting treatment. Benzosulphinide is, of course, a condiment and should be used in much smaller amounts than is ordinarily directed, not because it is harmful, for it is not, but for the reason that smaller amounts are quite as efficacious and satisfying as sweetening.

The arsenic-lithium carbonate ordinance in carbonated water, devised by my old teacher, Martineau, which I learned while a student in Paris in 1882, is probably more frequently useful than any single medication, and particularly in diabetes mellitus of hepatic origin.

Patients suffering from diabetes mellitus treated with discrimination after a thorough study so that the cause shall be accurately determined do not die from the disease or its ordinarily associated sequelæ. My oldest patient has been under my care for thirty-two years and has now reached the age of fifty-four. Often months pass without glycosuria or possibly with only traces of glucose in the urine.

On looking over my practice for the past twenty years I find one hundred and eleven instances of the various forms of diabetes, classified as follows:

Diabète azoturique.—If one considers the pharmacology of uranium, by analogy it should be influenced by this remedy. As a matter of fact, of seven patients suffering from this disease, none were benefited, and presumably the drug was without effect.

Diabetes alterans.—Three patients received uranium nitrate as a part of their treatment, but without any appreciable results.

Diabetes mellitus.—Nine of the neurotic type were apparently uninfluenced, as to their glycosuria, by the remedy. Of the hepatic type, fifty-four received the remedy, including six (three pairs) of the conjugal variety, and forty-six apparently received benefit in that thirst, polyuria, and glycosuria were improved, but generally only so long as the remedy was continued. The usual daily amount administered was from one-half to one and one-half grains; on a few occasions it reached three grains. Pancreatic diabetes naturally varies within wide limits owing to the diverse conditions affecting the gland. Of twenty-seven patients, twenty-two were improved as to the symptoms above noted, temporarily at least, but it was with difficulty, if at all, that any really lasting benefits could be obtained.

Diabète bronzé.—In two instances, in which uranium nitrate was employed absolutely no results were obtained. Of the infections, those due to syphilis, as paresis or tabes, or disseminated sclerosis, the disease seemed to be of more importance than the glycosuria, and no use has been made of the remedy. No patient under my care suffering from exophthalmic goiter has ever shown diabetic symptoms or signs, therefore no observations upon the effect of uranium nitrate have been made. Nor have I ever encountered diabetes as a sequela of typhoid or relapsing fever, or of cholera or diphtheria.

Diabetes insipidus.—Nine patients which have been under observation received uranium nitrate in daily amounts of from one-half to one grain. There was no reason why this remedy should influence the polyuria, nad as a matter of fact it did not. In a disease of so obscure an origin and of so unsatisfactory a course and so little amenable to treatment one sometimes yields to temptation and embarks on therapeutic adventures.

In all the instances in which I have employed uranium nitrate I have never noted any untoward gastric or intestinal symptoms nor any signs of blood or renal disturbances; careful observation has been especially directed toward the early detection of the latter. In some instances, especially in the hepatic and pancreatic forms of the disease, the remedy, when its use has resulted in the diminution of glucose to a trace or to total absence, has been continued for months and, for some patients, for years.

On conclusion, I believe that the statement as to the therapeutics of uranium nitrate, which I quote from the tenth edition of my Materia Medica and Therapeutics, is a fair one: Internally it has been employed with good effect in the treatment of diabetes mellitus for at least two decades. It will at times markedly diminish the amount of glucose in the urine, and this diminution, often to traces, will

persist so long as the remedy is continued. In other instances it is entirely without effect. Its use then is purely empirical, without any basis for an opinion whether it will or will not be useful. Indeed, when its use is successful in reducing glucose, lessening thirst, weakness, and emaciation, there is no valid explanation of its action.

Fortunately in diabetes the urine is frequently examined so that structural changes in the kidneys are readily and early detected and the treatment at once abandoned. The digestive disturbances also give early and emphatic warning. On the other hand, it has been administered in large doses, and over long periods of time, even years, without any digestive symptoms or renal signs, with apparently great benefit to the patients suffering from actual diabetes mellitus.

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THE TONSILS AND RHEUMATISM.

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Of late there has been some controversy over the merits of tonsil removal for the relief of rheumatism. Opponents of the procedure maintain that the operation generally fails to benefit the disease and that in many instances it has increased the suffering rather than diminished it. This is at variance with the experience of most of the men engaged in throat work. During the past ten years I have enucleated the tonsils of some two hundred patients for rheumatism and kindred disorders. To the best of my belief not a single person was made worse by the operation. Nearly all were benefited and many were wholly cured. About a score of my patients had been climate hunters unable to withstand the rigors of our northern winters. The success of my work has convinced me that just as the tonsil operation is the panacea for the ills of child life, its field of usefulness is quite as extensive in middle life.

For a long time physicians have been strongly impressed with the frequency with which tonsillitis was followed by rheumatism. The association occurred too often to be accidental. It was well known that an epidemic of tonsillitis is generally followed by an epidemic of rheumatism. Grebe of Jena was the first to establish a connection between the two. He found that rheumatism is a blood infection and that the infecting organisms that are found in the swollen joints, in the blood, and in the urine of sufferers are identical with those commonly found in the throat and particularly in the tonsils. Ten different organisms have been found in the joints of persons with rheumatism. In particular there is a streptococcus, known as the *Micrococcus rheumaticus*. Sometimes it becomes a diplococcus and it is a normal inhabitant of the tonsils.

As many as 150 kinds of germs have been found in the throat of a healthy person. Most of them are of no significance excepting for the putrefactive changes they promote and for the foul odor they impart to the breath. Of course the nose and the throat constantly harbor disease germs but these are incapable of mischief so long as the upper air passages are in a healthy state. It seems that the normal secretions of the nose and the throat wash away offensive organisms before they have a chance to colonize. The crypts of the tonsils at all times contain myriads of disease germs in a quiescent state. As soon however as the throat becomes disorganized, its bactericidal power becomes impaired and the tonsillar pockets become ideal culture tubes for erstwhile innocuous bacteria which now become virulent germs. The proximity of the tonsils with the cervical glands affords the germs a ready passage to the circulation. The readiness with which streptococci attack an enfeebled throat is instanced in the manner in which they hasten the destruction of an area already invaded by cancer, tuberculosis, or syphilis.

Unquestionably attacks of rheumatism can come from a suppurating focus anywhere in the body. Witness the arthritis of gonorrhea and of the puerperium. Also the infecting pus can come from the teeth, from a discharging ear, or from the nasal sinuses, but the vast majority of the attacks can be traced to the tonsils. At any rate it is an attack of tonsillitis that disurbs the equilibrium of the throat, fans the smoldering flame, and causes the absorption of the toxic products. Wood of Philadelphia, experimenting upon swine that have well defined tonsils, found that systemic infection occurs sooner and with greater violence when the infecting virus is rubbed into the tonsils than when it is applied elsewhere to the throat or is mixed with the food. The belief is gaining ground that it is principally through the tonsils that most systemic infections, notably tuberculosis, enter the human organism.

That rheumatic fever is a true pyemia is shown in that the symptoms are those observed in all septic intoxications. They are chills, febrile remissions, sweats, anemia, high leucocytosis, and a partiality for serous surfaces. The distinguishing feature of rheumatic fever is the marked acidity of certain of the body fluids, such as the urine and the sweat, which are normally alkaline. Frequently even the breath has a sour odor.

The older writers disclaimed any connection between rheumatic fever and chronic rheumatism. The present belief is that the difference is one of degree rather than of kind. The former being caused by the rapid absorption of toxins, which overwhelm the system and produce a severe reaction, whereas the latter is due to the occasional and restricted absorption of toxic products. An attack of rheumatic fever does not begin to decline until sufficient antibodies are manufactured in the body to overcome the toxins. Normally the blood is strongly bactericidal but occasionally it favors rather than hinders germ proliferation. Latent attacks of rheumatism are probably caused by the retention in the tonsils, or elsewhere of infectious materials which is thrown into the blood stream whenever conditions for germ growth are favorable.

The great joints, the heart, and the pleura are the places most susceptible to the corroding influence of the rheumatic infection, although no serous surface is free from attack. The temperature in rheumatic fever seldom exceeds 103° F. When it does so it denotes an attack upon a vital organ. An abrupt rise in the temperature usually signi-

fies a fresh onslaught of the infection and a sharp pain generally indicates the place where the toxin has been concentrated. The heart becomes infected in over a third of the sufferers of rheumatism. Usually the mitral valves become eroded—betrayed by a blowing systolic murmur over the apex of the heart.

There are three stages in life when the throat is especially assailable. In infancy, in adolescence, and in middle age, and these are the periods when rheumatism is most prevalent. Formerly it was thought that rheumatism is rare in infancy; it is now claimed that most of the graver respiratory and circulatory diseases of babyhood are of rheumatic origin. The belief is fostered by the knowledge that nearly all the ailments of a young child start with tonsillitis. Pyelitis, intestinal disorders, and growing pains are generally but signs of a rheumatic infection.

Youth is the time when the danger from a rheumatic infection is greatest. The most dangerous period being between the ages of 13 and 18 years. During adolescence gland life is exceedingly active and the dissemination of septic products is promoted. Frequently it is easy to trace the relationship between an attack of tonsillitis and one of rheumatism, since symptoms of the latter affection set in ere the tonsillitis has subsided. Usually, however, a week or two separate an attack of tonsillitis and one of rheumatism.

Following puberty girls are the principal sufferers of rheumatism and the heart is their most vulnerable organ. The aftermaths of rheumatism in young girls are many: goiter and chorea are among them. The sexual change and the resulting anemia have a disturbing influence upon many young girls. It places a severe tax upon their vitality and the heart becomes a ready prey to a rheumatic infection. Frequently an important organ is crippled for life, and often the way is prepared for a tuberculous infection. After a girl has matured and especially after the eighteenth year, her frame assumes greater stability and thereafter the consequences of a rheumatic infection are less serious than among males.

In middle life nearly everyone suffers more or less from rheumatism, or from one of the many disturbances akin to rheumatism, such as neuritis, bronchitis, asthma, gout, and various affections of the skin, of the alimentary tract and of the genito-urinary system. From the fact that most of the diseases of the ear and of the upper air passages begin with a sore throat, it is fair to assume that they too are of rheumatic origin.

Between the ages of forty-five and fifty-five years rheumatic affections are more prevalent than at any other period in life. This is the time when important organic changes are taking place and vascular pressure is at the maximum. It is with fear and apprehension that many women look forward to the change of life, and both their real and their unreal ailments are ascribed to it. Statistics show, however, that the ills of middle life are far more dangerous to men than to women. There seems to be a close relationship between the sore throat of middle-aged men and the acute affections that often prove fatal, especially pneumonia and kidney disease.

Many middle-aged individuals, through their enervating habits of life become predisposed to rheumatism. These are the so-called lithemics, people who partake too freely of highly nitrogenized products and who get insufficient exercise to help carry off the waste products of this rich food. The natural effects of hypernutrition are faulty elimination and autointoxication. The chemistry of the secretions is changed and acidosis occurs. Severe headache and frequent attacks of coryza often result therefrom. Rheumatism has long been regarded as a family failing, an inherited disorder, but according to our present knowledge germ diseases are not transmitted from parent to child. What can be inherited however are certain anatomical defects of the nose or of the throat, which conduce to rheumatism.

The throat of lithemics is often the barometer of their physical well-being. It is apt to be supersensitive and easily deranged. Inspection usually reveals a livid pharynx and injected tonsil pillars. Most likely there is an abundance of lymph substance in various parts of the throat, especially upon the base of the tongue. Common complaints are a feeling of dryness in the throat, some hoarseness, and perhaps a dry harsh cough. This hoarseness may cause much concern from the thought of malignancy. Rheumatic arthritis of the larynx is a common complaint. In most people with rheumatic affections the tonsils cannot be seen, as they are shrunken and lie deep in the throat, beneath the tonsil pillars. When the submerged tonsils are drawn to the surface foul-smelling cheesy masses, or perhaps tonsilloliths, can be squeezed out of them. These foreign bodies often are the cause of much annoyance and keep the throat in an inflamed state for a long time. The condition of the tonsils rather than their size determines whether or not they are diseased. Contrary to the general belief tonsils that are large and that stand out prominently in the throat are generally harmless, for usually their crypts are patent and drainage is ample. The principle objections to them are that they present a large infectious area and occasionally they interfere with the functions of the throat. Quinsy or peritonsillar abscess rarely starts in a large open tonsil. It comes from infectious material in a closed tonsil, which, in seeking an outlet at the place of least resistance breaks through the capsule of the tonsil and infects the peritonsillar space. This painful affection is rare in children because their tonsils are usually yielding and the crypts are open.

Acute tonsillitis is the most common and frequently the most depressing of all acute infections. The debility comes from the toxemia and it deranges the entire system. Until recently the treatment of this disturbing affection has been far from satisfactory. Most local applications had but a moral effect. In my hands the standard remedies, argyrol and silver, seldom influenced an attack. It was not until I was led to cleanse the tonsils with alcohol and then to rub in finely powdered aspirin, that I found that tonsillitis was brought under better control. It seems that the alkaline secretion of the tonsils converts the aspirin into nascent salicylic acid, the action of which is dual. It relieves the soreness and it inhibits bacterial growth; swallowing becomes eased,

and the extent of the inflamed surface becomes reduced. A further advantage of using aspirin in this way is that rheumatism is less apt to follow than when it is omitted. It has been found that the treatment of rheumatism in any stage is facilitated by rubbing aspirin into the tonsils. The symptoms are controlled quicker than when the drug is given internally and, besides, the dose is much smaller. Nor is it attended with the unpleasant after effects that mar the benefits of the salicylates in susceptible persons. Numerous persons have been consigned to a life of invalidism through the injudicious use of these drugs. Head noises, deafness, vertigo, headache, nausea, excitability and pronounced anemia are some of the conditions produced by the salicylates.

From the earliest known time the tonsils have been regarded with suspicion, as being accountable for many systemic disorders. They have been attacked in every conceivable way, but with indifferent success. Physicians have hesitated to remove the entire tonsils for fear of destroying essential functions, and from fear of hemorrhage. This leads to the consideration of the uses of the tonsils; a subject of much speculative thought. It seems that they are vestigial organs like the appendix, which evolution has rendered worthless excepting in infancy. From the fact that ruminating animals use their tonsils to moisten and to lubricate the dry fodder upon which they subsist, it is assumed that the human tonsils served a like purpose in the early stage of man's development, when his food consisted of nuts and herbs.

All young infants have a certain amount of adenoid and tonsil tissue. It takes the place of the salivary glands until mastication becomes established, at about the eighteenth month. After that the tonsils and adenoids gradually disappear, unless they are diseased, in which case they continue to grow until puberty. Then they become smaller but they remain diseased. It is seldom that a child outgrows diseased tonsils. One thing is certain, diseased tonsils are a menace to any child. Even in infancy they are harmful rather than useful and they should be dealt with at the earliest possible moment. That the tonsils are not essential even to nursing infants is proved by the fact that their removal is not followed by any discomfort.

Tonsil surgery was in a chaotic state until the old and discarded operation of tonsil enucleation was revived and modified. This has placed tonsil surgery upon a scientific and safe basis and has enabled us to combat successfully systematic infection from the tonsils. No doubt the old way of removing a portion of the tonsils did some good in reducing the area of infection, but it seldom effected a cure and often caused dangerous bleeding. Frequently it led to severe disturbance by sealing the outlet of infected crypts. No tonsil operation is complete unless every infectable pocket has been obliterated. In middle-aged persons not only should the tonsils be dissected out clean, but all diseased lymphoid tissue in the pharynx and upon the base of the tongue should be destroyed as well. Likewise the drainage of the nose should be improved if necessary, by surgical means.

The operation of tonsil enucleation is applicable at any age. Mishaps are extremely rare. My youngest patient was an infant of two years; my oldest a man of seventy-five years. In nursing infants it seems best not to remove the entire tonsils. The voice is not affected by removing the tonsils, providing the tonsil pillars are not injured. Madame Patti is one of the many noted singers whose tonsils have been removed. The tonsils and adenoids of children should never be operated upon without ether. Never chloroform. Novocaine anesthesia suffices for most adults.

164 West Seventy-third Street.

A CONSOLIDATED NURSING SERVICE.

By CREIGHTON BARKER, M.D.,

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Coincident with a keener appreciation of the value of the educational and preventive phases of public health work the trained nurse has become a more necessary part of all municipal health organizations. It is not to the credit of health officials to state that they were tardy in realizing the value of the public health nurse, but it is a fact, nevertheless. To the nurses themselves belongs the credit for first appreciating the great service that could be rendered by nurses visiting the homes of the indigent sick. By organizing themselves into visiting nurses' associations and securing their own funds they have in the past fifteen or twenty years laid the foundation for what is now conceded to be one of the most important of all public health activities. One of the earliest, and certainly the most active, of such associations is the Henry Street Settlement of New York City. Under the guidance of Miss Lillian D. Wald this organization has solved many of the visiting nurses' problems, and has an enviable record for many years of splendid service.

The charters of many cities still make it impossible for the health department to employ nurses. As recently as 1914 the health department of one of the most progressive cities in the Middle West, realizing the value of the trained nurse as a health agent, found that under the existing laws it could not employ nurses, and was forced to appoint and carry them on its payroll as sanitary inspectors. This state of affairs existed in a city that employed, and still does employ, four plumbing inspectors in its health department. Certainly modern ideas of disease prevention are slow in being accepted when one finds sewer gas receiving so much attention and no provision for nursing service.

But the old order changeth. With the advent of a group of trained public health officials who think for themselves, and are not bound by any archaic traditions, the value of the trained nurse is being fully appreciated. Such health officials desiring visiting nursing service are, however, confronted with a peculiar problem.

Nearly every city of any size has one or more visiting nurses' associations, supported by private philanthropy, and usually upon a sound financial basis. These associations have their traditions and ideals of service, the nurses on their rolls have in many instances been in the employ of the association since its beginning, and their strength, their minds, and in some cases their very souls, have been

given to make the name of the visiting nurses' association synonymous with charitable service of the highest type. To disband these existing organizations and transfer the nurses to the employ of the local health department would not only be impossible in most cases, because of sentimental reasons and traditions, but in every instance impracticable because of the expense involved. These nurses may, however, be placed under departmental direction.

The problem that then arises is to coordinate the activities of these various units into a workable organization under the direction of the health department. This, as a purely administrative problem, appears simple enough, but it is certain to be attended by a variety of difficulties. Personal and quasi-political objections are invariably encountered. The various organizations are unwilling to give up their established policies and independence of action, and occasionally a disgruntled subscriber will withdraw his support. In this regard, however, each community presents a peculiar problem, with a local means for solving it.

The great obstacle that stands in the way of combining the existing units into an efficient organization is the fact that usually each of the independent associations has a specialized function. That is, there will be a tuberculosis nursing association, a child welfare organization, a maternity nursing association, and frequently other groups organized for especial service in which some philanthropic person was interested or for which there existed a particular need.

To place these various organizations under the direction of the health department and allow them to continue their specialized function perpetuates a system involving a duplication of effort that is at once costly and inefficient. To state an example: A mother living in A Street has recently had a baby; in the tenement upstairs is a man suffering from tuberculosis, and awaiting a vacancy in the sanatorium; and across the hall is a schoolboy detained at home with tonsillitis. This house receives the services of three nurses from as many different organizations at the same time. The nurse from the maternity clinic attends the mother, the nurse from the association for the prevention of tuberculosis visits the man, and the school nurse attends the boy. This is not an overdrawn illustration, and not infrequently two nurses will make the greater part of their daily rounds together, visiting the same houses and often the same families. In addition to this costly duplication of service, the maternity nurse that visited the mother in A Street may not have another case in that locality, and will spend an hour or more getting to her next case, which is in Z Street.

Such a state of affairs is bound to appear to the unbiased observer as a gross waste of time and energy, and yet it is the situation that existed in Los Angeles and Dayton, and still does exist in a similar form in many other cities, including New York.

The logical solution of the problem is reached by the installation of a district nursing system. After a careful analysis of the nursing needs, and a consideration of the transportation facilities of the various areas, the city is divided into a number of districts. A nurse should be assigned to each of these districts, and it should be her duty to perform any and all nursing service required by the indigent residents of her district. The nurses should remain in the employ of the existing private agencies, and, so far as is possible, the desires of these organizations should be followed in assigning districts to nurses. The assigning of cases within the various districts should, however, be under the supervision of a director of nursing service employed by the department of health, and her office should serve as a clearing house for all visiting nurse service in the city.

The director of nursing service should be a woman of tact and possessing more than ordinary executive ability, for upon her will rest the responsibility for the success or failure of the consolidated system. She should be competent not only to direct and instruct the nurses, but to formulate policies, construct work programs, and, in conjunction with the health officer, map out and execute educational campaigns. Her subordinates, the district nurses, are in more intimate contact with the people than any other public health agent, and she can develop a wide and valuable influence, hence the choice of a person to fill this position should be wisely made.

There are specialists in public health nursing that will not agree with the plan herein set down. Some of them will object because, for some personal reason, they wish to see the present independent organizations continued. Others will object, with the contention that nursing service requires specialization. This reason is scarcely valid, however, for it is safe to assume that any nurse after completing the present-day course of training in a good hospital is competent to render any service that district nursing may demand. The objections to the plan are not real, and in cities where it has been tried out there has been found much to commend it in the economy of operation, definitized control, and increased service.

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THE RELATION OF CAPILLARY CALIBER TO NORMAL AND PATHOLOGICAL SENSATION AND FUNCTION.

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My object in presenting this paper is to ascertain, through criticism, the opinions of the profession, regarding the truth or fallacy of the theory presented. I realize very fully that I am offering something new, when looked at in the mass, and I shall probably make statements which are faulty, but it seems to me, nevertheless, that many points brought out must appeal, upon analysis, as being astoundingly evident.

In order to introduce the subject properly, I will state that this paper is based upon the theory that normal sensation and function demand a perfectly balanced capillary circulation, and that a nerve is a carrier of stimuli alone, and not an originator of either function or sensation. Contraction or dilatation of the capillary system of a given organ is back of its various physiological functions, and I believe, just so surely back of the pathological vagaries called disease.

Normal blood supply means perfect physiological functioning, without abnormal sensation, while capillary instability, either permanent or transient, spells pathological sensation instability.

I will state in order, ideas regarding a few of the common sensations which, to me, seem to prove the rôle of the capillary as the principal factor in their production.

The sneeze, which goes with a common cold, is the result of a perversion of sensation due to capillary dilatation in the turbinates and the septum, and immediate relief follows the local application of adrenalin, and consequent capillary contraction.

The variations in the sense of taste and smell, which accompany a common gold, are not due to nerve perversion, but to the inability of a congested mucous membrane to properly interpret a given stimulus, and the watery eye and the abnormal nasal secretion have back of them the dilated capillary.

Cough is an effort upon the part of nature to "scratch" by forcible air expulsion, a mucous membrane showing a perversion of sensation, because of capillary dilatation, and this sensation is as truly an itch as that found in an eczema or an urticaria, and is based upon the same causative factor.

Consider the part played by the dilated capillary as a function perverter in the photophobia which goes with a number of inflamed eye states. Headache and migraine are perversions of sensation due to over dilated or over contracted cerebral and meningeal capillaries. Tinnitus is a perversion or exaggeration of sound perception, due to either transient or permanent local capillary dilatation.

Every perversion of the special senses, outside of those due to anatomical anomalies or traumatic injury, has back of it a dilated or a contracted capillary. Pain of every character, outside of that due to actual nerve trauma, has as a concomitant, congestion or anemia of the painful part, and usually nothing has happened to the nerve, supplying the part, it simply acting as a conductor of the sensation induced by the abnormal blood supply.

Sensations of heat and cold are both influenced by the blood supply of the part tested, and a simple method of demonstrating this fact is to render a finger either bloodless or congested, by the use of a constrictor, and then note its inability to properly appreciate the different degrees of heat and cold to which it is subjected. This is especially true where the finger has been wrapped from tip to base with a narrow elastic bandage, and a constrictor applied to maintain the bloodlessness. The part so handled is especially slow to respond to sensations of heat or cold, or to a pin prick, and experiments convince me that many minor operations may be done with little pain upon fingers and toes rendered bloodless by the above method.

Everything that I can say in this article, has been said for years in the few words which give the classical symptoms of inflammation, *i.e.*, tumor et calor et rubor et dolor, but, as so often the case, we are deaf and blind to the simple and obvious.

All the sensations which precede and accompany the sexual act, from the blush of suggestion to the ejaculation of the semen, have the dilated capillary as a causative factor.

The tingling pain caused by capillary over dilatation consequent upon exposure to extreme cold is a familiar example to us all, and the numb, peaceful, painless death which intervenes when the exhausted capillary begins to contract, after prolonged exposure, gives a clinical picture of actual total anesthesia due to capillary contraction. A few of us have experienced the agonizing pain which accompanies the capillary dilatation which follows when half frozen hands or feet are subjected to a higher temperature.

It should be borne in mind that in the production of the various symptoms which go with the picture above, no change has taken place in the nerves supplying the parts. They have remained quiescent, and simply acted as conductors of sensation only.

The pains of caisson diseases, the "bends," will well illustrate the eccentric tissue reaction due to variations in the blood supply to the whole economy, when the capillaries endeavor to accommodate themselves to the excessive variations in atmospheric pressure.

The sensations which go with the manifestations of hunger, laughter, anger, fright, nausea, or sweating or any of the sensations to which mankind is subject, will eventually be proven to depend upon capillary caliber.

The white wheal and consequent bloodlessness and anesthesia which follow a hypodermic of distilled water into the tissues, well demonstrate the contracted capillary's antagonism to pain.

The peculiar degenerations and diseases of old age have, for ages, been unheeded orators, shouting at us to note the degeneration that must inevitably follow in all the tissues after age removes, together with its elasticity, the ability of a blood-vessel to properly respond to the physiological demands of a given organ, either in the matter of function, nutrition or protection.

Dyspnea, and its accompanying symptoms, is due to a dilitation of the lung capillary and a consequent compression of the air cell, the air hunger, blueness of face and extremities being consequent upon the fact that an insufficient air cell area is left, on account of capillary compression, to properly areate the blood brought to the lung from the economy.

A contracted lung capillary could produce symptoms of dyspnea for, while in the latter case, the air cell would be correspondingly dilated, the contracted capillary would not present sufficient blood carrying area to the dilated air cell, and air hunger would follow. The immediate relief that follows the hypodermic use of adrenalin, in the dyspnea of asthma, with the dilated lung capillary, is proof positive as to the pathologic state that exists.

I would state in parenthesis, that about eight years ago I tried to make the above statements regarding dyspnea in the columns of the *Journal of the A. M. A.*, but the editor refused me admission because he believed my article to be too theoretical, and three or four years later I was compelled to submit to seeing others receive credit for priority, regarding this and several other discoveries regarding adrenalin, which were discussed in the same article.

Among the statements made in the paper referred to was one which might well be embodied in the

present article. It is ancient history now, but I believe that when first written it was absolutely new, *i.e.*, "I wish to state that an over dose of adrenalin will produce symptoms similar to those which we see in fear, fainting, shock, profound anesthesia, epilepsy, etc.; *i.e.* pallor, tremor, sweating, prostration, vertigo, and spasm. It is possible that the symptoms enumerated above, when found in the diseased states mentioned, are due to a more or less sudden liberation of a surplus of the adrenal secretion."

The probabilities are that future investigation will show that normal, elastic blood supply to a part means normal functioning, and that a plethora or an anemia means, when transient, a perversion of function and when established, a pathologic state, and that the sneeze or cough or pain or photophobia or tinnitus or nausea or sweating, are simply jangles or sparks from our conducting wires, giving early warning of future faulty metabolism and later pathologic states.

The flow of all the secretion of the body, whether from duct or ductless gland, is normal so long as the blood supply to the gland is normal, and it becomes a pathological product, under the influence of prolonged capillary dilatation or contraction, and diseased states are produced, not only because of interference with the functioning of the gland itself, but because of conditions consequent upon the inability of dependent organs to properly metabolize and appropriate a secretion which is chemically lacking.

All the tissue changes which we observe in overgrowth or eccentric growth of normal structure, which eventually produce either benign or malignant tumors, have back of them an increased blood supply, while atrophy and necrosis and death follow obstruction to the blood supply of a part.

Capillary dilatation and the diapedesis of the corpuscle in inflammatory states are too well known to be commented upon, and I mention them only as another link in the chain of proof as to this state as a factor in over functioning.

It should not be hard to prove that the various results that have been obtained in the use of the numerous local anesthetics were due as much to "blood block as to nerve block."

I can see so much that I am actually able to put my finger on, in this matter of parallelism between blood supply and sensation and function, and so much that is hard to classify under the certain head of fact or theory, that I have been baffled at many points, but I feel sure that once you start thinking along this line, I shall not be alone in the matter.

When considering this subject, please put in a good portion of your meditative hours comparing the difference in the possibilities of tissue metabolism, in an individual of "blushing age," *i.e.*, the age of the elastic capillary, and one where years and consequent loss of capillary resiliency render blushing difficult or impossible.

All the diseases of old age can have back of them, the inelastic, incompetent capillary, and we shall surely find that old age means this and nothing else.

Take conditions as widely separated, apparently, as baldness and necrosis, as an erection and a rheumatic joint, as a cough and an urticaria, and consider the influence of physiological and pathological blood variations, in the production of both function and sensation, and you are astounded because of the bigness of the subject, and the ridiculous simplicity of the fundamental principle which underlies the whole matter, provided the author of this paper is on the right track.

The dilated capillary seems to go hand in hand with over functioning or overgrowth of a given part, even to the point of malignant growth production, while the contracted capillary seems to spell under functioning, atrophy, anesthesia, necrosis, and death.

That sensation and function both normal and pathologic are absolutely dependent upon capillary caliber, to me seems indubitable, but the blank wall which stands between me and the absolute rounding out of my argument is the gap that exists between capillary caliber variation and the terminal nerve filament.

To me, the unanswerable query is: "What has happened as a result of capillary dilatation or contraction which stimulates the nerve filament to record sensation, either normal or eccentric?" Does some change in function or sensation take place because of simple pressure or the lack of it, or do as yet unidentified components of the circulating blood produce variation in function or sensation by actually filtering through the capillary wall, as do the leucocytes in inflammatory states.

One point that should be borne in mind in the consideration of this subject is that in diseased states of the blood, as in the anemias, one would have to consider faulty blood chemistry as an added factor, along with capillary instability, as an influence in pathologic processes.

I shall very much appreciate hearing from any reader of this article, either in criticism or commendation, as I am anxious to compile ideas along the lines suggested, the major portion of which I have scarcely touched upon.

113 Big Horn Avenue.

OBITUARY OF JULIUS H. EICHBERG.*

By CHARLES D. AARON, Sc.D., M.D.,

DETROIT, MICHIGAN.

Julius H. Eichberg was born in Petersburg, Va., in 1859, and died in Cincinnati, Ohio, Nov. 1, 1916. In his early youth he studied in Germany, completing the course in the gymnasium. Thus was laid the foundation of the scientific attainments and exemplary scholarship which distinguished his later years.

In 1880 he was graduated from the Cincinnati College of Pharmacy, after having been associated in chemical laboratory work with the elder Fennel, a noted pharmacist of those days. Eichberg must have been a student of rare assiduity and talent, for he carried off honors and a gold medal at his graduation. In 1887, in recognition of his ability, he was appointed pharmacist of the City Hospital. He was not satisfied, however, with his educational equipment, despite public recognition and encour-

*Read at the seventeenth annual meeting of the American Therapeutic Society, New York, June 1 and 2, 1917.

agement. In 1891 he registered as a student in the Miami Medical College; four years later he became an interne at the City Hospital, and after a short service in that capacity went to Vienna to pursue special studies. Upon his return he engaged at once in the practice of his new and what was destined to be his life-long profession, and soon won the confidence of his patients and the respect of his colleagues.

It was natural for him that he should continue his helpful work as pharmacist in the capacity of Professor of Pharmacology in the College of Pharmacy, but he soon added to his academic labors those of Professor of Materia Medica and Therapeutics in the Ohio Miami College, now the University of Cincinnati. In the Cincinnati Hospital he took an unusually active part in the contagious diseases department. His students speak of him as one who "won a lasting place in their hearts," and the Medical and Surgical Staff of the Bethesda Hospital, of which he was a member, declare "His high medical attainments have always been recognized." They also pay a tribute to his "courteous, genial and modest personality." The faculty of the University of Cincinnati College of Medicine records that "he was one of its most loyal, farseeing, and honest members," and that "he was a man of rare scientific attainments and most modest demeanor"; and it asserts, what every one who was in professional touch with him will endorse, that "he possessed an intimate knowledge of pharmacy, chemistry, and medicine," such as made his death "an almost irreparable loss." While his associates respected him for his scrupulous and strictly scientific judgment, his patients esteemed him because of his transparent honesty and unswerving loyalty. He had rare acumen and diagnostic and therapeutic ability of a high order, and these he placed at the service not only of his patients but of his colleagues with a splendid liberality.

As a man and a friend he is gratefully remembered. His tender and sympathetic nature sweetened his manly character and held those who knew him best in genuine fellowship. He possessed an analytic mind which faced the problems of social and public life with the same penetration as that by which he solved the problems of his chosen science, and he devoted himself to every allotted task with the unflagging energy with which he carved his career to professional eminence and public affection.

In addition to being a thoroughly scientific man and an excellent physician, he was also a humanitarian. The needy had a good friend in him, and the memory of his personal influence and help lingers on in many hearts and lives. His was a life of many-sided usefulness, and the Cincinnati community will long cherish it as one of signal merit.

Pyocyaneus Meningitis in the Course of Tetanus.—Chauffard and Laroche report the case of a patient whose tetanus was improving under intensive serotherapy when a meningitis set in. The *B. pyocyaneus* was found in the spinal punctate, having doubtless been introduced by an unclean needle while injecting serum into the spine. The complication responded to urotropine treatment and patient recovered.—*La Presse Médicale.*

Therapeutic Hints.

Muscular Rheumatism.—The following formulæ, though not new, produce marked relief from pain in this condition:

℞ Olei gaultheriæ.
Olei gossypii seminis.
Linimenti saponis.
Tincturæ aconiti.
Tincturæ opii, aa.....cc. 20.0.
M. Sig.: Liniment.

℞ Tincturæ iodi.
Aquæ ammonii.
Chloroformi.
Tinctureæ aconiti, aa.....c.c. 30.0.
Linimenti saponis, q. s. ad.....c.c. 700.0.
M. Sig.: External use.

℞ Olei gaultheriæ.....c.c. 8.0.
Liquoris potassi.....c.c. 44.0.
Mucilaginis acaciæ.
Glycerini, aa.....c.c. 16.0.
Aquæ destillatæ, ad.....c.c. 250.0.

M. Sig.: One teaspoonful every three or four hours.—*Medical Fortnightly.*

Enemas.—The following formulæ for enemas may be used for different degrees of acute and chronic constipation:

℞ Ox gall.....gr. xx.
Glycerin .....℥j.
Starch water.....0j.

℞ Infusion senna compound.....℥viii.
Water, q. s. ad.....0j.

℞ Emulsion asafetida.....℥viii.
Powdered tragacanth.....℥iv.
Water, q. s. ad.....0j.

℞ Castor oil.....℥ij.
Gum arabic.....℥ss.
Water .....0j.

℞ Spts. turpentine.....℥ss.
Gum arabic.....℥ss.
Water .....0j.

℞ Glycerin .....℥ij.
Water .....0j.

℞ Magnesium sulphate.....℥ij.
Water .....0j.

Normal salt solution is the simplest and one of the most efficacious enemas; this, with the last two formulæ given, should be injected at a temperature of 102° Fahr.

Simple Means to Eradicate Flies.—A small quantity of oil of lavender (five cents' worth) mixed with the same amount of water and sprayed from a common glass atomizer in places where flies collect will drive them away. Sprayed around the dining room and on the table linen it refreshes the majority of people but is obnoxious to flies. Likewise geranium, mignonette, heliotrope, white clover, honeysuckle and hop blossom odors will remove these pests. A French scientist has stated that flies have an intense dislike for the color blue; rooms decorated in this color will help to keep them out. Another mixture helpful in their removal is one tablespoonful of cream, one of black pepper and one of brown sugar; put in a saucer, darken the room except one window and in that place the saucer. Burning pyrethum powder stupefies the flies, which must be swept up and burned.—*Merchants' Association of New York.*

Military Medicine.

LETTERS FROM AN M. M. R. C.

It is most advisable for the doctor expecting to join the ranks of the M. R. C. to take into serious consideration Bulletin VII of The Army Service School which gives general information for officers entering service in Medical Reserve Corps. You may likely be told at your academy of medicine or wherever else you have enrolled, that you need pay no attention to the necessities the Government has recommended you to provide yourself with. This is a mistake and the depressing advice was intended more for those men who intended buying or had already bought their mounted equipment from saddle cloth to horse shoes. The latter of course is quite unnecessary. An officer in a training camp is in no wise different from a private. The Government has no intention of furnishing him with a horse, even if it had the horses (which it has not). You may be told at the station where you enlist that you will be able to purchase the requisites at the quartermaster's at cost price. This at the present moment is an exaggeration which will lead to great personal discomfort.

The following is the list of articles required by General Orders No. 39 not optional:

Equipment A.—(*a*) 1 mosquito bar; (*b*) 1 basin, canvas; (*c*) 1 bedding roll; (*d*) 2 blankets; (*e*) 1 bucket, canvas.

To an officer coming to a training camp, the only absolute requisites are the bedding rolls (*c*) and the blankets (*d*). He may be able to buy the blankets from the Quartermaster Department of his post, but it is most unlikely that he can procure the bedding roll at the present time. The bedding roll is an absolute necessity. As soon as he is finished sleeping the bed clothes and pillow are rolled back so they occupy one-third of his cot. The barracks provided at these training camps are very dusty and if bedclothes and mattress were not protected by this bedding roll they would soon become filthy. The cost of a good canvas bedding roll is about $11. In travelling, the folding cot and chair are placed in the center of this roll. The other articles on this list are only essential to those men who have to sleep in tents. In all the encampments for the training of medical officers there are lavatories, so the buckets, basins, etc., are unnecessary and need not be procured till the time comes for them to be ordered away at the completion of their course.

Under the list of clothing is the following which is not optional: (*a*) 1 belt, waist; (*b*) 2 breeches; (*c*) 1 gloves; (*d*) 4 drawers, pair; (*e*) 2 laces, shoe, extra pair; (*f*) 2 shirts, flannel, O. D. (olive drab); (*h*) 2 shoes, marching pair; (*i*) 6 stockings, pair; (*j*) 1 tag, identification; (*k*) 4 undershirts; (*l*) 1 clothing roll; (*m*) 1 cot; (*n*) 1 lantern; (*o*) 1 locker-trunk; (*p*) 1 slicker.

Starting at the top—the belt has to be of regulation material (an O. D. woven cord cloth). These can always be procured at the quartermaster's for a few cents. Leather belts are not permitted. When it comes to breeches 3 pairs khaki are better than 2 pairs. You will find that they get very dirty and will have one pair in the wash every week. Any other variety of cloth except khaki is not used in training camp. This really applies to your entire dress uniform. It will practically be of no use to you after you arrive in training camp. You are not permitted to wear it except in travelling. It is really foolish for a man who is considering dollars and cents to go to the outlay of an expensive uniform. The inexpensive khaki is not only quite proper but is better suited to conditions. The Quartermaster is usually out of the sizes you wish both in breeches and coat or blouse as it is called. You can always procure these at the Post Canteen however, at an advanced price. A pair of breeches that can be bought for a little over $2 at the Quartermaster's will cost you $6.50 at the Post Canteen or army and navy supply stores found in most cities. Even this is much better than buying your outfit from an expensive tailor. Buying khaki uniforms at such places is money absolutely thrown away. Remember that they all have to suffer at the hands of indifferent washwomen. Both coat and trousers are needed by you as soon as you join your training camp. Gloves (*c*) are of no value to you in camp. Shirts (*f*) can be procured from your Quartermaster only occasionally in the size that you require. Provide yourself with at least two before you come into camp. If you can buy them at the Quartermaster's they will cost you only $2. If not found there you can always get them at the Post Canteen for $4.50. When it comes to shoes (*h*) you will find that the ordinary shoes that you are accustomed to wear, are quite unsuitable for marching. The regulation shoe when it can be procured at the Quartermaster's will cost you $2.11. The chances are that you will find none of your size at this source. Again you can always get them at the Post Canteen, and the shoe will cost you $6.50. It is most advisable to get your shoes hob nailed. It will keep you from slipping and make your drills and hikes much easier. The proper care of the feet is a most essential thing in this life of intensive physical training. The Quartermaster can always furnish you with a cot, also a mattress and pillow if you so desire. It is best to buy these things on your arrival at the post. Incidentally it might be well here to mention that all these things must be cash purchases. Credit is not given the new enlisted man, and under this heading the M. R. C. man comes. A portable small electric light (*n*) is a good thing to have. Often thunderstorms will put the electric lights of your barrack out of commission and getting your bed and self ready in the dark is not much fun. It is doubtful whether you can procure a locker or trunk (*o*) from the Quartermaster. The same varying degree in price exists and you can buy a good one at the Post Canteen for $12. This trunk has to be of regulation size and color. It occupies a certain space at the foot of your cot; in the same way in transit, the baggage car or ambulance accommodates a certain number of a certain size. They do not care for odd sizes and shapes. Most trunk houses will know what the regulation trunk is. The last on this list is the rain coat (*p*). Anything will do to bring with you. By keeping a sharp eye open on the Quartermaster Department you will sooner or later get the proper thing.

The toilet articles mentioned among those required are all necessary and should be with you when you arrive. It would be well to remember some talcum powder for your feet and some sooth-

ing ointment for pruritus ani. The remaining articles on the list will not be needed at once in training camp and can best be purchased from the Quartermaster when the time comes that you need them.

Do not buy cheap puttees. Imitation pigskin will part after the first tough drill. In the same way do not buy a cheap service hat—the cap worn with dress uniform will never be worn by you here. Do not go to fancy light shades of pearl gray or green felt. Take the regulation brown and be prepared to pay $6 for it.

To the casual reader of this rather dry account of needed expenditures by one becoming an officer of the Medical Reserve, the question must have already arisen, "how is it that the Government Quartermaster is short of these necessities, yet the Post Canteen is well provided?" It is a question I cannot answer. I am rather inclined to the belief that the Quartermaster Department is not always out of the supplies that it claims it is out of, that a full stock of everything is on hand but is held in readiness to provide for the wants of the new private recruits who enter the army practically naked and bare. An officer is always supposed to furnish his own uniform. At the present time there is no vital reason why they should assist the officer of the M. R. C. at their own inconvenience, to procure their outfit at cost prices. The attitude of the regular army at the present moment toward all reserve corps men is comparable to the toleration of the fox terrier for the family cat. There is a natural rankle in the breast of the man who has been in the service fifteen years before the grade of major was reached, against the M. R. C. who obtained his rank of major from Washington last month, and I doubt if this feeling will ever be entirely overcome.

TUBERCULOUS SUSPECTS IN THE FRENCH ARMY.

SINCE laboratory tests and physical examinations seem inadequate to detect the presence of pretuberculosis and the incipient stage of the disease, some authorities advocate a dependence upon the rational signs of evening fever and tachycardia in addition to others somewhat less significant, such as unmotivated cough and loss of weight and appetite. This point of view is found among certain sanatorium practitioners and it will be of interest to compare it with the conclusions of military practitioners who have to evacuate from the ranks soldiers who probably are about to develop the disease or are already attacked. Where there is selection to be practised among hundreds of men certain pseudotuberculoses confuse the subject, and practical criteria are in urgent demand. In an article by Professor Sergent abstracted in the *Revue de médecine et de chirurgie pratiques* for July 25, the statement is made that 50 per cent. of suspects are able to remain among the effective troops. Either they have or do not have the disease, but even when they have it it is as a rule not an incipient but an extinct or stationary type of the disease. Among the spurious suspects we find tuberculophobes and malingerers, dyspeptics, and psychasthenics and subjects with old intranasal and bronchial lesions.

A pulmonary tuberculosis in earlier evolution is most commonly suspicious through the presence of emaciation, weakness, anemia, dyspepsia, and fever. The physician, as a rule, is overinclined to suspect the presence of early progressive tuberculosis and is deceived by the malingerer, the poorly nourished man, and even the old rachitic subject. Some in these classes will very likely die of tubercle at some period more or less remote. The flabbiness and weakness of the hypotonic subject and psychasthenic may deceive the unwary. Anemia and dyspepsia prevail extensively under the most varied conditions, and some of these subjects may have slight rises in evening temperature, due occasionally to chronic appendicitis. "Suspicious bronchitis" is a term in common clinical usage and is often of intranasal or intrapharyngeal origin. One must never forget that among these bronchitics there may occur cardiac and nephritic subjects.

In the suspect who coughs one must always investigate thoroughly the state of the upper air and food passages. During the present war French authors have again and again called attention to false tuberculosis of intranasal origin. Trench life is especially calculated to cause a respiratory syndrome. This is a tracheobronchitis accompanied by sweating feet and a stopped nose. In not one case has this affection passed into tuberculosis. Then there is the secondary bronchitis from gassing. Of 300 of such cases Sergent has not seen a single one of supervention of tuberculosis. The terms pseudotuberculosis and tuberculous suspect, he says, do not reflect much credit on the profession and should be done away with.

Neurasthenia in Soldiers of the Home Forces.—A report of this condition and its effects has been made to the Medical Research Committee by F. W. Burton-Fanning and published in a recent issue of *The Lancet* (June 16). The term neurasthenia he uses in its widest sense to include disorders of the nervous system which are believed to have no organic basis. The fact of the frequency with which neurasthenia underlies patients' maladies in civil practice and the unawareness of either them or their doctors of the true explanation of the symptoms even while the patients are at work hampers diagnosis. Fanning was therefore not prepared for the astounding prevalence of neurasthenia in the occupants of beds in a military hospital. The country, he considers, is suffering an enormous loss of man power on this account, aside from the great expense, the occupation of beds by these men, and the moral and physical deterioration of the patient. Numbers of his patients have spent far more time in hospitals and convalescent homes than with their units. To a large extent he believes these losses could be prevented.

During ten months Fanning had charge of a number of medical beds in the First Eastern General Hospital, Cambridge, which had carried from time to time between 120 to 180. Into these beds 2,240 patients were admitted during his service, of whom 640 came in convoys from overseas and the remaining 1,600 were from Home Forces. Out of the last number he found 509 to be suffering from neurasthenia and to be free from any organic dis-

ease, averaging about one-third of the admissions into medical wards from Home Forces from neurasthenia. A large proportion of them realized that they were of a nervous temperament, and that this constituted their disability. A larger number were more or less ready to admit that they were nervous, but had not connected their supposed malady with this nervousness. The remainder of the patients were unwilling to believe that their symptoms were not caused by disease of an organ, and they would not allow that their nerves had troubled them. With a few exceptions, they were sure of their unfitness for military service and did not conceal their resentment at being called up.

Fanning gives a picture of the neurasthenic from boyhood on, showing the existence always of a nervous temperament. The patient is often an only son with bad parental training. Later trials have not been met philosophically, and the mind is constantly occupied with disquieting thoughts. The nervous system becomes overwrought and oversensitive, and thus the working of the whole economy is deranged. A very small proportion of these patients had enlisted voluntarily. Before the date of compulsory service there was seen in this hospital nothing to compare with the recent outbreak of neurasthenia. Their heart and soul are not in their service, they dislike the work, and find their companions uncongenial.

While the symptoms are never confined to any one region, weakness, prostration, a feeling of exhaustion, or sudden collapse are invariable, and Fanning states that our minds must be at peace if we are to possess energy and *joie de vivre*. This these neurasthenics lack. Rheumatism is the most common avowed cause of disability, especially acute rheumatism. However, disquietude of mind is by far the most common cause of headache and backache. When complaint of the limbs is made it will often be found that the subjects of these painful limbs have long been of neurotic temperament, and the trial of a long march concentrates their attention on their limbs and increases their so-called rheumatism. Gastritis is another complaint particularly affected by these patients. The heart, according to Fanning, is the seat of some sensations in all neurasthenics, whatever may be the main complaint. Practically every other organ may receive its share of attention as a seat of trouble for these neurasthenic men.

In discussing means of prevention, Fanning considers that in general the prevention of neurasthenia comes within the sphere of education. The atmosphere of the English public school seems to be one means to prevent neurasthenia. Sedentary occupations seem to have a tendency to increase the condition. Recruits would show fewer breakdowns if they could be better classified and gradually got on full drill. It is everything with these men to establish self confidence. Again when the case comes to court, the physician should be able to make a proper diagnosis of the case and thus assure the patient of the safety of his condition and administer sufficient reassurance to aid in recovery.

The treatment resolves itself into an attempt to remove from the patient's mind whatever is the disturbing influence. The patient's confidence must first be gained by the physician; a careful physical examination should be made, with explanation of supposed symptoms. Occupation is much better than rest, and Fanning had the men put to marches as soon as they were able.

He does not consider that real fighters can ever be made of the majority of these neurasthenics, although a small proportion may return for service. The neurasthenic cannot be fired with the spirit required in attack or with the willingness to make the supreme sacrifice. But he concludes that there should be plenty of work at home or behind the line of which they are quite capable and which, after a little treatment perhaps, they would perform efficiently.

Casualty Surgeons Wanted.—The Council of National Defense, through the general medical board has sent a letter to the heads of various hospital staffs asking them to submit the names of surgeons on their staffs who are specializing in brain surgery or who are casualty surgeons of large experience.

Surgeon General Amends Rules Governing Physical Examinations.—The Surgeon General of the Army has amended the regulations governing physical examinations of men called by the local boards so as to authorize the acceptance of men 61 inches high, weighing not less than 110 pounds; 62 inches, same weight; 63 inches, not less than 112 pounds. The Surgeon General also authorizes the acceptance of men 64 inches high and over if less than standard weight, provided under weight is due to temporary causes, and can, in the opinion of the medical examiner, be reasonably explained.

Sanitary Conditions at Camps to be Investigated.—An announcement from the Surgeon General's Office states that Colonel H. C. Fisher has left Washington for a sanitary inspection of the cantonments in the southeastern department, including the States of North Carolina, South Carolina, Alabama, Mississippi, Tennessee, Louisiana, and Arkansas. The plan is to have general sanitary inspectors attached to the Surgeon General's Office who shall make careful inspections of all cantonments in order that he may know at first hand the actual conditions and take timely steps to remedy any defects in sanitation.

Hookworm Among Troops.—Discovery of hookworm infection in forty-seven out of seventy-five militia recently mobilized for war service and suspected of shirking duty, has caused the Public Health Service authorities to recommend prompt examination of all units of the National Guard and National Army at present organized, especially those from the warmer parts of the country. This discovery of hookworm was made by Dr. C. Wardell Stiles of the Public Health Service at a Government reservation in connection with certain experimental work that was being carried on.

School for Training Crippled and Blind.—New York is to have a Red Cross Institute for the purpose of teaching crippled and blind men to be self-supporting. Jeremiah Milbank has contributed $50,000 for the promotion of this philanthropy and Dr. Edward Devine, director of the New York School of Philanthropy, has sailed for France to study the methods of teaching the crippled and blind that are now being used in the reeducational schools of that country.

Another Hospital Raided by German Airmen.—A cablegram to the Associated Press describes an infamous night raid made by German airmen on the hospital at Vadelaincourt. Five bombs were deliberately dropped on the buildings. Two of these did serious damage, one falling on a shed occupied by wounded soldiers and the other on a dressing station. One man nurse, one woman nurse, and ten wounded men were killed in the hospital proper. At the same time four bombs were dropped on the Evacuation Hospital, killing eighteen men nurses and wounding forty-nine. At about the same time a German aviator attacked the hospital at Chateau Mont Hairons. The bomb exploded in a ward filled with wounded men, killing one of them. Ten wounded soldiers were killed on the same evening at Berupt by a German shell. Proof of premeditation on the part of the German authorities in making these attacks was furnished by a photograph found on a German aviator brought down at Dead Man Hill. The photograph represented the Vadelaincourt Hospital, with the red cross sign indicated clearly.

Recruiting Nurses for Emergency Service.—Members of the Mayor's Committee of Women on National Defense of New York are urging young women to adopt nursing as a profession. They are sending out large numbers of letters setting forth the advantages and requirements of this profession to recent graduates of high and private schools. It is hoped in this way to get young recruits who can be trained to fill the emergency at home while the graduate and registered nurses are serving with the armies abroad.

The Need of Specialized Surgery to Meet the Physical Disasters of War.—The Surgeon General has authorized the following statement in justification of the formation of the highly specialized surgical units, as surgery of the brain, surgery of the ear, nose, and throat, and surgery of the mouth. This highly specialized work lends to the department of general surgery, of general medicine, and of neurology a refinement and precision of diagnosis which in many problems is the essential forerunner of satisfying medicinal and operative therapeutic results. The vital necessity of ophthalmoscopic examination by the ophthalmologist in the work of the brain surgeon; the need of prompt release by the brain surgeon of increased intracranial pressure to save eyesight; the value of expert examination of the ears by trained otologist in the elucidation of the problems of neurology and cerebral surgery; the need of search by the expert rhinologist and oral surgeon for foci of infection in the accessory sinuses; the tonsillar tissues and the dental areas, are so well known that it is useless to elaborate the catalogue or further emphasize the facts. For years this type of specialized and expert work has been at the disposal of the practice of medicine in civil life; for the first time in history it has become an integral part of the practice of military medicine and surgery. Such specialized surgery may proceed along three lines:

1. Immediate service, or what is ordinarily known as first aid, to be given at the first dressing station. Time is of vital importance in dealing with many head injuries, involving lesions of its special organs, notably of the eye, and many eyes have been saved which otherwise would have been lost where it has been possible to act at once. As to the accuracy of this statement, all eye surgeons who have been at the front will testify.

2. Later service in the base hospital where all operative procedures of these types of special surgery can be brought into deliberate action. The triumphs of oral surgery in particular are matters of common knowledge and of scientific record, and the same is true of the procedures of cerebral surgery and of those of the eye and ear.

3. Final service in special hospitals devoted to reconstruction and reeducation. In such hospitals the work of the department of the surgery of the head will find and has found one of its widest and most important fields of action, not only in individual work but in the work devoted to those who must be trained for special duties in these regards.

Red Cross Appropriations.—The American Red Cross announces that its war council has appropriated $100,000 for medical research work in France. This action followed a report from Major Grayson M. P. Murphy containing the following: "An extraordinary opportunity presents itself here for medical research work. We have, serving with various American units, some of the ablest doctors and surgeons in the United States. Many of these men are already conducting courses of investigation which if carried to successful conclusions will result in the discovery of treatments and methods of operation which will be of great use not only in this war but, possibly, for years afterwards. To carry on their work they need certain special equipment. At present, equipment and personnel can not be obtained through ordinary Government sources without delay, which makes this source of supply quite impracticable."

Columbia War Hospital No. 1.—Columbia Hospital, New York City, which was accepted as a war hospital by the Government some time ago, was designated as United States Army General Hospital No. 1 in army orders published. It will be one of a series of big hospitals where serious cases requiring long treatment will be taken.

Rockefeller Foundation Increases Gifts to War Relief Work.—Announcement has been made that besides applying the income from the $100,000,000 given the Foundation by John D. Rockefeller to war relief work, the principal will be drawn upon this year to the extent of $10,000,000. Already appropriations aggregating $6,426,872 have been made from this draft upon the Foundation's investments. They include $5,000,000 given the Red Cross, $340,000 for work about the training camps for American soldiers, $402,500 for medical research in the mobile hospital in France, to the National Committee on Mental Hygiene, and to the Rockefeller Institute for Medical Research. A fund of $300,000 was also set aside to build and equip the hospital, under the control of Dr. Carrel, to teach new methods of war surgery. A number of relief associations have also received large sums.

Judge Robert S. Lovett has resigned as chairman on cooperation of the Red Cross by reason of his appointment by President Wilson to membership on the war industries board. Mr. C. A. Coffin has been appointed to succeed Judge Lovett.

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THE THREATENING MEDICAL FAMINE.

THE Mayor's Committee on Hospital and Medical Facilities states that unless the War Department speedily announces a program for such disposition of drafted hospital interns and medical students as will meet the needs of the army and of the civil population an appeal will be made to Congress for appropriate legislation. The urgency of the situation has again been brought to the notice of President Wilson and Secretary Baker, and it is hoped that an executive order to relieve the situation will be issued soon.

The contention of the Provost Marshal General that the draft would not make serious inroads on the medical schools is refuted by returns received by the committee directly from twenty medical colleges. The following figures, showing the percentage of medical students drafted and accepted under the first call, have been given out by Dr. S. S. Goldwater, chairman of the committee: University of Nebraska, 34; University of Cincinnati, 32; Western Reserve University, 31; Atlanta Medical College, 17; Hahnemann Medical College, Chicago, 22; University of Wisconsin, 20; Columbia University, 30; University and Bellevue Hospital Medical College, 22; Cornell University, 21; University of Virginia, 9; New York Homeopathic Medical College, 33; Syracuse University, 29; Medical College of South Carolina, 18; University of Michigan, 23; Jefferson Medical College, 22; Marquette University, 20. In some instances these figures refer to the graduating class only; in other instances they include the total student body.

But this is not all. The hospitals are suffering acutely through the drafting of their interns. The Mayor's Committee publishes letters from the Johns Hopkins Hospital, the Mary Immaculate Hospital, Jamaica, L. I., the University of Wisconsin, and several of the hospitals in Chicago, all testifying to the crippling of their work by the loss of their house doctors. Men needed on the farms and in workshops are exempted, although a shortage in these branches of industry could be made up at very short notice. A physician, however, takes five or six years in the making, and if 25 to 30 per cent. of the students and hospital interns are taken in the first draft, and as many more in each subsequent one, the medical famine will soon be acute, and when it comes it will be irremediable.

POST GONORRHEAL NEUROSES.

THE recently published work on gonorrhea by Carle is said to contain a novel chapter on this subject, an abstract of it being found in the *Revue de médecine et de chirurgie pratiques* for July 25. The mechanism of these cases is not always the same but there is always the neuropathic predisposition and the possibility of cure by rest, change of scene or occupation, or marriage. The morale of the patient may be profoundly upset, so that he may give up his occupation or take some other radical step. Suicide sometimes results. Whatever treatment is used doubtless cures by suggestion in part. The patient is usually distressed by one or two particular symptoms, such as the expressed morning drop or by subjective sensations. He often believes he has a stricture when none is present. The best treatment, in as far as it helps by suggestion is scientifically wrong. Thus while experts no longer give copaiba, as being both inert and irritating, this medication is often welcome to the patient who may think it good for his kidneys. In other words it is well to cater to the empirical and the popular. Patients have always used balsamics and have at least believed that they were benefited thereby. Even in the absence of stricture it may be well to allow the patient to believe the contrary and then pass the cold sound. If the urethra is the seat of paresthesiæ it may be well to instill a little cocaine. If the patient wants injections even although the discharge comes from the lacunæ of the urethra beyond their reach, let him have them.

As for the constitutional treatment our opportunities are equally great. The patient no doubt benefits in the two fold way from a remedy like strychnine. Bromides do harm and the cold douche is not a good suggestive remedy nor in fact is anything of a shock nature. These patients are to be regarded as pseudoneurasthenics and it is a great blunder to condemn them to a rest and isolation cure when they need diversion. Left to themselves on a farm they become introspective to the last degree. After a brief interval of change from their routine their morale is best assured by a return to their regular activities. As they have often been dieting themselves with painful precision it is well to have them return to liberal regimen. The practice of the physician to insist on a rigid and literal carrying out of orders had best be slurred over for these patients are naturally contrary and impatient. While these affections are by no means imaginary it is difficult to make an absolute diagnosis. Some one or more organs are at fault, perhaps not in the genital sphere at all—for example there may be a demonstrable disorder of the stomach, or instead of a disturbance of some organ the entire trouble may be traceable to marital in-

compatibility. In other words in the worst of these cases the gonorrhea only serves to focus a general malady.

THE THERAPEUTIC USES OF GARLIC.

JUST at the time of the outbreak of the present war the Allies had been pretty well schooled to the belief, through the success of the German pharmaceutical houses, that the synthetic compounds were the all-powerful remedies in their therapeutic action on the commonly encountered diseases of today. The vegetable compounds bade fair to disappear from the white light of popular medical favor.

Now all is changing. For the past three years the American pharmaceutical houses have cleverly taken up the manufacture of some of these synthetic drugs, and produced good ones. However, the temporary scarcity of some and the lack even yet of others together with the increased price of all, have caused a sense of general dissatisfaction among the members of the medical profession. A realization, too, of the ignominiousness of our former dependence upon the German patented chemicals has awakened a desire for a return to nature's products when possible. Thus are the vegetable drugs again coming into their own. Among these garlic, *Allium sativum*, seems to be swinging into therapeutic favor. It comes with no surprise, for garlic is one of the oldest of the vegetable drugs and long-tried in the hands of both the profession and the laity. While its popularity with physicians declined in favor of the newer treatments, old women in out-of-the-way villages have gone quietly on applying the juice of garlic and onions in the home treatment of whooping cough, typhoid fever, pneumonias, and diphtheria with marked success.

Probably few vegetable remedies have been credited with a wider range of therapeutic value. William Charles Minchin writing in the *Medical Press and Circular* for June 13, 1917, gives the results of years of special study of the therapeutic action of oil of garlic. This oil is composed of allyl sulphide with volatile terpenes, and would appear to be Nature's antiseptic for internal use, destroying many pathogenic germs within the body, and being at the same time harmless to the tissues. In this respect it seems to differ from every other known antiseptic of any great value. Its germicidal power outside the body, compared with that of carbolic acid or other toxic substance, does not seem to be very great, but the body tissues may be saturated with oil of garlic for a considerable period of time, even continually, without injury to them. The oil appears to be so volatile that it may be beneficially used by inhalation in pulmonary conditions; and when applied locally to any part of the skin, it readily penetrates to the deepest tissues in the region of the application, reaching even the bones, and finds its way into the blood current so that its odor can be detected in the breath in from ten to fifteen minutes after the application to the skin. According to Minchin, it destroys the germs of many infectious diseases, as typhus, typhoid, and diphtheria. When typhus or typhoid fever has become established in the body, he recommends the use of one dram of succus allii sativi every four to six hours, in beef tea or with syrup. In typhoid, if given early, he says it has a definite abortive action, but is beneficial at any stage of the disease.

In diphtheria garlic is to be applied with but little dilution. It is necessary to keep it in the mouth constantly for several hours so that it may act as a local application to the throat and surrounding tissues. The exact amount used is not so important as is the constant application of it to the tissues where it is needed. The simplest way, Minchin says, is to have the patient keep a clove of garlic in the mouth and occasionally crush it between the teeth, thus expressing the juice. This may be kept up indefinitely. In three or four hours, from one to two ounces may be used in this way. At the expiration of this time, one not infrequently finds that all membrane has been removed from the tonsils, and the temperature has fallen even to normal. This treatment is also beneficial, according to Minchin, in those cases which have been too late for serum to be of use. A continuation of this method of treatment carries on the beneficial action and while one or two ounces a day is sufficient, an overdose cannot be taken. The patient suffering from diphtheria neither smells nor tastes garlic, but merely finds it hot.

In the treatment of whooping cough Minchin has found garlic to be most efficacious. In the cases of adults an inhalation of the fresh succus allii sativi, rapidly relieves the distressing symptoms. It must be used, however, continuously from three to five hours for two or three days in order to produce the best results. In the case of infants and young children 20 minims to half a dram of the juice of the garlic taken internally every four hours in a little syrup gives speedy relief in the early stages. The author lays special emphasis upon the beneficial effects of garlic in the treatment of tuberculosis, and he quotes the results obtained by the staff of the Metropolitan Hospital, New York, in the treatment of 1082 cases of tuberculosis according to fifty-six different methods, out of which garlic gave the best results.

These are only a few of the conditions in which Minchin says garlic has been used with strikingly beneficial results; it has been recommended as a stimulating expectorant, anthelmintic, and antispasmodic, and as an effective detergent of foul ulcers and sloughing wounds—indeed so nearly a panacea does it seem to be that one's scepticism is necessarily aroused. Nevertheless it is worthy of a trial, and perhaps if its virtues should prove to be real some pharmaceutical chemist may devise a method, in the interests of the bystander, of suppressing the odor without weakening the therapeutic efficacy.

One interesting observation is alluded to by Minchin, who says that some years ago the health officer of Croatia ventured the opinion that the well-

known longevity of the non-combatant portion of Bulgaria's population was due to their ingestion of large quantities of garlic, and not, as Metchnikoff assumed, to their use of sour milk and its products. Against this, however, is the fact that other alliophagists, who know not the Bulgarian bacillus, Spaniards for example, attain to no unusual length of years.

Relation of Industrial Unrest to Alcohol

Industrial unrest which exists to a greater or lesser extent in all parts of the world is of especially serious import in the present crisis, and anything tending to abate it must be welcomed. In the *Lancet* for July 28, 1917, A. F. Stanley Kent has a paper in which he points out the connection between industrial fatigue and alcohol, and incidentally the relation of industrial unrest to alcohol. Industrial fatigue is brought about by the conditions of labor, long hours of monotonous work, frequently performed in unhygienic and uninteresting environment. The workers are often underfed while their ambitions and aspirations have been so blunted that they frequently more nearly resemble mere machines than human beings. Moreover, this is not all with which the factory worker has to contend. His home is in too many instances so squalid and wretched that he has nothing to look forward to but a dreary round of tiresome labor. Industrial fatigue is therefore apt to culminate in a feeling of utter helplessness and hopelessness. The human machine, in order to work harmoniously and efficiently, must have suitable surroundings. In America and in Canada the fact has been recognized, and by many employers every effort has been made to insure to the worker satisfactory home and factory conditions. In many cases, to the honor of mankind be it said, this has been done as much on the grounds of humanity as because such a policy pays. Consequently, it may be said that a good deal of the industrial unrest, which is a menace to the well-being of European nations and, in a lesser degree, to the countries on this side of the Atlantic, is largely due to the conditions under which so much industry is carried on. The conditions of labor induce industrial fatigue, which induce physical discomfort. The discomfort can be diminished by drink, and therefore the worker drinks. Because the effect is transitory the dose will be repeated again and again, and industrial alcoholism will be established. Industrial alcoholism aggravates industrial unrest, caused, in the first instance, by industrial fatigue. Therefore, as industrial fatigue and industrial unrest are related as cause and effect, the remedy lies in lessening industrial fatigue. For example, the hours of labor can be shortened, for the result of so doing is beneficial to output. Housing conditions should be improved, and factory environment bettered so that the worker should not be deprived of all pleasure in life. The true cure for alcoholism, industrial fatigue, and unrest is the provision of decent surroundings in the factory and in the home, adequate wages, leisure, and relaxation. By such means ambition will be stirred and the worker will soon regard himself as an important unit in the scheme of life, and one whose self-respect and usefulness must not be impaired by drink.

Gonorrheal Meningitis.

It has doubtless occurred to more than one military surgeon that some of the alleged cases of cerebrospinal meningitis in young soldiers could have been due to the gonococcus, especially if the patient had a urethral discharge at the time. The close resemblance which obtains between the meningococcus and gonococcus lends some plausibility to the view that under certain unknown conditions the latter which sometimes does attack the meninges can behave like the former. Such cases are really examples of gonococcus sepsis with exclusive meningeal localization, and are of the same type as typhomeningitis. While cerebrospinal meningitis is sometimes preceded by a bacteriemia, it is usually held to be propagated directly from the rhinopharynx to the encephalon. In a case reported by Blind and Ricard in the *Paris Médical* the diagnosis was made from the presence of the gonococcus in urethral pus and by the meningeal syndrome. The mild type of the disease and the evident absence of cerebrospinal meningitis in the *entourage*, together with the absence of the meningococcus in the lumbar punctate would combine to exclude the more serious disease from consideration. In this case but one spinal puncture was made and there were no cultures nor was an examination made of the secretions of the rhinopharynx. It would seem that in alleged cases of gonococcus meningitis—believed to be a rare affection—all possible control tests should be practised. The bacteriological test of the punctate should be made by an expert owing to the great resemblance between the two forms of coccus. The autonomy of gonococcus meningitis is as yet by no means rigidly proven, and cerebrospinal meningitis may occur in a benign form. In the reported case the withdrawal of but 5 c.c. of spinal fluid caused a notable clinical improvement, and during the present war many cases have yielded to repeated puncture without other treatment.

Complying with the Law.

Some weeks ago we referred to a law passed by the Legislature last winter forbidding the advertising of any agents employed in the treatment of venereal diseases. This law, we have since learned, was introduced at the request of a society having for its aim the suppression of so-called social evils. It was apparently drawn up by someone unused to lawmaking and uninstructed in medicine, and being the work of an amateur was necessarily faulty. It puts an end not only to quack advertisements in the lay press but to reputable announcements of legitimate remedies in the medical press. As in all such cases, the quacks against whom the law is aimed, being ready in the hope of great gain to take big risks, will somehow manage to make themselves and their wares known to the gullible public, while the medical journal, loyally obeying the law, however exacting and unjust its workings out may be, eliminates all forbidden advertisements from its pages. The law goes into effect on September 1, and to-day being September 1, no "advertisement concerning a venereal disease, lost manhood, lost vitality, impotency, sexual weakness, seminal emissions, varicocele, self-abuse, or excessive sexual indulgence" will be found in our pages.

News of the Week.

An Open American University Club in Paris.—For the benefit of college men who are likely to be with the American forces in France, headquarters are to be opened in Paris of the American University Union of Europe, formed recently in consultation with the Washington Government, the American Red Cross, and the International Army and Navy Young Men's Christian Association, by the joint action of about twenty American universities and colleges. It is expected that eventually the union will include most American colleges. The Institute of Technology Club of Paris will merge with the University Union, which will take a hotel or group of hotels to provide at a moderate cost "a home with the privilege of a club for American college men and their friends passing through Paris or on furlough," as the committee explains. The organization also will "aid institutions, parents, or friends in securing information and assist the men in every possible way." The general purpose of the union is "to meet the needs of American university and college men who are in Europe for military or other service in the cause of the Allies."

Sale of Absinthe Forbidden.—Beginning September 1, the sale of absinthe is to be prohibited by the New York City Board of Health, according to the provisions of a section of the Sanitary Code. It will be a violation of the code to "have, sell or offer for sale the alcoholic beverage known as absinthe, a manufactured product containing wormwood, or absinthe, an ingredient which may render the beverage injurious to health."

Death of Two German Chemists.—A press dispatch from Copenhagen, dated August 26, announces that Dr. Eduard Buchner, professor of chemistry at the University of Wurzburg, who was in service at the front as major, has died of wounds. His death followed shortly that of Adolf von Baeyer. Thus two of the greatest German chemists died within a week. Professor Buchner, whose specialty was the chemistry of fermentation, received the Nobel prize for chemistry in 1907.

Commission to Study French Birth Rate.—A commission of American specialists is to make a study of the conditions responsible for the alarming decrease in the birth rate of France during the past year of the war. Dr. J. Morris Slemmons, professor of obstetrics in the Yale Medical School and Mrs. Slemmons, formerly a Johns Hopkins nurse, are on their way to France where they will cooperate with the infant welfare unit now working in France, which is headed by Dr. William Palmer Lucas, professor of Pediatrics of the University of California, and financed by Mrs. William Lowell Putnam of Boston. They intend to review the work already done by French experts and to further elaborate it.

Infant Blindness Increases in England and Wales.—According to the report of the Local Government Board published in the British Medical Journal for the year 1916, there were 7,615 cases of ophthalmia neonatorum in England and Wales, a rate of 9.56 per 1,000 births as compared with 6,806 cases for 1915. Quite contrary to conditions in France, pulmonary and other forms of tuberculosis are showing a decided decrease, the rate being 3.03 per 1,000 population in 1912 as against 2.10 in 1916.

Anthrax Traced to China.—A report of the Local Government Board of England and Wales on an inquiry into several cases of anthrax shows that most of these were cases of external anthrax. In nearly every instance the lesion was situated in the shaving area of the face and neck. Suspicion fell on the shaving brush, and in some of the cheaper brushes examined living anthrax bacilli were found. All the brushes showing anthrax bacilli were traced to a single factory in which Chinese horsehair was used which had not been disinfected before being manufactured into brushes. An investigation is being carried on to determine the precise conditions which must be fulfilled to insure the sterilization of the horsehair.

Ship Carrying Plague Arrives in London.—The British steamship *Mahana*, which arrived at Gravesend from Bombay, on August 13, had on board three convalescent cases of bubonic plague. These were removed to a hospital. During the voyage the vessel had nine cases on board, six of which died. Another case has occurred since the arrival of the ship.

Home for Convalescents.—The Valeria Home for Convalescents, which was founded by the late Jacob Langeloth, has purchased a tract of 550 acres midway between Peekskill and Oscawanna in Westchester County, which will be used as a site for a new building.

Health Department Plans to Treat Drug Habitués.—The New York Health Department announces that plans have been perfected whereby drug addicts wishing to be cured of their habit can apply to the Department of Health for treatment in one of the city institutions.

St. Mary's Free Hospital of New York has received a bequest of $2,000 under the will of the late Mrs. Laura F. Hearn.

Dr. Charles G. Carleton of Lawrence, Mass., was given a testimonial dinner on August 15, in honor of having completed fifty years in the practice of medicine

Infant Mortality in American Cities.—The New York Milk Committee has just made public the results of a study of the infant mortality rates of the cities of the United States. It finds that the death rate among babies in the large cities has been reduced 11 per cent. since 1910. This reduction has been made among cities of 100,000 population and over. The reduction in cities between 50,000 and 100,000 population is only 2 per cent., while those under 50,000 show an increase of 5 pe cent. The general reduction is 9 per cent. The survey covers 150 of the largest cities in the United States, representing one-fourth of the population in the United States. They report 670,000 living births and 68,000 deaths under one year of age for the year 1916, making an infant mortality rate of 100 baby deaths for each 1,000 births reported. The lowest infant death rate in the country, in 1916, among the cities of 100,000 or over, was in Portland, Ore., with a record of only 55 baby deaths per 1,000 births. Fall River, Mass., is the highest with a rate of 163. In the second group, those with a population of 50,000 to 100,000, Hoboken, N. J., has the low rate of 77 against San

Antonio, Tex., which has the high rate of 246. In the cities with populations of 50,000 and under, Brookline, Mass., leads with the remarkably low rate of 32 against Austin, Tex., whose rate was 182. Though there has been a general decrease for all the cities since 1910, the reports for 1916 compared with those of 1915 are not so encouraging In cities of over 100,000 population there was an increase in the number of baby deaths in 1916 of 1,573. Thirteen cities in this group showed reductions, New York City leading with a decrease of 1,048, and infant mortality rate of 93, the lowest in the history of the city. Other cities in this group showing decreases were Philadelphia with a rate of 101; New Orleans, 96; Washington, 105; Jersey City, 102; Rochester, 82; St. Paul, 67; Denver, 84; Portland, 55; Oakland, 65; Scranton, 85; Grand Rapids, 115; Spokane, 57; Albany, 96. The cities in this group showing decreases were: Chicago, 111; St. Louis, 89; Boston, 104; Cleveland, 107; Baltimore, 118; Pittsburgh, 111; Detroit, 112; Buffalo, 113; San Francisco, 79, etc. Of the cities under 50,000 there was an increase of 755 deaths under one year compared with 1915.

The Medical Society of the Missouri Valley will hold its Thirteenth Annual Meeting at Lincoln, Neb., September 20 and 21, 1917, under the presidency of Dr. C. R. Woodson of St. Joseph, Mo.

The National Exposition of Chemical Industries will hold its third annual exhibition at the Grand Central Palace, New York, during the week of September 24, 1917. The exposition will cover all the ramifications of the chemical industry.

The American Association of Orificial Surgeons will hold its annual meeting in Chicago on September 27-29, under the presidency of Dr. B. A. Bullock.

Publicity for City Welfare Work.—The recently organized Committee on Public Welfare has formulated plans for demonstrating to the public through literature, lectures, motion pictures, and tours, an outline of the work performed in the Departments of Charities, Correction, Street Cleaning, Licenses, Health, Police, Tenement Houses, and others. This committee is a non-political and non-sectarian organization which plans to demonstrate how city wards are treated. The committee wishes to focus attention on welfare work in order to insure a continuance and an extension of humanitarian work.

Diet Kitchen Saves Babies.—The New York Diet Kitchen Association has had under its direct care thus far this summer 3,425 babies. Of this number only three have died.

Obituary Notes.—Dr. John Strother Pedleton, for many years a practitioner of medicine at Marion, Va., died in Richmond, on Aug. 14, aged 78 years. He was a graduate of the Medical College of Virginia, in 1861, served as a surgeon in the Confederate Army during the Civil War, and was for many years surgeon at the State prison.

Dr. Harvin C. Moore of Houston, Tex., died following an operation for appendicitis, on August 5, aged 42 years. He was a graduate of Tulane University Medical School in 1898, and an ex-president of the Harris County Medical Society.

Dr. Isadore H. Chicoine, a graduate of Harvard University Medical School in 1894, and for many years a member of the staff of the Lynn Hospital, died after a long illness in that city, on August 8, aged 52 years.

Dr. Homer H. Warner, a graduate of the University of Vermont in 1859, was found dead in his home in New York City on August 10. Dr. Warner was 80 years of age, and served as a surgeon with the First Massachusetts Cavalry during the Civil War.

Dr. John F. Axtell of Newton, N. H., aged 61 years, a graduate of the University of Vermont Medical College, in 1881, died August 10.

Dr. Burdette Ramsey died at Paint Lick, Ky., about August 1. He was a graduate of the University of Louisville in 1853, and at the time of his death was the oldest man in Gerrard County, being 93 years of age.

Dr. William L. Jerkins, a graduate of the Atlanta Medical College in 1903, aged 45 years, died at his home in Moultrie, Ga., on August 8.

Dr. William H. Robertson, a graduate of the Northwestern University Medical School, in 1909, died at his home in Mattoon, Ill., on Aug. 16, aged 43 years.

Dr. Samuel Meyer, a graduate of the University of Louisville Medical School, in 1891, died in the Jewish Hospital of Louisville, Ky., at the age of 48 years.

Dr. John W. Clerke, a graduate of the University of Toronto Faculty of Medicine, in 1884, died at his home in Green Cove Springs, Fla., on Aug. 12, aged 72 years.

Dr. J. Morgan Sims, formerly a practitioner of Collinsville, Ill., died in the Alton State Hospital, on Aug. 16, aged 49 years. Dr. Sims was a graduate of the University of Louisville, Ky., in 1890. He was formerly superintendent of the Arkansas State Asylum for the Insane at Little Rock and later surgeon at the Kentucky Asylum at Lakewood, Ky. More recently he was coroner of Madison County, Ill.

Dr. Kate S. Kavanaugh, a graduate of the Hahnemann Medical College Hospital of Chicago, in 1891, died at her home in Minneapolis, on Aug. 16, aged 63. She practised for a number of years in Menomonie, Wis.

Dr. Thomas E. Callahan of Saguache, a graduate of the Baltimore Medical College, in 1889, died suddenly on Aug. 10.

Dr. Frank S. Bates of Colorado Springs was killed at Fort Riley, Kan., by a stroke of lightning, on Aug. 7. He had just received a commission in the regular army and was to go to Nevada, Mo.

Correspondence

OUR LONDON LETTER.

(From Our Regular Correspondent.)

MEDICAL REEXAMINATIONS OF RECRUITS—DIMINUTION IN DRUNKENNESS—ELECTION AT THE ROYAL COLLEGE OF SURGEONS.

London, July 28, 1917.

A select committee is investigating the conduct of medical examinations under the Review of Exemptions Act. Surgeon-General Bedford, deputy director of medical services, giving evidence, said the constitution of the traveling medical boards is not

quite the same as that of the ordinary recruiting medical boards; in the former local doctors sometimes assisted and he gave a detailed description of the examination. A recruit had to run the gauntlet of the members of the board, each of whom examined him for a particular form of disability. Then all expressed their opinion, and the president decided what the recruit's category should be; he produced an army instruction that the president must himself classify all recruits. It was remarked that this was a new instruction but General Bedford said it was issued last February. No recruit could be finally rejected without the president's approval. During the year ending on June 30 last, thirty-three boards in the Northern command examined 500,000 recruits. He disagreed with the statement that a successful stock broker with a weak heart might drop down dead in the army through exertion; "that is the very thing he would not do if he were properly classed." He would be put into C3, where he would be as safe as in a church. These are the very men we want—of good education, not fit to go into A1 or B1 but valuable in a hundred offices. He handed in a copy of instructions issued by him in September on the subject of the large number of men found permanently unfit by some boards, emphasizing that every man so found is once and for all lost to military service and cannot again be called upon for reexamination or employed in any military capacity. In future boards must retain every man who is of any potential use whatever in the army. This was decided after a meeting at the war office at which the high percentage of rejections was referred to. General Jenkins, deputy director of medical services, issued an instruction to medical boards in his command to the effect that the large number of rejections left it to be inferred that many men were classed as B3 or C3, or even totally rejected who might be usefully employed on medical service and that there were many duties in the army which incurred no greater fatigue than fell to the same men in civil life; it is to be hoped if the recruiting board realize this there will be a considerable reduction in the proportion of rejected recruits.

Sir Ryland Adkins has given to the select committee on re-examinations his experience as a member of an appeal tribunal. He felt in an increasing degree that the arrangements were not working out in a way to give them the assistance they would like. They were faced with remarkable contrasts in the classification of persons coming before the tribunals. Persons rejected in 1915 and again last year were coming forward classed as A or B1, with a record from private doctors making it very difficult to discern their duty. He thought the difficulty had increased since the passing of the act authorizing reexaminations. We know the doctors are men of ability, devotion, courtesy and good will, but we know too they are understaffed, overworked, and often, if not always, obliged to do things too quickly; so the results at which they arrive are wanting in weight. As to complaints made about tearing up certificates, though the last to believe them all, one could not sit on a tribunal week after week and listen to these stories without concluding there must be something at the base of them. He suggested as one remedy the appointment of certain doctors of 50 years of age or upwards to sit upon the board one or two days a week. Presidents of boards should not have power to overrule the other members. Replying to Sir Godfrey Baring he admitted complaints of examinations being too rapid and cursory had not been without some foundation and men who had been lowered in category should have a right to have their cases reconsidered. How that would be managed during the exigencies of war he did not pretend to show.

Convictions for drunkenness in the scheduled areas of Great Britain continue to decline. In the last four years (to end of May) the total numbers were: 1914—males, 140,133; females, 36,533; total, 176,671. In 1915 the weekly average was 2,517, or a total of 130,884, giving a total of 80,288 in 1916, 1,544; in 1917, 1,039, with a total of but 54,028.

At the Royal College of Surgeons Sir George Henry Makins has been elected president for the ensuing collegiate year. Messrs. Vincent Warren Low and W. Harrison Cripps were reelected and James Sherran elected members of council; Arthur Keith, Jonathan Hutchinson, Tindall Lister, P. Pasley Cole, E. Kenneth Martin and Hildred Carhill, Hunterian professors; F. Gymer Parsons and William Wright, Orris and Gale lecturers; S. G. Shattock, E. Wilson, lecturer. In conjunction with the college of physicians, a number of diplomas in public health were conferred.

OUR LETTER FROM PARIS.

AMERICAN AMBULANCE CEASES TO EXIST—TRENCH FOOT.

(From Our Regular Correspondent.)

PARIS, July 23, 1917.

THE work of the American Ambulance at Neuilly was officially terminated yesterday at half past five o'clock, by Mr. Laurence V. Benét, president of the ambulance committee. At the same time, M. Justin Godart, Under Secretary of State for the Service de Santé, relinquished all claim to the American Ambulance and offered sincere thanks on behalf of the French Government for the magnificent institution, which, he declared, had been a monument to the love and sympathy which the American people bore France during the long months that their Government remained neutral.

No service could have been more touching and impressive, and there were but few dry eyes in the gathering of some two or three hundred Americans when M. Godart, after declaring that the American Ambulance no longer existed, turned to "Monsieur le President" of the dissolved committee and kissed him on both cheeks, the expression in France always of the sincerest thanks.

On Aug. 14, 1914, the Lycée Pasteur was placed at the disposal of the committee forming the American Ambulance, and it was the first hospital formation to commence work in France. It started with 150 beds, which were steadily increased to 600. It organized its own ambulance corps, numbering 170 men and nearly 100 machines.

M. Justin Godart, in closing his remarks, asked that the American flag that had been placed over the entrance door of the hospital on August 14, at its opening, be presented to the Minister of War,

to be placed among the trophies as a lasting remembrance of the great work that had been accomplished. The American Red Cross has taken over the hospital, which will still devote its work to the wounded of the French Army. Dr. de Boucher leaves the hospital entirely, his place being taken by Major Geo. P. Peed of the U. S. Army, and it now becomes American Army Hospital No. 1. The Red Cross has established its headquarters in one of those beautiful monumental buildings facing the Place de la Concorde, where it is now organized, and is rapidly taking over all of the American formations of every kind and sort of benevolent work.

The additional information constantly being brought before us regarding "trench foot" is adding grave importance to this new disease, and forms a warning to army surgeons to treat each and every case with serious attention. In a communication presented to the Société Chirurgicale on July 4, 1917, Dr. Bertrand reported 511 cases coming under his observation, with 60 cases of gangrene, or 12 per cent. Of the 60 cases, 40 were the humid variety and 35 of the cases were bilateral; one case had humid gangrene of the left foot and dry gangrene of the toes of the right foot; one had humid gangrene of the left and dry of the right, and a third case was of the humid variety of both feet and dry of the forefingers of both hands. Five of the cases were attacked with tetanus from ten to twelve days after the onset of the disease, despite antitetanic injections given at the first-aid station and repeated every six days in the base hospital; all 5 suffered a rapid development of the disease and early death.

In two of the 60 cases true gaseous gangrene developed, and one of the patients died. Eighteen of the cases showed gas, but it proved to be due to the mortifying processes in the diseased members. One case succumbed to septicemia. The gravity of the invasion caused the author to amputate in 18 cases, of which 8 were bilateral, and all of these patients survived.

The conclusions of his observations are important, viz., that of the 60 grave cases noted, that which marked their gravity was not the original infection, but what supervened. He therefore esteems it of the highest importance methodically to disinfect the parts affected in a truly surgical manner, as is the rule in all cases menaced by gangrenous invasion, which in these cases should be presupposed.

146 Avenue des Champs Elysées.

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 16, 1917.

1. Industrial Benzol Poisoning in Massachusetts. Thomas F. Harrington.
2. Essential Shrinking in the Conjunctiva Occurring in Acute and Chronic Pemphigus, with a Report of Two Cases. Frank A. Conlan.
3. Intestinal Adhesions and Peritoneal Bands in Epilepsy. Heiman Caro.
4. A Comparative Study of Feeble-Mindedness and Psychopathic Personality Among Offenders in Court. V. V. Anderson.
5. Hearing Tests from a Practical Standpoint. George L. Richards.
6. An Epidemic of Dysentery at the Boston State Hospital. Mary Elizabeth Morse.

1. Industrial Benzol Poisoning in Massachusetts.—Thomas F. Harrington reports five cases of benzol poisoning that have been brought to the attention of the Medical Deputy Commissioner of Labor. Of these five cases, three were fatal. All occurred in the auto tire-building department of a rubber establishment in which benzol cement was used. A chemical examination of the benzol used by these men showed that it was free from impurities and of the pure benzol grade. The use of benzol as a cement in the tire-building process was discontinued and naphtha substituted. No further cases of benzol poisoning have occurred since this change was made.

3. Intestinal Ahesions and Peritoneal Bands in Epilepsy.—Heiman Carso first discusses the causes of chronic intestinal stasis; second, the etiological factors present in the causation of intestinal adhesions; third, inasmuch as these bands and adhesions give some evidence of colonic stasis, he makes a comparison of the incidence of this pathological condition as found in the necropsy protocols of an institution for epileptics and in those of a general hospital. A review of 775 necropsy protocols of patients in a general hospital shows a total of 142 intestinal adhesions, while 280 necropsies on epileptics gave a total of 50 showing intestinal adhesions of various kinds. In other words the incidence of intestinal adhesions and peritoneal bands is relatively the same in both series. The writer concludes that, in view of our present knowledge, the constipation of epileptics cannot be said to be due to factors differing far from those usually considered in the colonic stasis of other patients. Intestinal adhesions and peritoneal bands are due to congenital defects, acute inflammatory processes, or mechanical causes. It seems probable that intestinal anomalies are not present in any greater proportion in epileptics than in other persons, and in the last analysis we are still combating, from a therapeutic viewpoint, a general condition, and not one particular lesion or pathological phase of metabolism.

6. An Epidemic of Dysentery at the Boston State Hospital, due to a Member of the Paratyphoid Enteritis Group.—Mary Elizabeth Morse presents a study with reference to the leucocytic reaction in cases of the above mentioned type, some of which received therapeutic doses of vaccine. Comparisons were made with a series of persons who had neither the disease nor the prophylactic treatment, and with those who had had the disease from nine to seventeen months previously. The leucocytic reaction consisted of a hyperleucocytosis, with the highest count rising but little above twice that of the normal count for the individual and a relative increase in polynuclears at one or more periods during the following twenty-four hours after the administration of the vaccine. The reaction was more marked after the second or third inoculation than after the first as a rule. In comparing the leucocytic reaction with the clinical history in these cases the following conclusions have been made: 1. The stronger normal individuals show more reaction to subcutaneous injections of vaccine than the weaker ones who have had the disease and recurrent attacks. 2. The leucocytic reaction for the individual is more marked during or immediately after an attack of the disease and diminishes with recurrent attacks. This corresponds to the clinical observation that the resistance of the individual to the disease is lessened by a previous attack. 3. The fact that there may be a polymorphonuclear reaction to a subcutaneous injection of vaccine, coincident with the cessation of diarrhea, would indicate the use of vaccine therapy. In the few cases in which the treatment has been given, the results have been favorable for a recovery from the attack. A series of agglutination reactions was also done, using the sera of recovered and vaccinated patients and of immunized rabbits with the epidemic strains and also with several representatives of the paratyphoid enteritis group, one or more tests being made on 78 persons.

New York Medical Journal.

August 18, 1917.

1. Relation of the Syndrome of Anaphylaxis to the Vegetative Nervous System. Francis M. Pottenger.
2. Erysipelas as a Complication of Mastoiditis. Harold Hays.

3. Nasal Obstruction a Factor in the Production of Disease. W. Peyre Porcher.
4. The Scope and Utility of Fluoroscopy. I. Seth Hirsch.
5. Refractive Errors Causing Retardation in School. William Merle Carhart.
6. A Paraffin Wax Treatment for Burns. Charles A. Behney.
7. Etiology and Treatment of Bronchial Asthma. Mark J. Gottlieb.
8. Race Retrogression. Robert H. MacNair.
9. A Case of Blindness and Focal Infection Due to Ethmoiditis; Cured. Harry Rodman.

2. Erysipelas as a Complication of Mastoiditis.—Harold Hays expresses the conviction that erysipelas cannot be considered either a contagious or a directly infectious disease. He concludes that the disease does not occur as frequently as is thought from the fact that there were only 17 cases in the New York Eye and Ear Infirmary from January, 1912, to January, 1916. During that time between three and four thousand patients were operated upon for mastoiditis, which brings the ratio down to less than four per thousand. It was found that these cases occurred sporadically and that there was no direct infection from one patient to another. Apparently the character of the organism found in the ear or mastoid cavity had no definite relation to the development of this complication. In his experience he is inclined to believe the disease occurs more frequently in females than in males because of the maceration of the hair at the time of operation. On account of his belief that infection arises from this source he advises having the hair thoroughly washed before any operation on the mastoid. In the majority of cases of erysipelas complicating mastoiditis the onset occurred on the second or third day after the operation, though in a number of instances it occurred later. From his experience in private cases Dr. Hays considers the prognosis extremely good provided the patient has proper care and attention to his mastoid wound and provided the erysipelas is properly treated. The writer has found it impossible to combat the disease locally and believes that by far the most important part of the treatment consists in increasing the patient's resistance. It is preferable not to give such drugs as antipyrin, acetanilid, etc., on account of their depressant action on the heart. Aspirin, to which is added a small dose of caffeine, is permissible. No specific vaccines or serums seem to be effective, but Hiss leucocytic extract is almost a specific for uncomplicated erysipelas, particularly when it is associated with ear diseases. The writer has used the commercial extract in his private cases with brilliant results. The theory on which the leucocyte extract is used is that it increases leucocytosis and by so doing greatly improves the patient's powers of resistance. Dr. Hays reports one instance in which citrated blood taken from a convalescent erysipelas patient apparently effected a cure in a severe case of erysipelas complicated with bronchopneumonia.

6. A Paraffin Wax Treatment for Burns.—Charles Augustus Behney relates his experience in the treatment of burns with a preparation of paraffin, wax, and resin which he believes is as good as ambrine and comparatively inexpensive. He applies the wax with a soft camel's hair brush or atomizer and then places a layer of the thinnest absorbent cotton obtainable over the wax. A second layer of the wax is applied so that it completely saturates the cotton and firmly seals down the margins of the dressing to the sound skin. For additional protection a heavy layer of raw cotton is placed over all. The best results are obtained by redressing every twenty-four hours. Applied in this way the dressing is comfortable and can be removed without pain. For a period of time there may be active suppuration beneath the dressing, but this need not cause alarm, since it soon subsides and does not cause sepsis. This dressing enables the patient to become ambulant earlier; lessens toxic absorption from burns involving large areas; promotes the separation of devitalized tissues, and minimizes the formation of scars and contractures. It should be applied as soon as possible for the first dressing and should be used for all subsequent dressings. The formula is:

Paraffin (M. P. 40 C).....80 per cent.
Beeswax (yellow).....10 per cent.
White resin (turpentine)..... 3 per cent.

7. Etiology and Treatment of Bronchial Asthma.—Mark J. Gottlieb states that 27 of the 37 cases of bronchial asthma which they have had under their care had distinct nasal factors which were corrected, and in addition autogenous vaccines were administered. Seven had two series of injections consisting of fifteen doses. Five have been free from symptoms for over four years, and nine had a return of their symptoms, but they have stated that their attacks were not as severe or so frequent as before treatment. Ten patients were not benefited. The author concludes that bronchial asthma has always an underlying anaphylaxis, though the cause of the anaphylaxis is not the same in every case. The anaphylaxis may be multiple. In the majority of cases there is a superadded infection. The nasal accessory sinuses are the most important avenue through which infection occurs. Bronchial asthma is curable if the etiological factors are found and dealt with accordingly.

Journal of the American Medical Association.

August 18, 1917.

1. The Relation of Gynecology to General Surgery, Past and Present. Howard W. Longyear.
2. Report of Studies Concerning Acute Lobar Pneumonia. Rufus Cole.
3. Dilated Duodenum with Special Reference to Chronic Duodenal Obstruction in Visceroptosis. Douglas Vander Hoff.
4. The Familial Tendency to Fat Incapacity in Infancy and Childhood. Thomas S. Southworth.
5. Cholecystotomy Versus Cholecystectomy. Miles F. Porter.
6. Observations on the Excretion of Dyes. Russell L. Cecil and Richard Weil.
7. An Apparatus for the Study of the Dissociation of Oxyhemo Globin. W. G. MacCallum.
8. Edebohls' Operation in Nephritis in Children. John Lovett Morse.
9. Occurrence of Tubercle Bacilli in Breast Milk of Tuberculous Women. Stanley L. Wang and Frederick Coonley.

1. The Relation of Gynecology to General Surgery.—Howard W. Longyear. (See MEDICAL RECORD, June 9, 1916, p. 1015.)

3. Dilated Duodenum, with Special Reference to Chronic Duodenal Obstruction in Visceroptosis.—Douglas Vander Hoff. See MEDICAL RECORD, June 9, 1917, p. 1013.)

4. The Familial Tendency to Fat Incapacity in Infancy and Childhood.—Thomas S. Southworth. (See MEDICAL RECORD, June 9, 1917, p. 1011.)

5. Cholecystotomy versus Cholecystectomy.—Miles F. Porter. (See MEDICAL RECORD, June 16, 1917, p. 1062.)

6. Observations on the Excretion of Dyes.—Russell L. Cecil and Richard Weil, in their studies on the excretion of dyes, observed that the dyes were excreted by external ulcers. This suggested the possibility that ulcers of the gastrointestinal tract might perhaps act in a similar fashion. They therefore studied gastric ulcers from this standpoint. Congo red was found in the stomach contents of a number of patients with gastric ulcer. In these cases it was usually present in very large amounts. In a number of cases of gastric carcinoma the same observation was made. On the other hand, there were some cases both of ulcer and of cancer which failed to give a reaction, while there were also occasional control cases in which neither ulcer nor cancer was present in which the stomach contents showed a small amount of the dye. In trying to account for the latter group they found that Congo red is excreted in large amounts in the bile, and that the reflux of bile into the stomach might present a severe complication in the utilization of the method as a gastric test. This fact led to a study of the excretion of dyes in relation to their excretion by the liver. Congo red is the only dye of which the excretion in the human bile has been directly investigated. It was found that injected into the blood the Congo red made its appearance in the bile in one-half hour, and continued to be excreted by that route for more than twelve hours. If dyes are to be used for the diagnosis of gastric conditions, it is essential to use such dyes as are not excreted by the bile. The method which the writers employed to determine whether dyes were excreted by the liver was to give an animal an intravenous injection, and then after two or three hours to aspirate the contents of the gallbladder. It was found that dyes could be divided into three classes in regard to their excretion by the liver. In the first group are the dyes which are excreted by the liver and are present in the bile. Among such dyes

may be mentioned, in addition to Congo red, neutral red, safranin, methylene blue, Biebrick scarlet, benzoazurin, and oxamin violet. The second group comprise the dyes which do not appear in the bile. Such are rosanalin, pyronin, trypan red, Orange G, eosin, indigocarmin, azur, and a number of others. The third group comprises those dyes which make their appearance in the bile occasionally, but not regularly, when injected in the routine amount of 0.5 c.c. of a 1 per cent. solution. Examples of this group are Bordeaux COV, Congo rubin, and azoblue. Further observations were also made on the effect upon the excretion of these dyes produced by first giving animals injections of phosphorized oil, which causes a marked fatty degeneration of the liver and an alteration in the degree of excretion. The results of these observations indicate the likelihood of finding some dye, the presence of which in the bile will always indicate a diseased process in the liver; as yet, however, this object has not been accomplished.

8. Edebohl's Operation in Nephritis in Children.—Dr. John Lovett Morse. (See MEDICAL RECORD, June 16, 1917, p. 1065.)

9. The Occurrence of Tubercle Bacilli in Breast Milk of Tuberculous Women.—Stanley L. Wang and Frederick Coonley have, during the past year, examined the breast milk of 28 tuberculous women at the Sea View Hospital, Staten Island, N. Y. The women had various types of tuberculosis and in various stages. The results of all the examinations were negative with one exception and that is considered questionable. Their observations indicate that tubercle bacilli are infrequently found in the breast milk of tuberculous women who have no mammary disease. The possibility of infection from such milk is probably slight, but it is very likely best to interdict nursing in every instance, because of the danger of infection through other avenues, the possibility of toxic substance in the milk, and the frequent bad effects of nursing on the mother.

The Lancet.

July 28, 1917.

1. Fatigue and Alcohol. A. F. Stanley Kent.
2. On the Fallacies of Relying Solely on Agglutination Tests for Diagnosis of Typhoid Fever in Antityphoid Inoculated Individuals. With Special Reference to the Use of Dreyer's Method. R. F. Garrow.
3. Some Practical Notes on the Technic of Condenser Testing in Nerve Injuries. Francis Hernaman-Johnson.
4. A Contribution to the Study of War Nephritis. F. C. Davies and R. P. Weldon.
5. An Extension Splint for the Ambulatory Treatment of Fractures of the Femur. N. B. Taylor.

1. Fatigue and Alcohol.—A. F. Stanley Kent in a recent address discusses the nature and causes of industrial fatigue, by which he means a diminished capacity for doing work, partly as a feeling of unfitness and being below par, and the relation of industrial fatigue to the taking of alcohol. A recent investigation of industrial fatigue shows that the reaction time of the abstainers is uniformly shorter than for those who take alcohol. The variations are also on a smaller scale, indicating that the effect of a day's work is less. Indeed, the average effect of a day's work in the alcoholics is five times as great as in the abstainers. He concludes that alcohol has little immediate effect upon the physical side of fatigue, whatever its ultimate effect may be. The amount of output is perhaps increased to a small extent for a short time, but the increase soon falls off and is replaced by a diminution. The influence of alcohol in the psychical side of fatigue is more profound. It leads immediately to a feeling of renewed vigor and increased strength. But here also the effect is transitory. Looked at from the other side, fatigue involves physical discomfort. The worker knows that this discomfort can be diminished by drink. Because the effect is transitory the dose will be repeated again and again, and industrial alcoholism will be established. Industrial alcoholism is a scientific problem and must be solved by attacking the cause, that is by improving the conditions that determine fatigue, by the provision of decent surroundings in the factory and in the home, adequate wages, leisure, and recreation.

2. On the Fallacies of Relying Solely on Agglutination Tests for Diagnosis of Typhoid Fever in Antityphoid Inoculated Individuals. With Special Reference to the Use of Dreyer's Method.—R. F. Garrow discusses this subject because of its great importance in military medicine. He believes that Glynn and Lowe, and Donaldson and Clark, diagnosed an unduly high number of cases as true typhoid among the enteric cases occurring in the Eastern Mediterranean. He believes that this can be explained by the fact that their cases were examined at a stage of their illness (late convalescence) when agglutination results are liable to be fallacious and that they even attached diagnostic significance to fluctuations which were possibly due to technical errors. The writer states that the result of these observers are sufficient to refute even the most modest interpretation of the claim that agglutination tests alone can be made to furnish a uniformly accurate diagnosis in cases examined during active infection. It cannot be too strongly insisted upon that agglutination tests by any method cannot be relied upon solely to furnish a diagnosis of enteric infections against which the patients have been inoculated. The official adoption of Dreyer's technic as a standard agglutination test in the Army, together with the teaching of the Oxford School of Pathology as to the diagnostic significance of an agglutinin fluctuation in an inoculated soldier would be disastrous to the enteric statistics of the Army.

4. A Contribution to te Study of "War Nephritis."—F. C. Davies and R. P. Weldon base their observations on 664 cases of "war nephritis" returned to a certain General Hospital from October, 1916, to March, 1917. During this period there were 173 medical and surgical autopsies, in 53 of which definite evidence of renal disease was obtained. Of the above 53 deaths, 26 occurred in patients diagnosed and under treatment for "war nephritis," giving a mortality for this disease in the period under consideration of 4 per cent. During the early part of this period cases of war nephritis were not numerous and were quite overshadowed by trench fever, while by March this latter disease had almost disappeared from the wards and war nephritis had largely taken its place. Many of these cases did not correspond to the published description of "trench nephritis;" some presented the clinical picture of bronchopneumonia, lobar pneumonia, or capillary bronchitis, whilst others were admitted with uremic coma, uremic convulsions, or uremic dyspnea without obvious edema of the head, trunk, or limbs. The fatal cases occurred without exception among the group simulating pulmonary disease and those admitted with uremia. The experience of the last winter shows that the disease has a much higher mortality than was suggested by the earlier published accounts. The autopsy findings in the fatal cases of war nephritis showed the kidneys nearly always enlarged and distinctly flabby. The capsule stripped fairly easy as a rule. The cut surface presented a cloudy appearance with eversion of the edges. The following features have been strikingly constant throughout the whole series: Degeneration of the epithelium of the convoluted tubules; absence of interstitial inflammatory changes; absence of glomular changes, except in seven cases that showed evidence of fibrosis, and absence of changes in the collecting tubules. In most of the cases the glomeruli were visible to the naked eye as minute granules. In contrast with the marked epithelial degeneration, the signs of interstitial inflammation have been singularly insignificant. A definite amount of fatty change of the tubular epithelium was present in every case examined. The evidence goes to show that one portion anl only one of the entire renal unit from glomerulus to pelvis bears the brunt of the disease, and this seems to eliminate the probability of a generalized bacterial infection of the kidneys, and equally to suggest that these same convoluted tubules are damaged in excreting a soluble poison, which may or may not be bacterial. Partial suppression of the urine is not infrequent in the early stages; later, however, a notable feature is the large quantity of urine secreted, even to three and one-half liters a day.

British Medical Journal.

July 28, 1917.

1. Tropical Medicine and Hygiene. Patrick Manson.
2. India and Medical Progress. R. McCarrison.

3. The Treatment of Scabies by Chlorine Gas. G. Herbert Clark and H. S. Raper.
4. Anaphylactic Shock After the Injection of Serum Intravenously. C. Adam Patrick.
5. Grave Diabetes Mellitus with Pulmonary Tuberculosis Following Mumps. F. B. Gilhespy and H. S. Holden.

3. The Treatment of Scabies by Chlorine Gas.—G. Herbert Clark and H. S. Raper have made an investigation as to the effect of "gassing" on scabies, about 60 cases of scabies in non-commissioned officers and men and 14 cases in officers have been treated by exposure to chlorine. The service gas helmet was worn by the men as a protection. The exposures were of five minutes duration and occurred on successive days. Usually four exposures were given but in some instances this number was exceeded. The patients were given a hot bath and wore ordinary hospital clothing. The concentration was between two and three parts of chlorine per thousand air. The number of exposures and the intervals between them were varied in order to find out the best conditions of treatment. Of the series of 60 non-commissioned officers and men not more than 25 per cent. were cured by this treatment. Of the 14 officers treated 11 were cured and three much improved. From experience with this group it seems that usually four exposures are sufficient, if given on the first, second, fifth and sixth days. The authors relate that numerous cases of scabies were occurring in a mounted section which was sleeping in temporary barracks. They were all passed through a considerable concentration of gas in a state of nudity, gas helmets being fastened about their necks with towels. The "gassing" was carried out in the sleeping quarters of the men, and all their clothing and bedding were widely opened and were treated by exposure to the chlorine fumes at the same time. The medical officers report that no case of scabies has occurred in this unit for two months that have elapsed since the gassing.

5. Grave Diabetes Mellitus with Pulmonary Tuberculosis Following Mumps.—F. B. Gilhespy and H. S. Holden report the case of a boy in the Royal Navy, 16½ years of age, who had an attack of mumps without any testicular or abdominal symptoms. On the third or fourth day of the disease his attention was called to the large amount of fluid he was drinking and he noticed that he was passing urine three or four times during the night which he had not been doing before. He developed marked symptoms of diabetes mellitus and later tuberculosis, dying five months after the attack of mumps. The point of interest in the necropsy findings aside from the extensive tuberculous condition was that sections of the head and body of the pancreas showed but little abnormality, while those of the tail showed, in addition to infiltration, hyaline degeneration of the islands of Langerhans. The affected islands were, however, rather scanty. The writers in commenting on this case say that abdominal symptoms have been but rarely described in mumps. In an epidemic of thirty-three cases, Edgecombe found that five of the subjects were affected with symptoms that pointed very definitely to an implication of the pancreas. Other writers have noticed the same train of symptoms occurring in the course of epidemics, and Morley Fletcher, in summing up their evidence, states that severe abdominal pain starts within a week of the onset of mumps, usually the fourth or fifth day, and is accompanied by vomiting and diarrhea. The same writer states that some cases of diabetes may date their origin from inflammatory changes brought about in the pancreas by an attack. Owing to the severe nervous strain imposed by the war it might naturally have been expected that diabetes, which has been experimentally shown to be associated with the chromaffin system would have become more frequent. From a careful analysis of the numbers of cases of diabetes treated at the Royal Naval Hospital, Plymouth, from January, 1911, to June, 1916, this expectation is justified. Out of 9,127 cases admitted to the hospital in 1911, 1912, 1913, there were five cases of diabetes, or 0.05 per cent.; whereas out of 7,968 cases admitted during 1914, 1915, and up to June, 1916, there were 22 cases of diabetes, or 0.27 per cent. Assuming that the navy has increased twofold during the latter period, the incidence of diabetes estimated on this basis has increased five-fold in the Plymouth Hospital.

La Presse Médicale.

July 5, 1917.

Bronchospirochetoses and Bronchomycoses.—Castellani writes on the simulation by these affections of pulmonary tuberculosis. On the Adriatic-Balkan front this was present in 3 per cent. of all tuberculous soldiers examined. The spirochetic form, known also as Castellani's bronchitis, was first discovered in Ceylon in 1905-1906; and during the subsequent decade the affection has been recognized in many parts of the globe. There appears to be but a single causal spirochete which shows much polymorphism. The clinical features have been freely described in recent literature. Another condition, a group infection, the bronchomycoses, is also well known. Unlike bronchospirochetoses, the number of exciting causes is very large, and these are usually divided into groups as follows: I. Monilia, oidium, saccharomyces, etc. II. Hemispora. III. Aspergillus, penicillium, mucor, etc. IV. Nocardia, streptothrix. V. Sporotrichum. Most of these pathogenic moulds have been known for many years. But three species are of such clinical significance as to be associated with disease-pictures. These are represented in bronchomoniliasis, bronchooidiosis and bronchohemisporosis. The two first named conditions may be described together. The old nomenclature and description of these moulds has been revised by the author after artificial cultivation on certain sugars, which acts as a check on a purely botanical classification. He has differentiated 21 forms of monilia and 4 of oidium. The clinical picture set up by all these varieties is identical. There are two forms, mild and malignant and it is the latter which can simulate tuberculosis closely. The patient becomes thin and weak and has evening temperatures. The sputum, mucopurulent, may contain blood. The physical signs of bronchoalveolitis may sometimes be recognized—dullness on percussion, crepitant rales. The evolution is a matter of months and years and the termination fatal. In Ceylon the coolies who work in the tea industry present the affection, as known under the popular name of tea factory cough. The diagnosis is readily made from sputum examination and culture. Iodides are of benefit but cannot cure the severe cases. Bronchohemisporosis, the third or rather second clinical type cannot be said to present anything characteristic although the hemispora can cause severe lesions in the skin. It also can set up a malignant pseudotuberculosis and is likewise amenable to iodine treatment.

La Presse Médicale.

July 19, 1917.

Transfusion of Citrated Blood.—Hédon traces this resource to the early labors of Arthus and of Sir A. E. Wright with oxalated blood. These go back to 1891. The principle may never have been tested in mankind for sodium citrate was eventually substituted for the oxalate. The antagonism between calcium and sodium citrate in respect to coagulation of the blood was demonstrated by Sabattani in 1900. Further than these citations the author does not enter into the evolution of his subject. His own labors are purely experimental and represent a continuation of the research of the authors quoted. There is no reference whatever to the clinic or to mankind. He concludes that blood rendered incoagulable by trisodium citrate is perfectly safe to use in animal transfusion after a copious hemorrhage and states that the animals can be completely restored. The technique is very simple. A vein of the donor is punctured and aspirated by means of a syringe and needle, the barrel of the former having been previously charged with citrate in solution. The solution is then thrown into a vein in the recipient animal. The blood and solution are first mixed by shaking the syringe or the mixture may be thrown into a graduated glass with the same object.

Causes of Error in Wassermann Tests and How to Avoid Them.—Telmon refers to the various attempts made in recent years to simplify the Wassermann technique. In part these have to do with the use of the natural complement of the blood in which the serum is not heated, while in the other method the complement is inactive or previously warmed guinea pig serum. Leredde and others are partisans of non-heated

serum. Heating, they say in destroying the natural complement may also unfavorably affect the syphilitic amboceptor so that it may be present in small quantity only or be very unstable The two kinds of serum practically represent different reagents and cause much discrepancy in miscellaneous findings. Unwarmed serum is said to be superior to warmed serum in an entire series of cases. But aside from this source of discrepancy those who work with one method claim that paradoxical behavior is common enough to induce scepticism as to the trustworthiness of the reaction in diagnosis. The role of the antigen is of course much less important than once was believed, i.e., various antigens give the same result. But in regard to the question of fresh serum one must ask "is there a possibility that serum could be too recent?" We perhaps have to deal with a notable excess of complement when a serum is used immediately. In a positive case the excess of complement could cause hemolysis and vitiate the test. In the author's experience the serum should be at least twenty-four hours old. It is not uncommon to get a negative reaction at first and a positive one later. Sera rich in specific amboceptors may of course neutralize the entire complement. but generally speaking, the injurious excess should be suppressed. The serum should be first tested for its richness in complement. This test is one of relative hemolysis. A serum which hemolyses in less than five minutes is too rich in complement and should be retested in from twelve to twenty-four hours. If seven minutes are required for hemolysis, the serum should be of proper "age". We can therefore understand why paradoxical finds can come about through the age of the serum. In regard to inactivation by heat the author asserts that the drawbacks of this method can be obviated by the prolonged application of low heat—say for twenty-four to thirty hours at 38° C. instead of thirty minutes exposure at 56° C.

El Siglo Médico.

July 14, 1917.

Renal Insufficiency and Hemoptysis.—Pasanis enumerates the conditions under which hemoptysis occurs—affections of the bronchi, lungs, heart, and vessels, infections, suppression of habitual hemorrhages, etc. If a patient consults us for hemoptysis we first examine him for pulmonary tuberculosis and other affections of the bronchi and lungs, and if no lesions are found, examine the heart, and look perhaps for evidences of a bloodstate like purpura. If we succeed in excluding all these possible sources of bleeding we should look into the state of the renal functions. A case is related of a man who was subject to considerable hemorrhages from the lungs, averaging 80 or 90 gm. at a time. These occurred without evidence of either predisposing or exciting causes. A routine examination of the urine was at first negative. The appearance of the patient suggested tuberculosis and it was anticipated that this would ultimately be the diagnosis. The continued absence of temperature rise with relatively slow pulse, however, militated against this view. The second diagnosis, hemophilia, was entirely against the evidence and was quickly renounced, as was the possibility of a mitral stenosis, although a *bruit de galoppe* was heard at times. One year before consultation, patient had had a febrile affection accompanied by dysuria which apparently persisted. Arteriosclerosis could be excluded, and the author began to assume that the patient had gone through a simple nephritis which had left the kidneys compromised. There was not the least trace of albumin in the urine in some of the tests, although at times the tests were positive. The diagnosis lay between a latent chronic nephritis and a mere functional insufficiency of the kidneys due to an acute nephritis which had complicated a fever—probably typhoid. As far as could be ascertained, and judging from the outcome of the case, the renal insufficiency, if present at all, was temporary and ended in resolution. A study of the great clinicians and pathologists since the time of Bright shows that nephritis may be the cause of hemoptysis, hematemesis, epistoxis, purpura, etc. In rare cases it seems able to determine an acute hemorrhagic diathesis. But these losses of blood need not be due to nephritis *per se*, for they could be explained by the associated hypertrophy of the heart, hypertension from other causes, angiosclerosis, etc. The patient was placed upon the regimen for chronic nephritis with calcium chloride internally as a hemostatic. Within several weeks all his symptoms had disappeared and he was beginning to gain weight. During the elapsed four years he had not suffered from the slightest indisposition, and his health is now splendid. From the nature of the cure the author assumes that the hemoptysis was of renal origin. Although he writes much about blood analyses and retention of chlorides and nitrogen it does not appear that any such researches were made in the present case. The sole evidence of renal insufficiency appears to have been the intermittent leakage of albumin.

Correspondenz-Blatt für Schweizer Aerzte.

July 7, 1917.

Are Thermos Bottles Suitable for Keeping Milk Warm?—Von Bergen states that the socalled thermos bottles have come into general use not only in outdoor life but in household economics, especially in keeping warm the baby's milk. There are communities in Switzerland where neither gas, alcohol, nor petroleum is used in the household, and in such these containers are almost indispensable. The author, however, discovered that milk thus preserved can curdle in from six to eight hours. He believed at first that this event was due to poor milk, but upon investigation found that the latter had been normal to standard when placed in the bottles. He next suspected that the latter had not been properly cleansed, but after thorough disinfection the milk still curdled. The change in the milk was found to be due to butyric acid fermentation. The whey was turbid and sweet to the taste. Cultures gave the butyric acid bacillus. This organism grows energetically in sterile milk which it can curdle completely in twenty-four hours. There are two forms, motile and nonmotile, and both cause free production of CO_2 in the course of transforming lactose into butyric acid. Ordinary boiling is not sufficient to destroy the spores. The full explanation of the phenomenon is probably as follows: the milk is supposed to be boiled before going into the bottle, but to destroy the spores of the butyric acid it is necessary to boil for some time. Again at Leysin, where the author lives, the altitude above sea level is 1,400 meters and milk boils at 93° C., so that even prolonged boiling might fail to destroy the spores. The bacillus is also an anaerobe, and in the dearth of oxygen finds a stimulus to growth. Growth occurs only between 16° and 40° C., and as the temperature in the bottle is as a rule about 60° C., we can understand why the butyric acid fermentation occurs only exceptionally. The remedy is to bottle hot after first having heated the bottle to prevent breakage.

Excess of Women Among Suicides.—Spinner of Zürich quotes Swiss statistics in connection with this contention. It is known that women have been more prone to use poisons than are men, with the exception of doctors and druggists, which fact may in part explain the greater frequency of female suicides in some countries. On the other hand, there is an increasing tendency today among men of all classes to use poisons for suicidal purposes so that other factors must be sought which can affect the sex ratio. But as far as Switzerland goes, men still show a numerical superiority, although in 1912-1913 the sex ratio was practically fifty-fifty. In 1906-1907 the rule was reversed, for then more Swiss women than men killed themselves. However, the author's research has shown that for some unknown reason poisoning with illuminating gas has never been included in Swiss figures. If these cases are incorporated the proportion of female suicides shows an increase. During the past decennium there have been 474 suicides in Switzerland, the men leading with 56.1 per cent. An intensive study of suicide seems never to have been made. We do not know how many people are fatally poisoned, for example, and cannot determine the frequency of suicidal poisoning. The question of motive requires agitation. A woman who dies from an abortifacient, for example—under what circumstances is she a suicide? Suicides during pregnancy and menstruation, are they accidental, motivated, or done quite irresponsibly?

Book Reviews.

PULMONARY TUBERCULOSIS, Its Diagnosis, Prevention, and Treatment. By W. M. CROFTON, M.D., Lecturer in Special Pathology, University College, Dublin; Visiting Physician Royal National Hospital for Consumption in Ireland. Price, $1.50. Philadelphia: P. Blakiston's Son & Co.

THIS volume of scarcely 120 pages contains quite a good deal of information on the vast subject of tuberculosis. In the chapter on Bacteriology, the various microorganisms usually met with in the secretions of the tuberculous lung are enumerated. The *Micrococcus catarrhalis* and streptococci are justly mentioned as the most frequent factors in mixed infection.

The chapters on Anatomy, Histology, and Physiology, contain a number of excellent diagrams illustrating the topograhpy of the chest. In these diagrams the author designates as commonest sites of the first signs of tuberculosis, the region about the upper internal angle of the scapula, and the internal portion of the clavicle. As far as the posterior situation is concerned, the reviewer is in accord, but he is not willing to substantiate the author's opinion concerning the most frequent site of the first signs of tuberculosis anteriorly, for the first signs of an apical tuberculosis are quite as if not more frequently found anteriorly, near the external portion of the clavicle.

In the chapter on Diagnosis of Acute Miliary Tuberculosis in Doubtful Cases, such for example as those where the tubercle bacillus cannot be found in the blood-stained sputum, the author recommends lung puncture to obtain the exudate. This to the mind of the reviewer is a somewhat drastic procedure and not without danger. To hasten the resolution of the lung, the author gives the patient one or two doses of 1 to 2 c.c. of theosinamine sodium salicylate subcutaneously. By this means, Dr. Crofton claims to produce rapid dissolution of the fibrinocellular exudate in unresolved pneumonias, and tubercle bacilli, if present, will be more easily released.

As prophylaxis, the author states that for eight years he has urged all members of families whose parents were tuberculous to undergo a "short course of tuberculin T.R." He admits, however, the T.R. is not a very good antigen, neither can the ordinary tuberculin on the market be considered such, but that in his more recent experience the clinical results with tubercle bacilli dissolved in benzoyl chloride have been so satisfactory that he uses it also for prophylactic purposes.

In the chapter on General Therapeutics, nothing new is offered, but it is gratifying to see an endorsement of massage and passive movements for the non-febrile or very slightly febrile patient in bed prior to beginning walking exercises. With the author's recommendation that the laryngeal patient should be allowed to whisper, the review strongly disagrees. To whisper so that the average individual can understand, causes more or less strain on the vocal organs which should be at absolute rest when the larynx is involved.

In the concluding chapter the author describes his method of preparing his solutions of the tubercle bacillus with the aid of benzoyl chloride. He seems to be an enthusiast on the use of tuberculin and other sera for prophylaxis and treatment. He advises immunizing the patient against his catarrhal microbes before doing so against his tubercle bacilli. No statistics or corroborative statements of results obtained by the author's treatment are offered. The book is nevertheless worth careful perusal by those interested in modern phthisiotherapeutics.

PRACTICAL URANALYSES. By B. G. R. WILLIAMS, M.D., Director Wabash Valley Research Laboratory. Author of "Laboratory Methods," etc. Illustrated. Price, $1.25. St. Louis: C. V. Mosby Company, 1916.

A MANUAL covering every purpose for which its author has intended, that is, a guide for both student and practitioner in those diagnostic matters usually encountered from day to day in study or practice. One feature has been especially emphasized, the tests for the minor products of erroneous metabolism and excretion—proofs of disturbed function and its nature in certain tissues, organs, and systems, while therapeutic measures may yet offer relief or cure. It is in no way a usurper of more detailed, comprehensive works. On the contrary, the author strongly urges consultation of the larger laboratory books by the specialist or research worker for knowledge limited to any one branch of medicine. The book is so sensibly and well bound it deserves credit from this practical point of view also.

PERSONAL HEALTH. A Doctor Book for Discriminating People. By WILLIAM BRADY, M.D., Elmira, N. Y. Price, $1.50. Philadelphia and London: W. B. Saunders Company, 1916.

DURING the last decade or more, there has gradually arisen a popular interest in not only public, but personal health. This interest and curiosity has been fostered to a great extent by the newspapers all over the country as represented, in one instance, by the National Newspaper Service. The health talk department in the newspapers conducted through this channel has been in charge of physicians, one of whom is the author of this popular manual on personal health.

Never was a wiser movement started than this one catered to by the newspapers. What if, on the one hand, it does encourage the neurasthenics to become more deeply intrenched in their pet hobby of ill-health; on the other hand, it has opened vistas of encouragement to those who have a right desire to be thoroughly healthy and a wish to remain the same, through a realization that conditions which cannot be treated through the medium of the newspaper column require the services and attention of a nearby practicing physician.

The author has placed under one cover all the accumulated knowledge of most interest and benefit to the ordinary, intelligent layman, and he has presented it in such a direct, crisp, clean-cut style, there can be no mistake as to his meaning on the subject discussed. "The Catching Cold;" Adenoids and Tonsils; Heat and Ventilation; The Air We Breathe and the Air We Don't; Digestion, Metabolism, and Nutrition; Inside of the Chest, Cough; First Aid in Emergencies, and The Medicine Cupboard, cover some of his subjects. An excellent appendix giving directions for practical, household therapeutic measures is added.

MANUAL OF THE DISEASES OF THE EYE FOR STUDENTS AND GENERAL PRACTITIONERS. By CHARLES H. MAY, M.D., Director and Visiting Surgeon, Eye Service, Bellevue Hospital, New York; Attending Ophthalmic Surgeon to the Mt. Sinai Hospital, New York; Consulting Ophthalmologist to the French Hospital, to the Italian Hospital; Formerly Chief of Clinic and Instructor in Ophthalmology College of Physicians and Surgeons, Medical Department, Columbia University, New York. Ninth Edition, Revised. With 377 Original Illustrations, Including Twenty-two Plates, with Seventy-one Colored Figures. Price, $2.50. New York: William Wood & Company, 1917.

WITH the raising of the standard of admittance to medical colleges, there is coming too an improvement in the style of compilation of medical books. This naturally was bound to follow, and in many instances has been foreshadowed by the republication of certain medical works. These works must have had originally an appeal aside from the statement of true scientific facts, through a charm of style, good diction, and excellent illustrations which has carried them far ahead in favor among students and practitioners.

Among such is this work by Dr. May. It has reached its ninth edition August, 1917, following after an interval of only three years the eighth edition, which appeared in August, 1914, was reprinted in August, 1916, and again in February, 1917. Translations into eight different foreign languages have been made since 1904. While keeping abreast of the newest proved scientific data this latest edition has not been increased in size; the elimination of old material required to keep within its original size has been accomplished by sound judgment and common sense. The author states that the original plan of presenting a book for the student and general practitioner has been adhered to. To those whose power of thinking and ability to learn depend upon their mental visualization this book will prove an easy method of obtaining knowledge, for the illustrations are such that at times one might almost imagine that the patient sat in front of the examiner, so clearly and true to life have the many and various conditions been portrayed.

Society Reports.

AMERICAN PEDIATRIC SOCIETY.

Twenty-ninth Annual Meeting, Held at White Sulphur Springs, W. Va., May 28, 29 and 30, 1917.

THE PRESIDENT, DR. FRANK SPOONER CHURCHILL OF CHICAGO, IN THE CHAIR.

Monday, May 28—First Day.

President's Address: The Responsibility of the American Pediatric Society in the Present National Crisis.—Dr. FRANK SPOONER CHURCHILL of Chicago delivered this address. He said, in part, that each and all of us were asking ourselves, "What is my duty—what ought I, what can I do to help my country in its present crisis?" These questions we asked not only of ourselves as individuals, but of societies and organizations. The advice to the individual had been "Do for your country that which you are best fitted to do." Similarly to the society or the organized group it could be said: "Let us do that which the nature of our organization makes possible for us to do well and efficiently." Clearly then the direction which the contributions and efforts of this Society should take was that which would best safeguard the child life of the country, not only from those dangers already existing, but from those that would inevitably arise as a result of the war. We might meet those problems in a twofold manner. First by continuing agencies already devoted to the interests of children, and, second, by making renewed and greater efforts to meet new problems. There was danger that the beneficent organizations devoted to the welfare of infants and children might be curtailed by cutting the appropriations to the public ones and by failure of subscriptions to the private ones. This would be suicidal and destructive. One of the most cruel results of war was its effect on the young and the helpless. The physical problems to be met had to do largely with nutrition and bodily sickness. There would be two groups of children requiring attention, the children of the poor and the children of enlisted men. The latter group must be the object of our special solicitude. It was within the power of this and other groups of pediatricians, by organized effort, to render great service to the children of these fighting men, not as a gift but as a just payment from us. This organization could well and profitably concern itself with an intensive study of food stuffs for the young, draw up diet lists embodying the results of such study, naming articles of food of proper nutritional quality, giving the caloric value, and, whenever possible, suggesting cheaper substitutes for the present high-priced articles. Equally important with the problem of nutrition of the child were the problems of a moral nature involved in the questions of child labor and delinquency. It was estimated that there had been in the warring countries an increase of 34 per cent. in juvenile crime and delinquency. Existing child labor laws should be enforced and juvenile protective associations should be heartily supported. Our part in this war was to fight in terms of the next generation. The quality of that generation would be the measure of our victory in the war.

Primary Carcinoma of the Liver in Childhood.—Dr. J. P. CROZER GRIFFITH of Philadelphia presented this paper in which he reported a case of carcinoma of the liver occurring in a female child, 21 months of age, whose family history was negative. The child had previously been in good health except for some degree of anemia, supposed to be dependent upon indigestion and a constant tendency to constipation. Midway between the midsternal and the right mammary line there was a decidedly visible prominence. On palpation this was found to be hard, smooth, and apparently connected with the liver. It changed its position distinctly with respiration. A provisional diagnosis of tumor or cyst of the liver was made. At operation, a dark gray, glistening, fibrous capsule, covering a tumor mass the size of an orange, was found in the right lobe of the liver. It projected slightly above the organ and extended in depth through the entire thickness of the lobe. The condition appeared to be inoperable and the wound was closed. Histological examination of a small portion of the tumor showed that it consisted entirely of epithelial cells without trace of liver tissue. The subsequent history of the case was that the growth continued to increase in size, sometimes rapidly and at others more slowly, until death occurred, about nine months after the case came under the writer's observation. The writer commented on the rarity of carcinomatous neoplasms in infancy and childhood and stated that carcinoma of the liver appeared to be more frequent than sarcoma. He reviewed 57 cases, 44 of which were collected by Steffen and Castle, and 13 additional cases which he had collected. Of this series 25 were males and 26 females. In others the sex was not mentioned. In this series of cases there were eight occurring in the first three months of life and 16 during the first year of life. The occurrence of so many cases suggests the existence of a tumor of embryonal nature. Of these cases some were simple carcinoma, some clearly adenocarcinoma, and others included provisionally were described as adenoma. The symptoms were entirely uncharacteristic and depended to some extent on the mechanical effect of the growths. The emaciation and cachexia natural to carcinomatous neoplasms was present. Icterus and ascites had been noted in some instances, but more frequently they were absent, or no statement was made regarding them. Operative interference was attempted in only one instance and that without success. It could only be done in the case of a single encapsulated tumor.

Intravenous Injections in Infancy.—Dr. CHARLES HUNTER DUNN of Boston read this paper, in which he said that the principal difficulty attending intravenous injections and transfusion in young infants had been the technical one due to the small size of the veins. The longitudinal sinus was a large vein very easily accessible through the open fontanel. This route was available not only for giving transfusions in hemorrhagic disease of the new born, but also for the giving of intravenous injections and medication. At the Infants' Hospital they had adopted the use of the longitudinal sinus for the purpose of obtaining blood for the Wassermann reaction and giving intravenous injections. The technic was extremely simple and apparently free from danger except when salvarsan was used. They had used the longitudinal sinus for giving normal salt solution, sodium bicarbonate in acidosis, antitoxin in diphtheria, circulatory stimulant drugs, and solutions of dextrose. It was the latter which the author said he wished particularly to consider. He had used intravenous injections of dextrose in cases of extreme atrophy and inanition produced by various forms of gastrointestinal disease. All the cases were either admitted to the hospital in an actually moribund condition or after admission became steadily worse under all ordinary methods of treatment. The theory upon which the intravenous injection of dextrose was based was that apparently the vicious circle produced by gastrointestinal disorder had become extreme and the digestion and absorption of sufficient fluid to furnish the energy requirement of the body was impossible. Dextrose was the only food substance that existed outside of the body in the same form in which it circulated in the blood and was utilized by the tissues. Consequently it seemed that introduced directly into the blood it might through the temporary supply of even a small quantity of fuel break the vicious circle for a sufficient length of time to permit improvement of the condition to take place. The author described the technique, the carrying out of which required three persons, but was otherwise simple. In determining the quantity of dextrose they had rather arbitrarily adopted a five per cent. solution. In choosing the quantity of dextrose for intravenous injection one-sixtieth of the body weight was taken. In 18 of these cases the records were sufficiently complete to report. In some of the cases the improvement which followed the injection was so immediate and striking that it seemed that there was a possibility at least that the injections had produced the good result. Of these 18 cases, 13 died and five recovered. In all a fatal ending had seemed imminent. Six showed a very striking improvement immediately after the injection. There was, however, no evidence that improvement, even if it was due to the intravenous injection, was

due to the dextrose. The giving of fluid into the circulation in cases of this character was of itself a therapeutic measure of known value and it was quite possible that the improvement was due to the fluid and not to the dextrose. In the writer's opinion there was sufficient possibility of the dextrose being of value to warrant its further trial. Careful urinary examination in these cases showed that whether or not the dextrose produced a favorable result it was at least utilized in the child's metabolism. In five cases more than one injection was given. In one case six injections of three grams each of dextrose were given, and in this instance the patient seemed to be practically kept alive by the dextrose and eventually recovered.

Dr. HENRY F. HELMHOLZ of Evanston, Ill., said that they had been doing similar work. Dr. Woodyatt had devised a pump by which they were enabled to introduce the sugar solution at a uniform rate and the rate could be varied at will. They had found that with the injection of about 0.8 of a gram of dextrose per kilo body weight no sugar would be excreted in the urine. He thought that in the concentration in which they had used the dextrose there was no danger of overloading the circulation and putting too great a strain on the heart.

Dr. GODFREY R. PISEK of New York described a syringe which he had been using, by which it was possible to withdraw the fluid in the usual way and then to make the injection by the gravity method. This provided an additional element of safety and eliminated the possibility of running the fluid in too rapidly.

Dr. HOWARD C. CARPENTER of Philadelphia warned against the injection of too powerful drugs by this method. He related an instance in which salvarsan was given by a technique supposed to be properly carried out. The child died about eleven days afterward and autopsy showed an abscess on the frontal lobe of the brain.

Dr. ALFRED F. HESS of New York related a case which he said had impressed him to such an extent that he hesitated to enter the longitudinal sinus in hemorrhagic cases.

Dr. JULIUS P. SEDGWICK of Minneapolis said they had been using this method of going through the longitudinal sinus. In a few instances in hemorrhage disease he felt that it had been a life-saving procedure.

Dr. HENRY F. HELMHOLZ of Evanston, Ill., said he had seen three cases within the last three months which had resulted fatally after injections into the longitudinal sinus. They were not his own cases. In all three cases the injections were very carefully given and at autopsy the entire cortex as well as the base of the brain was covered with blood. It was possible that some pathological condition and not the injection was to blame.

Dr. CHARLES HUNTER DUNN of Boston said it would probably be safe to give stronger solutions of dextrose than they had given, but in the beginning of a work of this kind it was necessary to proceed very cautiously. In giving medication by this route it might be well to make an exception of salvarsan.

The Therapeutic Use of Horse Serum.—Dr. ROWLAND G. FREEMAN of New York presented this paper in which he stated that he had been so impressed with the results of an injection of blood serum in a case of hemorrhage in a new born infant that although there might have been nothing unusual in this case, it had brought the question to his mind whether this treatment might not be applied to other conditions with good results. Of the various conditions which we always had with us and in which our results were not good with ordinary methods of treatment was marasmus. He had at this time in his service at Roosevelt Hospital a baby, 7 months old, that came in weighing 12½ pounds. Though fed on different promising foods except breast milk, this infant continued to lose. One month after his admission it was found that he had lost a pound and he appeared to be practically dead. He was given hyperdermoclysis, 250 c.c. This was followed by a rise in temperature and an increase of several ounces in weight. On the following day 20 c.c. of horse serum were injected. This was followed by a temperature reaction up to 102° F., as occurred on two following days when he received injections. Seventeen days after the institution of this treatment the child had gained one and three-quarter pounds and the treatment was given only every second day, a larger amount of horse serum being given. A little less than a month after the treatment was commenced the child's condition was so satisfactory that the injections were discontinued and the child went on to a complete recovery. This baby, in the writer's opinion, would most certainly have died without this treatment. Recently Dr. Freeman had had on his service at Roosevelt Hospital four babies at the same time with a weight of five or six pounds, all being about two months old, and all having been labored over with all sorts of foods. Treatment in these cases was started on the same day. The histories of these cases seemed to show that when the injections were stopped the improvement was not so rapid, and indeed there would be a loss in weight, but as soon as the injections of horse serum were resumed there would again be a gain in weight. After two injections of horse serum it was advisable to again test the child for sensitization before a third injection was given. One case of miliary tuberculosis with consolidation and cavitation, which had lost from twenty-six to eighteen and one-half pounds and under heliotherapy, and then gradually gained to twenty-six pounds at which point she remained stationary for weeks, was given 20 c.c. of horse serum, which was repeated once when she began gaining. Dr. Freeman stated that he did not hold that this treatment was in any way a panacea, but that under proper control it was a safe procedure and in some almost hopeless cases it apparently produced marked improvement. He believed it had a much greater sphere of usefulness than had hitherto been appreciated. It seemed of no use to give injections of less than 20 c.c. of serum.

Dr. CHARLES HERRMAN of New York said that they had had an epidemic of the type of cases described by Dr. Freeman. They had had some twenty-six cases, two of which were very severe, and it seemed probable that they would die. They were given injections of horse serum with very good results. Theoretically human serum would be better than horse serum. As a rule it was not difficult to get human serum for babies as the parents were usually willing to act as donors. The question was whether it was necessary to use serum, whether the whole blood would not be just as good as the serum.

Dr. FRITZ B. TALBOT of Boston said it would be interesting to know what Dr. Freeman had done for the future of these babies, particularly the one that developed a reaction after one or two injections of the horse serum, to what degree they would be sensitized. Dr. Talbot said he was not so much impressed by these charts as he would like to have been. He had seen a similar improvement take place in cases of this kind without this form of treatment.

Dr. L. EMMETT HOLT of New York asked what proportion of the cases treated in this way the charts represented, and whether these were the only satisfactory ones. He said he agreed with Dr. Talbot that one sometimes saw similar results in cases not treated in this way. There was one case, however, in which the results were very striking.

Dr. ROWLAND G. FREEMAN of New York, in closing, said that horse serum was more easily available than human serum and one could get it in any quantity. In the one case that was given so many injections treatment would have had to be discontinued had they been dependent upon human serum. He did not think it made much difference whether they used human serum, or horse serum, or whole blood. As to the possibility of having sensitized these babies to horse serum these were practically dying babies and the question of sensitization was at the time a minor one. The results of the treatment in two of the cases were very striking. Dr. Freeman said he was not sure that this treatment was worth a great deal but it seemed to be worth enough to warrant bringing it before the society to see what the members thought of it.

Twenty-four Hour Metabolism of Two Normal Infants with Special Reference to the Total Energy Requirements of the Infants.—Dr. FRITZ B. TALBOT of Boston presented this communication, which consisted in a continuation of the series of investigations of the metabolism of normal infants begun five years ago by Benedict and himself at the Nutrition Laboratory of the Carnegie Institution of Washington. The present in-

vestigation was made to determine, if possible, how much energy was expended in the ordinary muscular activity of an infant during a twenty-four hour day. If the increase in metabolism due to muscular activity could be determined, if the factor of growth and the factor of energy lost in the excretions could be established, this material could be used in conjunction with the curve of basal metabolism to estimate the number of calories necessary in a twenty-four hour day. One of these infants was in the respiratory chamber twenty-two hours and thirty-one minutes, and the other twenty-three hours and ten minutes. The length of observation compared favorably with those of Rubner and Hubner, which were in all instances shorter. Accurate records were kept of the time during which the infants were nursed, the time during which they cooed, kicked, played, smiled, cried, and were changed. It was found in the first baby that the basal metabolism of 285 calories was increased 143 calories by muscular activity. This corresponded with an increase of 67 per cent. The basal metabolism of the second baby was increased to an extent corresponding to 70 per cent. by muscular activity. Since the babies were removed from the chamber at regular intervals during the twenty-four hours for their usual nursings, their metabolism could not be measured for that time, but an estimate of what it would have been was considered justifiable. This allowance calculated very carefully was estimated as seventeen calories, and this was added to the measured metabolism and gave the total calories produced in twenty-four hours. There were, however, other ways in which energy might be lost from the body, such as the potential energy of the urine and feces. This energy which was lost must be supplied in the food. Presumably the greatest single factor was the fat lost in the feces, which with the urea in the urine would not exceed 15 per cent. of the total measured metabolism in a normal infant. A rough estimate of the caloric requirement of the normal infant might then be made by adding the calories used up in muscular activity to the basal metabolism. If the infant was very quiet 15 per cent. should be added, if normally active 25 per cent., and if extremely active 40 more or less per cent. To this result 15 per cent. should be added for energy lost in the excreta and 20 per cent. for growth. In the case of the first baby, E. L., they knew how many calories were actually used up in muscular exercise, therefore all that was necessary was to add the probable amount of calories necessary to allow for growth and what was lost in the excreta. That was 35 per cent., which was added to the 74 calories per kilo of body weight actually used by this baby, and it was thus found that she needed about 100 calories per kilo body weight in her food. If the same process was followed out with the second baby the food requirement was found to be 94 calories per kilo body weight. The writer made the practical suggestion from these observations that it was probable that infants fed on cow's milk, and particularly on formulas containing large amounts of protein, would require even more food than infants fed on breast milk, because the stimulating action of the protein caused extra heat to be burned during digestion. The caloric requirements of sick babies were obviously not the same as for normal infants, since the basal metabolism of the sick infant was higher per kilo body weight, neither did it apply to the infant with a subnormal temperature which indicated depressed vital functions.

Dr. Thomas S. Southworth of New York asked Dr. Talbot if any calculations had been made as to how much energy was used up in the changes in temperature to which babies' bodies were exposed as when the lower extremities were exposed. He had recently been consulted regarding a child that was dressed without shoes or stockings and had told the parents that the baby would do better if its feet and legs were covered, and if it did not waste energy through a loss of heat that should go into growth. An English authority has estimated that a certain number of ounces additional nourishment must be given to provide for the loss of heat when certain portions of the body were exposed.

Dr. Charles Hunter Dunn of Boston asked what evidence there was that there was such a thing as a normal infant. The factor of individual variation came into an enormous extent if one took only two, three, or five babies. If there were enough observations made one could arrive at a standard of averages, but he had always felt that this was a great mistake foreigners had made. If one took a number of figures and divided their sum by a number of cases the result was never applicable to any individual infant.

Dr. Godfrey R. Pisek of New York said that they should be very grateful to Dr. Talbot for this piece of work. He thought, however, that the estimate of the amount of energy the child used when out of the respiratory chamber was low, particularly the amount of energy used in nursing.

Dr. B. Raymond Hoobler of Detroit said Dr. Talbot was to be congratulated on being able to make a metabolism observation covering twenty-three hours. This had not been done before. The best that Dr. Rubner had been able to do was to get observations covering nineteen hours and some minutes. Rubner had found 100 calories per kilo body weight the average requirement of an infant under six months of age. Dr. Talbot's estimate would exceed just a little 100 calories per kilo body weight, so that this estimate must be very near the truth. He thought we were finding that nearly all active children required more than 100 calories per kilo body weight. All of Dr. Talbot's calculations had been worked out very nicely.

Dr. Talbot, in closing, said that in regard to the loss of heat from exposure, the surrounding temperature made no difference unless there was chilling, and then when the baby shivered he produced heat. If he did not perform additional exercise he did not produce more heat. The figures presented might not be applicable to older children, but they were applicable to newborn babies. It was a mistake to give a newborn baby a water bath at the time of birth, since it might result in a subnormal temperature and then there would be a lowered metabolic activity and all the vital functions would be depressed. If the newborn baby was strong enough to shiver and cry it then produced heat and was able to withstand the shock. A point of importance with reference to muscular activity was brought out by Dr. Lusk in an investigation in a boys' school. These boys were very active and the number of calories they were getting were carefully estimated. It was found that they were eating one and one-half times as much as a laboring man.

Studies on Blood Calcium — The Calcium Partition Distribution in Ox Blood and in Man's Blood.—Dr. David Murray Cowie of Ann Arbor read this paper. He said that they had carried out this investigation because of the difference of opinion as to the distribution of calcium in the blood. The practical side of the question had to do with the question of whether it was more expedient and more accurate to use serum or whole blood for the estimation of blood calcium. Hitherto in the employment of whole blood for making these estimations considerable difficulty had been experienced in ashing. This they believed they had overcome by a method employed by them last year and still further perfected by Dr. Lyman. The scope of their work had been to determine the calcium content of the whole blood, of normal serum, of serum from defibrinated blood, the calcium content of the unwashed corpuscles obtained from citrated blood, of washed corpuscles obtained from defibrinated blood, of washed corpuscles obtained from citrated blood, the power of the blood corpuscles to combine with calcium, and the character of the combination of calcium with blood corpuscles. The present communication consisted of a preliminary report on the calcium partition and distribution in ox's blood and in man's blood. In making their calculations they had to consider the relative proportion of serum and formed elements in a given sample of blood. For instance, in ox's blood 32.55 per cent. of the whole blood was composed of formed elements, corpuscles 67.45 per cent. of serum. In man's blood 51.302 per cent. was composed of formed elements, 48.698 per cent. was serum. Calculated on this basis, they had found that the calcium content of whole blood was definitely greater than that of an apportional amount of serum. One must admit that the corpuscles were not negligible. Calculating the amounts of calcium in the serum and corpuscles, respectively, of 100 c.c. of ox's blood and of man's blood showed that the serum of ox's blood contained more calcium than the serum of man's blood; that the corpuscles and fibrin of man's blood contained more calcium than the corpuscles and fibrin of ox's

blood, and that the whole blood of man contained more calcium than whole ox's blood. The possibility of a variation in the relative proportion of corpuscles and serum under altered states of the organism must also be taken into consideration. There was more serum per volume of blood in severe anemia and hydremia. The Lyman method was well adapted for the study of either the corpuscles or the serum, and with proper equipment and reliable chemicals was of clinical utility.

The Uric Acid Content of the Blood in Newborns.—Drs. JULIUS P. SEDGWICK and KINGSBURY of Minneapolis presented this communication, which was read by Dr. Sedgwick. He stated that it had long been well known that the uric acid excretion in the urine during the first few days of life was both relatively and absolutely high, that during this period rapid morphological changes occurred in the blood, such as the disappearance of the nuclei of many of the red cells, the change in proportion from a predominating number of polymorphonuclear neutrophiles to a corresponding preponderance of lymphocytes, and the striking decrease in the leucocyte count of the peripheral blood. The polymorphonucleosis dropped rapidly from the second to the fifth day. Nucleoproteins set free by the leucocyte destruction had been considered the source of the well known high uric acid excretion of the first week. The present investigation was made in order to determine whether or not the high uric acid excretion during the first few days of life was accompanied by a simultaneous increase of this substance in the blood. The determination of the uric acid was made by the modification of the Folin-Denis method devised by Myers, Fine, and Lough. The weights of the blood samples used in these analyses varied from nine to eighteen grams and were drawn from the superior longitudinal sinus of newborns. The placental blood was collected as soon as possible after cutting the cord, which was done after the cord had stopped pulsating. The maternal blood was drawn from the arm of the mother at the time of parturition. All the newborn subjects were normal. It was found that the average values of 16 determinations of the uric acid content of maternal and placental blood were identical, being about three milligrams per 100 milligrams of blood. This agreed with the independent findings of Slemmons. In some instances the infants were given water in addition to their ordinary diet of breast milk. It might be observed that the content of uric acid in the blood during the first three or four days after birth was higher than that of the blood of the same newborn at the time of birth. In seven cases there was a marked decrease in this value at the end of eight to eleven days from the value obtained three to eight days earlier. It was noted that in the period between the second and third days that the value reached a maximum. During the first three or four days this value was higher than the maternal and placental figures. From a maximum of 3.9 milligrams the blood uric acid fell off slowly to 2.9 milligrams on the fifth day and then rapidly to 1.6 on the eighth to the eleventh day. This value agreed with the finding of Liefmann in the blood of the thriving children from nine weeks to fourteen months of age, on a pure milk diet. The findings also supported those of Wells, Corper, and others (in opposition to the results of Schnittenhelm and Schmidt) that human fetal tissues possessed no urilytic power. These results fitted well as the connecting link in the theoretical chain of early leucocytosis, fall in leucocytosis, flood of uric acid in the blood, high uric acid excretion, and uric acid infarcts.

Dr. FRITZ B. TALBOT of Boston said that this was one of the very obscure periods of infancy. Dr. Sedgwick had given them material which he hoped would open up the way to further investigations in the newborn about which so little was known.

Dr. PERCIVAL J. EATON of Pittsburgh said that he understood that some of these babies were getting water and others were not, and he would like to know whether Dr. Sedgwick had noticed a greater concentration of uric acid in the urine of those babies that were not getting water.

Dr. SEDGWICK replied that he had not made any examinations of the uric acid excreted in the urine, only the uric acid content of the blood.

The Salts in Green Vegetables and the Effect of Different Modes of Cooking.—Dr. FREDERICK H. BARTLETT of New York read this paper, in which he said that the practice of adding green vegetables to the dietary of young infants was becoming a common practice. It was believed that their value was due to their effect on the mineral metabolism. Instead of making use of drugs to supply the needed iron, green vegetables had been fed to many children in the wards and the outpatient department of the Babies' Hospital. The plan had been followed with children as young as six or seven months. Infants thus fed had shown an earlier closure of the fontanel and generally greater activity than those fed without such additions to their diet. The general opinion was that the mineral content was the important factor, and they had studied the subject from this viewpoint. They had studied the actual mineral content of the vegetables as ordinarily prepared and administered. They had analyzed cooked vegetables, considering separately the solid portion ordinarily given as food and the water used in cooking. They had estimated the content in grams of the solids of vegetables prepared by boiling, taking spinach, New Zealand spinach, young carrots, string beans, asparagus, and potatoes, estimating the solids, ash, calcium, magnesium, phosphorus, potassium, sodium, sulphuric acid, iron, and the total nitrogen and nitrogen as protein. They had estimated the percentage lost in the water with long and short boiling, and compared the percentages lost in water by steaming and by boiling, the content in grams of vegetables prepared by steaming of the various constituents, and the approximate content of one tablespoonful of steamed vegetable of the various constituents. Spinach showed the highest total salts. It contained from two to three times as much ash as any of the other vegetables studied. The preponderance was largely due to calcium and phosphorus. The iron was highest in New Zealand spinach, ordinary spinach and carrots coming next. The iron in onions was very low, while asparagus had only a trace. Spinach was the most efficacious in supplying mineral salts. New Zealand spinach possessed the advantage of being available for a continuous supply all summer. The analyses showed an excessive waste of salts if the water in which the vegetables were boiled was thrown away. Calcium was the only constituent not affected by boiling. Steaming was then tried and found to be the most economical method of cooking for preserving the salts. Any type of steamer which held the vegetables out of water would undoubtedly serve the purpose. In spinach the loss by steaming was about one-half what it was by boiling. One hundred grams of the edible portion of uncooked vegetable when cooked yielded approximately three tablespoonfuls; this was true of all vegetables but carrots, which yielded about four. The effect of steaming on New Zealand spinach was more variable than in the case of other vegetables.

Dr. GODFREY R. PISEK of New York said that many young children did not like vegetables. He would like to ask Dr. Bartlett how he got the infants to eat the vegetables, and whether he fed them through a bottle.

Dr. J. P. SEDGWICK of Minneapolis said that experiments in this line had been made in the Department of Household Economics of the University of Minnesota which showed the importance of retaining the salts of green vegetables and the amount retained with different methods of cooking. Experiments of F. B. Roder showed the retention of calcium in the feeding of a vegetable free diet and when vegetables were given to children. They had also endeavored to find the amount of calcium which it was necessary to administer in order to produce calcium retention. They found that an enormous amount was required and that the small amounts usually given therapeutically were a farce.

Dr. L. EMMETT HOLT of New York emphasized the importance of careful attention to the minute subdivision of all vegetables fed to infants. The difficulty caused by particles of undigested vegetables might be entirely obviated by rubbing the vegetables through a fine sieve. They were doing this in the hospital and it was surprising how little effect vegetables prepared in this way had upon the infant's stools. One mistake that could not be emphasized too often was that of allowing a child to have the bottle for two years. One met with some of the worst types of malnutrition in such children.

Dr. PERCIVAL J. EATON of Pittsburgh called attention

to the fact that the water in which vegetables were boiled could be used as soup stock or added to bean or pea soup and thus the mineral salts would be conserved.

Dr. Rowland G. Freeman of New York said it had been his experience that children with poor digestive capacity did not take vegetables well.

Dr. Percival J. Eaton said he thought if Dr. Freeman would see that the vegetables were rubbed through a sieve he would find that the children digested them well.

Dr. Isaac Abt of Chicago said they were using a mill with two closely adjusted plates for pulverizing vegetables and other foods and that this did the work very effectively.

Dr. Henry Heiman of New York said his experience had been somewhat similar to that of Dr. Freeman. He thought we must not lose sight of the fact that we had unsplit carbohydrates as well as unsplit proteins. Their experience in New York showed the necessity of giving babies vegetables as early as possible.

Dr. David M. Cowie of Ann Arbor said they had had some difficulty from attempting to use as much spinach as they did carrot; one could not use as much spinach as carrot.

Dr. Helmholz referred to an article recently published which showed that vegetables, dried and pulverized and then made into the finest emulsion possible might be fed to infants two or three months old without any ill effect.

Dr. Frederick H. Bartlett of New York, in closing, said that if the vegetables were rubbed through a fine sieve they could be fed either through a bottle or with a spoon. It was a mistake to begin feeding a baby as much as a tablespoonful of vegetable. One should begin with a very small quantity.

Congenital Skin Defects.—Dr. Isaac Abt of Chicago presented this communication, in which he commented upon the infrequency with which congenital skin defects had been reported in the literature, and the fact that the majority of reports dealt with defects of the scalp. He stated that most writers attributed their cause to either errors of development or to inflammatory adhesions between the external layers of the skin and the amnion. Not infrequently these skin defects were associated with other malformations such as deficient fingers, hands, or feet, caused by the action of the amniotic bands. These lesions were found most frequently on the scalp, though Emanuel reported a case with congenital skin lesions occurring on the hands, legs, feet, over the temples and bridge of the nose, and also an area in the middle of the lumbar region. These defects seemed to bear no relation to trauma at birth and undoubtedly originated *in utero*. Occurring singly or in groups, they presented ulcerated areas which affected both layers of the skin. The subcutaneous tissues were not involved. These ulcerated areas were sharply defined, somewhat irregular in outline. The base of the ulcer was red and secreted a thin lymph. In some of the recorded cases the defective skin areas developed hairs later in life. Microscopically the area showed the lack of epithelial structure, smooth muscle, and adipose tissue. The skin glands developed if at all in a rudimentary manner. The majority of these lesions tended to cicatrize in a short time. The case which formed the subject of this report was normal at the time of birth, except for two defective areas over both knees. The labor was normal. The areas in this case were about one and one-quarter inch in diameter, symmetrical, and seemed, so to speak, irregularly punched out. The skin around the edges was drawn and puckered, presenting the appearance of an ulcer. The base was beefy red and moist and small areas of the ulcerated surface showed a yellowish exudate. A whitish scar seemed to cross the ulcerated areas as though connective tissue bands indicated the beginning of a process of citratrization. The ulcers from week to week became more and more cicatrized and after five or six weeks were replaced by shiny white patches. A review of the cases reported in the literature was presented, giving the sex, age, localization of the lesion, and other data.

Dr. Julius P. Sedgwick of Minneapolis said that last winter they had had a case of congenital defect of the scalp. He felt sure that if newborn infants were turned over to the pediatrist more of these cases would be observed.

Enlargement of the Thymus Treated by the X-Ray.—Dr. Alfred Friedlander of Cincinnati presented this paper, in which he emphasized that enlarged thymus was more frequent than was ordinarily supposed; that the diagnosis could be made definitely by means of simple physical examination and the *x*-ray; that in the *x*-ray we possessed a therapeutic agent which in and of itself would effect a cure in the vast majority of cases. In their studies of this condition they had found that quite a number of cases had occurred in babies suffering from congenital syphilis, though at present no conclusions could be drawn fom this observation. A distinct familial tendency had been noted. They had also observed an apparent relationship between hypertrophic stenosis of the pylorus and enlarged thymus. Some cases of enlarged thymus ran a symptomless course. Sudden death as the result of trauma, anesthesia, or intercurrent affection occurred not infrequently in these cases. Intercurrent affections frequently lit up the pressure effect of an enlarged thymus. There were three definite symptoms of enlarged thymus, which were present singly or together, namely, dyspnea, continuous or intermittent; suffocation attacks with cyanosis, and stridor. The dyspnea might be either permanent or intermittent. Stridor when present was usually inspiratory. The diagnostic physical signs of greatest importance were the detection of a bulging mass in the jugular, oftener absent than present, and enlargement of the area of normal thymus dullness on percussion. In young children there was a definite form of thymus dullness in the shape of an irregular triangle or truncated cone whose base was the sternoclavicular junction and whose apex was the second rib. The percussion of the area of thymic dullness was not difficult if one used very light or at times threshold percussion. Dr. Sidney Lange of Cincinnati had worked out a very careful technique by which definite information as to the existence of thymus enlargement was afforded by the *x*-ray. The child must be absolutely flat on his back and the exposure must be absolutely instantaneous. In the series of *x*-ray pictures presented the exposure had varied from one-sixtieth to one-thirtieth of a second. A very soft *x*-ray tube should be used. The technique as worked out by Lange was remarkably simple. A Coolidge tube backing up a nine and one-half inch spark was employed. The rays were filtered through four millimeters of aluminum and a piece of thick leather. The target skin distance was approximately nine inches. The routine exposure was 25 milliampere minutes. In mild cases a single dose given over the anterior surface of the chest proved sufficient. In more urgent cases 50 milliampere minutes were administered at the first treatment, 25 anteriorly and 25 posteriorly. The interval between treatments was usually one week, unless urgent symptoms suggested the advisability of more frequent treatments. To guard against sudden death before the full destructive effect of the *x*-ray upon the thymus had been elicited, all cases with urgent symptoms should be kept under close observation and the *x*-ray treatments pushed boldly. In the average case improvement of symptoms had been noted within 24 to 48 hours after the *x*-ray treatment; in many a very decided improvement was noted in two weeks' time or even less.

Dr. Howard C. Carpenter of Philadelphia referred to the work of Dr. Pfahler of Philadelphia, who had been treating this type of cases with uniformly successful results. In a few instances almost instantaneous improvement had followed this treatment.

Dr. William Palmer Lucas of San Francisco said he had found practically the same type of picture in children without clinical symptoms, and had followed the children for months without any symptoms arising. In cases of enlarged thymus and symptoms he had obtained the same results with the *x*-ray treatment, with practically the same dosage as Dr. Friedlander, but not in two weeks.

Dr. Fritz B. Talbot of Boston said that they had been seeing practically the same results as Dr. Lucas had shown in the treatment of enlarged thymus by means of the *x*-ray. They had had one case four or five years ago in which the symptoms disappeared under *x*-ray treatment that returned last spring with a recurrence of the symptoms that required a long course of treatment.

Dr. David M. Cowie of Ann Arbor said he had had children sent to him with the report that the *x*-ray showed enlarged thymus in which he could not confirm that diagnosis. Again he had had typical cases of enlarged thymus which were not shown by the *x*-ray.

Dr. J. P. Crozer Griffith of Philadelphia said he believed there was such a thing as thymic asthma and that death occurred from it. He had seen this condition steadily disappear under *x*-ray treatment. Thymic enlargement was an accompaniment of status lymphaticus, and the symptoms and results that they saw were due to pressure and not to the thymus gland alone.

Dr. Alfred F. Hess of New York called attention to the possibility of mistaking the picture produced by an enlargement of the vessels at the base of the heart for enlarged thymus. This picture was sometimes seen in children with scurvy and in adults with beriberi. In taking *x*-ray pictures of babies he had found that some of the controls gave pictures just like those of thymic asthma, yet there were no symptoms of thymic asthma.

Dr. F. S. Churchill of Chicago asked how long the cases had been under observation.

Dr. Friedlander said that some cases of enlarged thymus might give no symptoms while others might produce pressure effects or the symptoms of hyperthymus. As some symptomless cases resulted in sudden death, and the thymus was an organ that enlarged and diminished very rapidly, the fact that there were no symptoms was no reason for stopping *x*-ray treatment. He had studied a large series of cases and found that in cases in which there was an enlarged thymus, if marked congestion occurred as from whooping cough or bronchitis, it might light up the symptoms and cause the death of the child. If we got a shadow that might lead us to suspect that it was due to enlargement of the vessels at the base of the heart, if two or three *x*-ray treatments were given and the picture again taken, the diagnosis would be cleared up. The first case was treated in 1903 and was now hale and hearty. Several of these cases went back to 1903 and others were very recent.

Focal Lesions Produced in the Rabbit by Colon Bacilli Isolated from Pyelitis Cases.—Dr. Henry F. Helmholz and Miss Carol Beeler of Evanston, Ill., presented this paper. Dr. Helmholz stated that in order to determine whether pyelitis could be produced by the hematogenous routes two series of experiments were performed on rabbits. In the first series sixty-six animals were injected intravenously with eight different strains of colon bacilli. Of these twenty-six showed focal lesions of one kind or another. The organs affected were as follows: Kidneys, eleven times; cecum, seven times; gallbladder, seven times; appendix, five times; stomach, four times. In addition there were single instances of hemorrhagic infraction of the descending colon, ulcerative colitis, hemorrhagic enteritis, and duodenal hemorrhages. Thus the organism did not show any special tendency to localize in the kidney and focal lesions were just as likely to appear in any organs of the gastrointestinal tract. In 90 per cent. of the instances the rabbit could excrete colon bacilli through the kidney without harm to the kidney itself. In the second series of experiments a mixture of colon bacilli and pneumococci were injected into eleven animals. The kidneys were infected in six of the animals, or about 60 per cent. It therefore seems possible that the relative number of kidney infections was greatly increased if a mixture of organisms was intravenously injected. It was possible that in human pyelocystitis there was a double infection and the second one was overlooked.

Dr. Charles Hunter Dunn of Boston related a case in which a baby had an empyema and aspiration of the chest showed a pure pneumococcus infection. A blood culture was taken and this showed no pneumococci but a pure culture of colon bacilli. Two days later the child developed a typical pyelocystitis. Dr. Dunn said that formerly he had not believed in infection through the hematogenous route in pyelocystitis, but he was now coming to believe in the possibility of infection through this route.

Dr. William Palmer Lucas of San Francisco said they had been making similar experiments, and their results had been similar to those of Dr. Helmholz. He felt that they were warranted in thinking that there was no definite localization in the kidney, but a general infection by which any organ might become involved.

Dr. Henry Heiman of New York said that if we accepted the theory that pyelocystitis was a hematogenous infection involving other organs as well as the kidneys and that the colon bacillus was the predominating organism, then we had a problem to solve. It would seem that the pelvis of the kidney was more readily infected through the urethra. Of the cases in which the pelvis of the kidney was infected 75 per cent. occurred in girls in whom infection through the urethra occurred more readily than in boys.

Dr. Henry M. Helmholz, in closing, said he was much interested in the case reported by Dr. Dunn. It had been his experience that if other organisms were present that might have caused the pyelocystitis, one might not find them, but usually found a member of the colon group, because the colon bacillus had a tendency to overgrow other bacilli. Personally he said he saw no reason to believe that the kidney might not be infected in a number of ways.

Tuesday, May 29—Second Day.

A Case of Precocious Menstruation. — Dr. William Palmer Lucas of San Francisco reported this case. He said the case might equally as well have been reported as one of linear nævus. This girl when first seen was nineteen months of age and gave a perfectly negative family history. Her first menstruation started when she was fifteen months old. Physical examination showed a raised linear lesion between the nose and lip on the left side. It was yellowish in color, verging on a brown, and resembled a keratitic condition. The child had well-developed mammæ and a somewhat advanced development of the small bones. Psychologically her intelligence was normal, but the faculty of attention was phenomenal. She did systematically things that would have been difficult for a child three or four years of age to do.

Dr. Howard C. Carpenter of Philadelphia called attention to the fact that some cases of polypoid sarcoma of the vagina in children had been reported in which there was a certain amount of hemorrhage. Before making a diagnosis of precocious menstruation the possibility of neoplasm must be carefully looked into.

A Case of Hemorrhagic Disease in the Newborn Treated by Direct Transfusion.—Dr. J. H. Mason Knox of Baltimore reported this case. He said that on March 6 he was called to see an infant two days old because it had vomited a considerable amount of bloody fluid. The family history was unimportant. The child weighed seven pounds six ounces. It showed no fever or cough, and nothing abnormal could be made out. During the examination it passed from three to five ounces of tarry-stained material, evidently a hemorrhage from the intestinal tract. The condition was diagnosed as melena, and 50 c.c. of the mother's blood was transfused. Fifteen c.c. of the blood was citrated and introduced into the longitudinal sinus. The remainder was administered intramuscularly into the buttocks. From 9 A. M. to 3 P. M. the child passed several tarry stools, became greatly blanched, the pulse became thready, and respiration shallow. Later the child began to improve. The following day there was one hemorrhage from the bowels, not accompanied by any change in the pulse or temperature. From this time on the child made an uninterrupted recovery.

Dr. Fritz B. Talbot of Boston said that one of the interesting features in these cases was that they frequently had a high temperature at some stage of the disease. In certain instances in which the hemorrhage was under the scalp or into the muscles he wondered whether the rise in temperature could be due to the absorption of the hemorrhage.

Dr. Alfred F. Hess of New York said that to his mind direct transfusion was the method of choice in these cases. He believed that direct transfusion was better than citrated whole blood. He believed that final investigations showed that citrated blood was not the same as whole blood.

Dr. Henry E. Helmholz of Evanston, Ill., said that most of these cases would recover without direct transfusion. They could be cured by intramuscular injections of whole blood, which could be given in amounts up to 100 c.c.

Dr. Charles Gilmore Kerley of New York said that he had had three cases of hemorrhagic disease in the

newborn within half a year which were entirely relieved by intramuscular injection. One-half ounce of blood injected into each buttock stopped the bleeding just as effectually as the use of the serum by the Welch method.

Dr. La Fetra of New York said that ever since Dr. Schloss had published his method of giving the intramuscular injections of whole blood he had been using this method. They had used it in some fifty cases, making the injection into the loose tissue in the scapular region. One did not have to use large quantities of blood; it was more important that the injections be made at frequent intervals. If human blood could not be obtained horse serum might be used.

Skiagraph of a Case of Idiopathic Dilatation of the Colon.—Dr. J. P. Crozer Griffith of Philadelphia presented this skiagraph. He said that the subject was a little boy four years of age. The *x*-ray showed marked peristalsis and an enormously dilated colon. It was with difficulty that he had been able to stay the hand of the surgeon. As the child's condition was fairly good he thought it better to treat him medically than to shorten the colon. Under the use of pituitrin and dietetic measures the boy's condition had improved. He believed that a resection of the colon was the proper procedure when the patient's condition was serious, but he had stayed the hand of the surgeon in some cases in which the condition was an acquired one and had seen the patients get well without operation. One must distinguish idiopathic dilatation of the colon from pyloric stenosis.

Dr. Fritz B. Talbot of Boston said that all were aware of the poor results of surgery in these cases. They had been using a well-fitting elastic belt that compressed the lower abdomen and had had encouraging results.

Dr. L. Emmett Holt of New York called attention to the necessity of distinguishing between Hirschsprung's disease and marked intestinal indigestion. He thought that in the mind of the general practitioner these two conditions in children were often confounded. The surgeon frequently made the mistake of operating on a case simply because the *x*-ray showed a dilated colon. In many cases an elastic band gave the needed support to a thin abdominal wall. In cases in which there were no signs of ulceration and the child was in fair condition the indications were to stay the hand of the surgeon, since a good many of these cases would get well under medical treatment even when the distention was very great.

Three Children with Sporadic Cretinism in One Family.—Dr. Charles Herrman of New York made this report. He stated that this was the second opportunity he had had of presenting three cases of sporadic cretinism in one family. The first series of cases had been reported in the *New York State Medical Journal*, August, 1914. The three patients in the present series were twenty-two, twenty, and eighteen years respectively, and had been under treatment intermittently since they were three years old. The mother had been pregnant twelve times, and these cretins were the third, fourth, and sixth births. The ninth and tenth pregnancies miscarried. It was noticed at the age of two years that these children were not developing properly mentally and physically. At the age of three years they were taken to Johns Hopkins Hospital, where they were treated intermittently for several years. The older girl began to menstruate at the age of seventeen, the younger at the age of fifteen. They came under the writer's observation in March, 1917, at which time their mental and physical condition was greatly retarded. The general appearance of the children was that of cretins who had been under treatment intermittently. They had now been under treatment for two and one-half months with a combination of extracts of thyroid, pituitary and suprarenal glands, and shown marked improvement both mentally and physically. It seemed very unlikely that either constitutional disease, such as syphilis, tuberculosis, or malaria, was responsible for the condition; neither did consanguinity seem to explain the condition. It seemed to the author that anomalies of the ductless glands could best be explained on the basis of heredity. The defect was not necessarily of the thyroid. Family pedigrees were usually incomplete or inaccurate, and it did not follow that because one could not elicit a history of such a defect therefore none existed.

Dr. John Ruhrah of Baltimore asked Dr. Herrman if he had ever seen a case of cretinism that remained perfectly normal in adult life.

Dr. Godfrey R. Pisek of New York said he did not think these cretins were ever cured or ever got beyond the moron stage. They had to be kept under thyoid treatment for years.

Dr. Henry Heiman recalled a case of cretinism that had been under his observation for years. He said they were obliged to give this patient thyroid after he was apparently well. He had gone through school and high school, had reached a height of five feet ten inches, and was a bookbinder. In these cases the after treatment always had to be continued.

Dr. J. P. Sedgwick reported that they had had a case of congenital cretinism last winter. He said he was interested in knowing whether congenital cases were common and whether the rest of the members had seen them.

Dr. Charles Herrman, in closing, said that the results of treatment depended upon how early treatment was instituted. Some of these cretins reached a normal standard physically but never mentally. However, they might become near enough normal to go into business and to get through life fairly well.

The Restoration of Maternal Nursing after Sixteen Days of Complete Interruption.—Dr. Thomas S. Southworth of New York reported this case. He stated that this child on the ninth day after birth developed a severe cellulitis as the result of a birth injury, which involved the right buttock, the entire lower part of the back from the ribs to the sacrum, the under surface of the chin, and the upper part of the neck. There was also a profusely suppurating otitis media the result of a birth injury. Owing to the erysipeloid appearance of the cellulitis about the chin, the baby was removed from the breast and the mother allowed to return home. The mother made no attempt to pump her breast or retain her milk. Two weeks after she returned home it seemed probable that if the baby did not receive breast milk it would die, so it was decided to take the baby home. The mother began by taking a pint of cornmeal gruel and one quart of milk daily, following definite instructions. At first complementary feedings of malt soup mixture were given after each nursing. After a few days these were stopped and the breast milk sufficed. From this time on the infant's progress was slow but fairly continuous, and he gradually overcame his various infections. While the restoration of the breast milk after an interruption of sixteen days was not so remarkable, it was well that we should be reminded of its possibility. The measures adopted to this end undoubtedly played some part in the success of the effort.

Dr. Charles Herrman of New York said he had a chart that demonstrated the possibility of resuming breast feeding after an interval of ten weeks. It was important to remember that in mothers who had stopped breast feeding it could be resumed if a persistent effort was made.

Dr. J. P. Sedgwick of Minneapolis said he wished to endorse Dr. Southworth's remark that it was well to be reminded of the possibility of resuming breast feeding when it had been interrupted. This was one of the most important things in pediatric and general practice. Dr. Sedgwick related an instance in which breast feeding had been resumed after an interval of nine weeks, and said that cases had been reported in which breast feeding had been resumed after an interval of three or four months.

(To be continued.)

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Connecticut.

March 13 and 14, 1917.

ANATOMY AND HISTOLOGY.

1. Describe the elbow joint.
2. Describe the minute anatomy of the pancreas.
3. Give the attachments, action, and nerve supply of the following muscles—digastric, biceps femoris, soleus, gastrocnemius.

4. Describe the occipital bone.
5. Give the anatomical relations of the axillary artery.
6. Describe and give the relations of the prostate gland.
7. Describe the minute anatomy of the female breast.
8. Describe the origin, course, and distribution of the internal mammary artery.
9. Describe the course and distribution of the musculo-spiral nerve.
10. Give anatomical relations of the common bile duct.

PHYSIOLOGY.

1. Discuss the functions of the cerebellum.
2. What important centers are located in the medulla oblongata?
3. How does the eye accommodate for objects at different distances?
4. Name the substances necessary for the formation of fibrin in blood clot. From what substances are they derived?
5. How is the flow of venous blood to the heart influenced by inspiration? Why does the flow of blood in the arteries remain unaffected?
6. Discuss the function of the parathyroid glands.
7. (*a*) How do smooth muscle fibers differ from striated muscle fibers in their reaction to stimuli? (*b*) Under normal conditions what chemical changes occur in the muscle as a result of contraction?
8. Discuss the exchange of oxygen and carbon dioxide in the tissues.
9. Name three enzymes that act on carbohydrates.
10. Where is trypsin formed? On which group of foods does it act?

MATERIA MEDICA AND THERAPEUTICS.

1. Discuss the treatment of hemorrhagic disease of the new born.
2. (*a*) Name the drugs used to cause an increase in the flow of urine. (*b*) Discuss the use of diuretics in acute nephritis.
3. Discuss the treatment of summer diarrhea in infants. State the dose of any drug you might use.
4. Name the preparations of mercury used in the treatment of syphilis, stating the dose and method of administration of each.
5. What are the symptoms and signs of mercurialism?
6. (*a*) What are the chemical properties of chloral hydrate? (*b*) What effect has it on (1) the central nervous system; (2) the heart? (*c*) What is the usual dose for an adult?
7. Write a prescription containing two bitter tonics commonly used to increase gastric secretion.
8. What are the symptoms and signs of digitalis poisoning, following prolonged therapeutic doses of the drug?
9. Name the three most important drugs of the digitalis group.
10. What drugs would you use for the immediate relief of an acute attack of asthma? State the dose and method of administration of each drug.

HYGIENE AND MEDICAL CHEMISTRY.

1. State the reasons that tend to create military inefficiency, "in the field," in a body of men not physically fit when mustered in.
2 and 3. What precautions should one use in selecting a recruit? (State minutely.)
4. What fabrics are warm for cold and windy weather? State reasons.
5. What are the conditions that a military hygienist should consider in the selection of a camp site?
6 and 7. State how you would arrange for the housing of a thousand men in a camp of instruction, there being only unmatched lumber and soldier labor. The camp is in this latitude and the season March.
8 and 9. As a sanitary inspector what recommendations would you make to prevent the spread of the following diseases? (*a*) Typhoid, (*b*) typhus, (*c*) yellow fever, (*d*) malaria, (*e*) syphilis.
10. (*a*) Is there any way by which the ordinary soldier can distinguish good from dangerous water? (*b*) What means are commonly at his disposal by which he can render germ laden water safe? (*c*) What chemical means of rendering this dangerous water potable is at the disposal of the hygienist?

ANSWERS.

ANATOMY AND HISTOLOGY.

1. The *elbow-joint* "is a ginglymoid articulation formed above by the lower extremity of humerus, below by upper extremities of ulna and radius. Its ligaments are external and internal lateral, anterior and posterior ligaments. *External lateral* arises from external condyle of humerus and is inserted into outer margin of ulna. *Internal lateral*, much stronger, consists of two portions; *anterior* arises from fore part of internal condyle to be inserted into coronoid process, and *posterior* from back part of condyle to inner margin of olecranon. *Anterior* ligament arises above coronoid fossa, and is inserted into coronoid process of ulna and orbicular ligament. *Posterior ligament*, attached above olecranon fossa, and below to olecranon process of ulna. The anterior and posterior ligaments become continuous with the lateral to encircle the joint."—(Young's *Anatomy.*)

2. *Minute anatomy of the pancreas:* "The *pancreas* consists for the most part of long tubular acini of columnar or polygonal epithelial cells, supported by very loose fibrous tisue. The cells are of the serum-secreting type. Their inner portion shows granules; the outer part is clearer, and sometimes striped. The pancreas has, therefore, a general resemblance to the parotid gland, but differs from it in two respects: (1) The intralobular ducts are lined by flat epithelium, and are inconspicuous; (2) between the acini here and there are islands of epithelial cells without any glandular arrangement. These are the *islets of Langerhans.* In some of the acini, close to the lumen, stellate cells can be seen. These are the *centroacinar cells of Langerhans*, and are probably continued into the acini from the small ducts. There are spaces between the cells continuous with the lumen of the acini. The larger ducts are lined with columnar epithelium, with a few goblet cells here and there, and the largest ducts have a ring of non-striped muscles in the fibrous wall. Numerous nerve fibers with nerve cells in their course run through the pancreas and end among the cells. Some of them may terminate in Pacinian corpuscles."—(*Aids to Histology.*)

3. DIGASTRIC. *Origin:* Groove on internal surface of mastoid process, and from posterior surface of body of inferior maxilla, near the symphysis. *Insertion:* Tendon attached to hyoid bone by a process of the deep cervical fascia. *Action:* It depresses the lower jaw and raises the hyoid bone. *Nerve supply:* Mylohyoid branch of inferior dental nerve and facial nerve.

BICEPS FEMORIS. *Origin:* Tuberosity of the ischium, great sacrosciatic ligament, outer lip of linea aspera of femur, upper part of line to external condyle, and intermuscular septum. *Insertion:* Outer side of head of fibula, by two slips. *Action:* Flexes knee, extends thigh, and rotates leg outward. *Nerve supply:* Great sciatic.

SOLEUS. *Origin:* Posterior surface of head of fibula and upper part of posterior surface of shaft of fibula, and oblique line and middle part of internal border of tibia. *Insertion:* By tendo Achillis into posterior part of os calcis. *Action:* It extends the ankle. *Nerve Supply:* Internal popliteal and posterior tibial.

GASTROCNEMIUS. *Origin:* Posterior part of inner condyle of femur and line above it, and posterior part of outer condyle. *Insertion:* By tendo Achillis into posterior surface of os calcis. *Action:* It flexes the knee and extends the ankle. *Nerve supply:* Internal popliteal.

4. The *occipital bone* forms the posterior inferior portion of the cranium. It presents two surfaces, four angles, and four borders. The external and posterior surface is irregularly convex and presents: The occipital protuberance for insertion of ligamentum nuchæ, and descending from which to the foramen magnum is the occipital crest; on either side, above and below are the superior and inferior curved lines for the attachment of muscles. In front it presents a large aperture,

the *foramen magnum*, transmitting the medulla oblongata and its coverings, the vertebral arteries, and the spinal accessory nerves. A little in front and on either side of the foramen magnum are the condyles for articulation with the atlas, the inner border of each condyle presenting a *tubercle* for the check ligament. Externally to each condyle are the *jugular processes*. In front of the foramen magnum is the *basilar process*, articulating with the sphenoid bone, and grooved on its under surface by the *pharyngeal spine* for the insertion of the tendinous raphé and superior constrictor of the pharynx. The *internal surface* is irregularly concave and divided by a *crucial ridge*, into four fossæ, the upper, for the posterior lobes of the cerebrum, and the lower, for the lateral lobes of the cerebellum. Its center is marked by an eminence, the *internal occipital protuberance*, which is hollowed out to correspond to the *torcular Herophili*. The upper division of the crucial ridge affords attachment for the falx cerebri, being grooved for the great longitudinal sinus; the lower extremity affords attachment for the falx cerebelli, being grooved for the occipital sinus; and the lateral divisions afford attachment for the tentorium cerebelli and are grooved for the lateral sinuses. In front of the foramen magnum is the basilar groove, lodging the medulla oblongata and part of the pons Varolii. The *superior angle* articulates with the parietal bones, the *inferior angle* articulates with the sphenoid, and the *lateral angles* are wedged in between the mastoid portion of the temporal and the posterior inferior angle of the parietal.—(Young's *Anatomy.*)

5. Relations of Axillary Artery. *In front:* Skin; fascia; pectoralis major and minor; costo-coracoid membrane; external anterior thoracic, inner head of median and internal cutaneous nerves; cephalic and acromiothoracic veins. *Behind:* First intercostal, serratus magnus, subscapularis, and tendons of latissimus dorsi and teres major muscles; posterior thoracic, internal anterior thoracic, musculospiral, and circumflex nerves, also posterior cord of brachial plexus. *Outer side:* Coracobrachialis; brachial plexus, and median and musculocutaneous nerves. *Inner side:* Axillary vein; ulnar, lesser internal cutaneous, and internal anterior thoracic nerves, and inner cord of brachial plexus.

6. *Prostate gland* is about 1½ x ¾ x ½ inches, and weighs about three-quarters of an ounce. It resembles a chestnut in size and form. It is situated at the neck of the bladder, and surrounds the first part of the urethra. It consists of fibromuscular (unstriated) tissue with imbedded follicular pouches, the whole enclosed in a firm fibrous capsular continuous in front with the triangular ligament, and behind with the posterior layer of the deep perineal fascia. The gland consists of three lobes, two lateral and one middle, and is perforated from base to apex by the urethra. The common seminal ducts open into the prostatic portion of the urethra, and are placed between the middle and lateral lobes.

Relations. *Anteriorly:* Symphysis pubis, anterior ligaments of bladder, branches of dorsal vein of penis. *Posteriorly:* Rectum. *Laterally:* Levator ani. *Base:* Surrounds neck of bladder, seminal vesicles, and vasa deferentia. The *apex* rests on triangular ligament.

7. "The mammary gland is a multiple alveolotubular organ. It is composed of from fifteen to twenty individual compound glands. Each of these possesses its own excretory duct, that has its own opening in the nipple. The entire organ is covered by skin. Each gland consists of lobes and lobules separated and supported by white fibrous and adipose tissues. All of the individual glands are further bound together in the same manner. The ducts converge and end in the nipple, which forms a small projecting mass. Each lobule consists of a number of acini which are tubular or alveolar in structure. The number of these depends upon the state of activity. In the gland of pregnancy, the acini are very numerous, and are lined by simple columnar or cuboidal cells, in which are accumulated the fat globules that form the important constituent of the milk. These cells rest upon a basement membrane, but in places are separated therefrom by peculiar elements called basket cells, which are compared to the smooth muscle tissue of the sweat glands. The ducts are lined by simple columnar cells which rest upon a basement membrane, outside of which circular bundles of white fibrous tissue are to be found. These ducts unite to form the main secretory duct of the individual glands; each main duct dilates to form a small ampulla or sinus lactiferus, before the nipple is reached."—(Radasch's *Compend of Histology.*)

8. The *internal mammary artery* arises from the under surface of the first part of the subclavian; it passes downward behind the clavicle and the subclavian vein to the posterior surface of the first costal cartilage, then between the pleura and the costal cartilages as far as the sixth space; it lies on the triangularis sterni muscle, and at the sixth space it divides into its two terminal branches, the musculophrenic and superior epigastric. Its other branches are the cornes nervi phrenici, mediastinal, pericardiac, sternal, anterior intercostal and perforating. It is distributed to the diaphragm, anterior mediastinum, thymus, pericardium, triangularis sterni, sternum, intercostal spaces, pectoral muscles, mammary gland, and rectus abdominis muscle.

9. The *musculospiral nerve* is derived from the posterior cord of the brachial plexus, and originates from the sixth, seventh, and eighth cranial nerves. At first it is behind the axillary and brachial arteries; it winds around the humerus in the musculospiral groove with the superior profunda artery; it pierces the triceps muscle. At the elbow joint it divides into the radial and posterior interosseous nerves. It supplies the triceps, anconeus, supinator longus, brachialis anticus, and extensor carpi radialis longi muscles.

10. The *common bile duct* passes along the right border of the lesser omentum, behind the first part of the duodenum, in front of the portal vein and to the right of the hepatic artery; it then passes between the pancreas and duodenum, in front of the inferior vena cava, and enters the small intestine by an opening common to it and the pancreatic duct.

PHYSIOLOGY.

1. *Functions of the cerebellum.* "When the normal impulses from the cerebellum are wanting, there is defective coordination of muscular movements as well as defective muscle tone. As a result, the power of maintaining the equilibrium of the body is impaired and the gait is staggering, though consciousness and volition are not affected. Further, observation of the results of localized lesions shows that different areas of the cerebellar cortex are associated with different groups of muscles, although no histological difference can be detected in the various parts of the cerebellar cortex. The cerebellum is, therefore, a reflex center for the maintenance of muscle tone and for the coordination of muscular movements. It is especially concerned with the maintenance of the position of the body in relation to gravity, and with coordination of the body as a whole."—(Bainbridge and Menzies's *Essentials of Physiology.*)

2. *Centers located in the medulla oblongata* are those for respiration, salivary secretion, mastication, sucking, deglutition, vomiting, voice, facial expression; it also contains the cardiac and vasomotor centers.

3. *Mechanism of accommodation.* "The lens is an elastic structure, and when released from the flattening influence of its suspensory ligament tends to assume a spherical shape. During accommodation the ciliary muscle (especially the circular fibers) contracts, drawing forward the choroid and relaxing the suspensory ligament; this diminishes the tension of the lens capsule and allows the inherent elasticity of the lens to increase its convexity. The change in curvature affects chiefly the anterior surface of the lens. This is Helmholtz's theory and the one usually accepted. Lately Tscherning has advanced a different theory; he maintains that the ciliary muscle increases the tension of the suspensory ligament during contraction and that this causes peripheral flattening of the lens with bulging anteriorly at its center. The act of accommodation is accompanied by contraction of the pupil, and (in binocular vision) by convergence of the visual lines."—(May's *Diseases of the Eye.*)

4. The formation of fibrin in the process of blood clotting is due to the interaction of fibrinogen and thrombin. Thrombin is derived from thrombogen by the action on the latter of salts of calcium.

5. During inspiration the venous flow to the heart is

assisted by the aspiratory action of the thorax; the negative pressure in the thorax becomes more negative and the venous blood is drawn into the thorax and toward the heart. This negative pressure hardly affects the aorta, and so the flow in the arteries is not affected.

6. *Removal of all the parathyroids* causes death from acute tetany. Their exact function is unknown, but it is supposed that some of the evil effects attributed to removal of the thyroids is really due to the removal of all the parathyroids as well, and that if the parathyroids are left (with their blood supply intact) these results will not ensue. The parathyroids are also concerned in the calcium metabolism of the body.

7. The contractions in *non-straited, involuntary muscles* are not under the control of the will; they are rhythmical, and are characterized by peristalsis. Example, the muscles in the walls of the intestines. In *striated, voluntary muscles,* the contractions are largely under the control of the will, are not rhythmical, and are not characterized by peristalsis. Example, the flexor muscles of the forearm.

When a muscle is in a state of activity: (1) It becomes shorter and thicker, but (2) there is no change in volume; (3) there is an increased consumption of oxygen; (4) more carbon dioxide is set free; (5) sarcolactic acid is produced; and hence (6) the muscle becomes acid in reaction; (7) it becomes more extensible, and (8) less elastic; (9) there is an increase in heat production and consequently a rise of temperature; (10) the electrical reaction becomes relatively negative; and (11) a sound is produced.

8. "Oxygen passes from the blood to the tissues by diffusion, and the amount which is available for the tissues depends largely upon the extent to which oxygen is set free in the plasma by the dissociation of oxyhemoglobin. If the tension in the tissues were zero, as was formerly supposed, the conditions during the passage of blood through the capillaries would be the same as if it were exposed to a vacuum, and the dissociation of oxyhemoglobin would be almost complete. Recent observations have shown, however, that the actual tension of oxygen in the tissues varies from 10 to 40 mm. of mercury, being highest in the glandular tissues and least in the muscles; this tension is so low that, as the blood traverses the capillaries, its oxyhemoglobin undergoes dissociation to a considerable extent. The oxygen thus set free passes into solution in the blood plasma and diffuses into the tissues. Further the rate at which oxyhemoglobin dissociates at this tension is increased by the addition to the blood of carbonic acid, and often of lactic acid, as it passes through the capillaries. In addition to these two factors, the amount of oxygen available for the use of the tissues depends upon the rate at which the blood is flowing through the capillaries. Carbonic acid also passes by diffusion from the tissues, in which its tension is high, into the plasma, in which its tension is much lower. The tension of carbonic acid in the tissues is ascertained indirectly by measuring its tension in bile or urine, and is about 8 or 9 per cent. of an atmosphere, whereas its tension in blood is only 5 to 6 per cent. of an atmosphere."—(Bainbridge and Menzies's *Essentials of Physiology.*)

9. *Three enzymes that act on carbohydrates:* Ptyalin, amylopsin, and maltase.

10. *Trypsin* is formed in the pancreatic juice; it acts on proteins.

MATERIA MEDICA AND THERAPEUTICS.

1. *Treatment of hemorrhagic disease of the newborn.* "By far the most satisfactory method of treatment is by the use of fresh human blood. The simplest and most satisfactory method is to withdraw from the arm of one of the parents, or other suitable individual, 30 to 50 c.c. and inject it subcutaneously or intramuscularly into the patient. This may readily be accomplished by using a relatively large syringe which holds, say, 20 c.c. By having two needles, leaving one in the vein when the syringe is filled, and using the other to inject the infant, it becomes feasible to easily and rapidly administer the treatment. The child should be reinjected every four to eight hours, depending upon the behavior of bleeding. This injection should be continued for one to two days or longer if the tendency to hemorrhage persists. Another simple procedure is to use an anticoagulant, the best of which is sodium citrate, in about 0.2 per cent. solution. This method has the advantage of permitting more time in the procedure, as there is no danger of the blood clotting. Another point in its favor is that a large amount, say 200 c.c., may be drawn from the donor into a citrate solution, and if kept cool will remain active for a week, and can be injected subcutaneously or intramuscularly in doses of 30 to 50 c.c. every four to eight hours. The use of the fresh or citrated blood, on account of the ease and rapidity of its application, will as a rule take preference over the direct transfusion. Where the infant is exsanguinated, direct transfusion may be desirable. The use of fresh animal serum or the dried precipitated sera is much less desirable than fresh human blood on account of the danger of anaphylactic reaction and inactivity of the preparation used. The use of supposed coagulants, as calcium chloride or gelatin, which at most are of questionable value since the use of fresh blood, can be dispensed with. Especially should the physician avoid wasting valuable time by trying these remedies first, rather than resorting at once to the use of fresh blood.—(Musser and Kelly's *Practical Treatment.*)

2. *Drugs used to cause an increase in the flow of urine:* Potassium acetate, bitartrate, and citrate; sodium acetate; ammonium acetate; lithium citrate and carbonate; magnesium citrate and sulphate; water; milk; digitalis; strophanthus; convallaria; squill; sparteine; calomel; caffeine; the nitrites; alcohol; cantharides; juniper; buchu; uva ursi.

"There is much difference of opinion as to *the use of diuretics in acute nephritis.* Some observers believe that all diuretics are irritating to the kidneys and therefore should be withheld at least during the stage of engorgement. Most authorities admit, however, that mild alkaline diuretics, like the vegetable salts of potassium, often serve a useful purpose in removing from the uriniferous tubules proliferated epithelium, albuminous plugs, and effete matter. From 20 to 30 grains of the citrate or acetate of potassium may be given three or four times a day, well diluted. Later in the disease, when the pulse tension falls, experience has proved that digitalis is often of great value. From 2 to 4 fluid drams should be given every three or four hours. It may be combined advantageously with an alkaline diuretic."—(Stevens' *Materia Medica and Therapeutics.*)

3. *Treatment of summer diarrhea in infants:* "Hygiene should be improved and exposure prevented. Feeding should be corrected. Cleanliness is imperative. Woolen clothing should be worn next to the skin when there is susceptibility to changes in the atmosphere. During the attack all food should be withheld for from twelve to thirty-six hours, and the child placed in bed. The thirst may be quenched by water, ice, barley-water, etc. If the child is weak brandy, gtt. 10-15, may be given. For the abdominal pain warm baths, turpentine stupes, spice poultice, and mustard plaster may be necessary. When food is given again it must be weak and in small quantities. The alimentary canal should be cleared of all irritating material by syrup of ipecacuanha, 51, if the stomach contains food, or by castor oil, equal parts of castor oil and aromatic syrup of rhubarb, 51 every hour until free bowel movement, or calomel, gr. ½, with soda bicarbonate, gr. 1, for four or five doses. The colon should be irrigated once or twice daily. If improvement is not marked in from twenty-four to thirty-six hours intestinal antiseptics, astringents, or both may be administered."—(*Pocket Cyclopedia.*)

4. In the treatment of syphilis, mercury may be administered: (1) *By the mouth:* Hydrargyri iodidum flavum, gr. 1/6 to 1; hydrargyum cum creta, gr. 1 to 2; hydrargyri chloridium corrosivum, gr. 1/12; each of these doses should be given three times a day. (2) *By inunction:* Unguentum hydrargyri, 2 to 4 drams every night on a different part of the skin. (3) *By intramuscular injection:* Calomel, gr. 1 or 2 in sterilized olive oil; or oleum cinereum, 1 dram; or mercuric salicylate, 1 c.c. of 10 per cent. suspension in oil. (4) Other methods include intravenous injections, spinal injections of mercurialized serum, inhalations of mercury or calomel vapor, fumigation, and plasters.

5. *Symptoms and signs of mercurialism:* Sore teeth,

spongy gums, profuse salivation, fetid breath, bluish line on the gums along the margins of the teeth, swelling of the salivary glands, aching of the jaws, fever, emaciation, anemia, diarrhea, cachexia, and malnutrition.

6. *Choral hydrate* is a compound of trichloraldehyde and a molecule of water. It is soluble in water, is neutral in reaction, has an ethereal odor, a sharp taste, and is easily decomposed under the influence of sunlight and potassium chlorate. On the *central nervous system* it acts as a hypnotic; it depresses and paralyzes the nervous system. It depresses the *heart*, and causes dilatation of both auries and ventricles. The usual adult dose is about 8 or 10 grains.

7. ℞.

Acidi nitrohydrochlorici diluti ℥vj.
Tincturæ aurantii amari.
Tincturæ calumbæ āā ℥j.
Infusi gentianæ q. s. ad ℥x. M.

Sig. One tablespoonful in a wineglassful of water, after each meal.

8. *Prolonged therapeutic doses of digitali: may cause:* Weak, dicrotic pulse, perspiration, nausea, vomiting, lowered reflexes, lowered body temperature, vertigo, muscular tremors, lassitude, delirium, stupor.

9. Digitalis, strophanthus, and convallaria.

10. For an *acute attack of asthma*, the following have been used: The fumes of ignited stramonium or belladonna leaves which have been steeped in potassium nitrate; these drugs may be burned in the patient's room, or smoked as cigarettes. Amyl nitrite, 5 to 6 minims, by inhalation; or a few whiffs of chloroform. Adrenalin solution (1:5000) on a pledget of cotton applied to the nasal mucous membrane or sprayed on to it. A hypodermic of morphine sulphate, ⅛ of a grain. Heroin hydrochloride, hypodermically, in 1/12 grain doses. Inhalation of compressed air or oxygen.

Hygiene and Medical Chemistry

1. The men may be suffering from various inherited defects; or from diseases due to accident or injury, or to the effects of climate, or to bad habits and modes of life (such as venereal diseases, and alcoholism); or to diseases such as typhoid, cholera, malaria, dysentery, etc. Improper food, clothing, hardships, and overcrowding are also factors. Any diseased condition of heart, blood vessels, nerves, lungs, abdominal organs, joints, feet, etc., may also cause inefficiency.

2. and 3. The following extracts are from the regulations prepared by the Surgeon-General of the Army:

The physical examination should take place in a large, well-lighted room. The person examined is to be stripped. The examining physician should proceed in substantially the following order, viz:

(*a*) Observe the general condition of the skin, scalp, and cranium, ears, eyes, nose, mouth, face, neck, and chest. Take weight, height, and chest measurements. Accepted measurements are as follows, all chest measurements to be taken on a level just above the nipple:

Height		Weight	Chest Measurement	
			at Expiration	Mobility
Feet	Inches	(Pounds)	(Inches)	(Inches)
5 4/12	64	128	32	2
5 5/12	65	130	32	2
5 6/12	66	132	32½	2
5 7/12	67	134	33	2
5 8/12	68	141	33¼	2½
5 9/12	69	148	33½	2½
5 10/12	70	155	34	2½
5 11/12	71	162	34¼	2½
6	72	169	34¾	3
6 1/12	73	176	35¼	3
6 2/12	74	183	36¼	3
6 3/12	75	190	36¾	3¼
6 4/12	76	197	37¼	3½
6 5/12	77	204	37½	3¾
6 6 12	78	211	38¼	4

To be acceptable, men below 64 inches in height must be of good physique, well developed, and muscular. Variations in weight above the standard are not disqualifying, unless sufficient to constitute obesity. Unless exceptionally well proportioned, men above 6 feet 6 inches in height should be rejected.

(*b*) The arms being extended above the head, backs of hands together, the applicant is required to cough vigorously; any form of rupture may now be discovered by the hand and eye, but still better by the index finger passed up to the external ring.

(*c*) The arms remaining extended above the head, the applicant is required to take a long step forward with the right foot and bend the right knee; the genital organs are now conveniently exposed and varicocele and other defects in the scrotum may be recognized.

(*d*) Arms down and the man required to separate the buttocks with his hands, at the same time bending forward; this exposes the anus.

(*e*) Examine heart and lungs; rate of pulse and respiration.

(*f*) Upper extremities: Make sure that all joints are free and supple, from the phalanges to the shoulder.

(*g*) Lower extremities. The person under examination is required to leap directly up, striking the buttocks with the heels, to hop the length of the room on the ball of first one foot and then the other, to make a standing jump as far as possible and repeat it several times, to run the length of the room in double-time several times, after which his heart and lungs are reexamined.

(*h*) *Mental.*—The mental examination should be such as to develop whether or not the man examined is possessed of normal, sound understanding.

(*i*) *Vision.*—Examine each eye separately, without glasses, covering the other eye with a card (not with the hand). The applicant is directed to read the test types from the top of the chart down as far as he can see, and his acuity of vision recorded for each eye, with the distance of 20 feet as the numerator of a fraction, and the size of the type of the lowest line he can read correctly as the denominator. The minimum visual requirements are as follows: 20/40 for the better eye, and 20/100 for the poorer eye, provided that no organic disease exists in either eye.

(*j*) *Hearing.*—To determine the acuity of hearing, place the applicant facing away from an assistant who is 20 feet distant and direct him to repeat promptly the words spoken by the assistant. If he cannot hear the words at 20 feet, the assistant should approach foot by foot, using the same voice, until the words are repeated correctly. Examine each ear separately, closing the other ear by pressing the tragus firmly against the meatus. The examiner, whose hearing should be normal, faces in the same direction as the candidate and closes one of his own ears in the same way as a control. The assistant should use a low conversational voice (not a whisper), just plainly audible to the examiner, and should use numerals, names of places, or other words or sentences until the condition of the applicant's hearing is evident. The acuity of hearing is expressed in a fraction the numerator of which is the distance in feet at which the words are heard by the candidate and the denominator the distance in feet at which the words are heard by the normal ear; thus 20/20 records normal hearing, 10/20 imperfect hearing, etc. The hearing with both ears open should not be below 10/20.

4. Woolen fabrics are warm for cold and windy weather. Wool is a poor conductor of heat and is not easily penetrated by cold winds. Paper is also a good protective against cold winds, and a paper vest will conserve the warmth of the body.

5. *In selecting a camp site* the following conditions should be borne in mind: The presence of water, wood, and grass. The soil should be dry and elevated, with some protection from winds. There should be space enough to accommodate the men without crowding. Old camp sites should be avoided because the soil is certain to be polluted and may be infected. Excess of vegetation and dense woods should be avoided on account of the extreme moisture or dampness which they induce. Marshes and stagnant water should also be avoided on account of mosquitoes.

6 and 7. "Upon arriving at the selected site, the first duty which concerns the medical officer, if the matter has not been previously attended to, is an examination of the water supply and the determination of the place or places where drinking and cooking water should be drawn. Below this, if the supply is from a stream, other places should be likewise set apart for watering animals, for bathing, and for washing clothing, in the order named." . . . The camp is to be arranged in columns of companies, at convenient distances. Generally the arrangement for each company will be in two lines, facing each other, with

a distance of 15 to 20 yards between the lines; this space forming the company street. From the sanitary point of view the great guiding principle is to separate the kitchen and messes as far as possible from the latrines. Therefore, the rule is to place the kitchen on one flank of the company and the latrine on the other. Near the kitchen is the store tent, and a pit for liquid wastes when cans are not provided for the purpose. Next to the line of kitchens is the line of officers' tents. Plans are prescribed in the Field Service Regulations. (From Havard's Military Hygiene.) The huts may be made to accommodate four to eight men, or barracks may be built to accommodate about one hundred men. According to Smith (quoted in Munson's Military Hygiene), "a space should be cleared for about three feet around the proposed site. The ground to be included should be smoothed and slightly raised, never excavated, and should be pounded or hardened. Trenches should be dug around the huts, and thence in a direction and to the distance required for effective drainage. The ground outside may be slightly raised, but an embankment should never be erected around the bottom for the sake of warmth, but instead the hut may be lined to a convenient height within, to ward off currents of cold air. The cleared space outside should be paved or covered with gravel. Wooden floors should be laid, if possible, and suitable provision made for the entrance of the air from the outside through either the floors or the lower part of the walls. Eaves should carry the rain some distance from the walls and, if possible, porches should be built, as adding much to the comfort of the inhabitants. Ventilation should be secured at ridge, end, and sides." The roofs and outsides may require waterproof sheathing paper; the windows may be fitted with sliding sashes or work on hinges. As a rule, each man should have from 600 to 1000 cubic feet of space, and if the huts or barracks are 10 feet high, this means from 60 to 100 square feet of floor space.

8 and 9. *Typhoid.* Water should be boiled; food must be screened from flies and protected from dust. Those attending the patient must wash their hands with soap and water and with an antiseptic lotion. Protective inoculation is of value to those liable to exposure. The urine and feces must be disinfected; soiled linen or clothing must be kept protected from flies and then boiled before being sent to the laundry. Flies must be kept out of the house. "Carriers" must be avoided.

Typhus. Personal cleanliness is essential; all unnecessary contact with the sick must be avoided, and rubber gloves should be used when attending patients. Cleansing and whitewashing of dark and dirty places should be enforced; sulphur dioxide is a good disinfectant. Quarantine suspected cases. In inhabited houses, phenol is a good disinfectant. Lice and bedbugs, if on the body, should be attacked by mercurial ointment; if in clothing, the latter should be disinfected by steam.

Yellow fever. Destroy the mosquitoes (and their larvæ), or keep them out of the houses. The patient must be isolated in a mosquito-proof room.

Malaria. Destroy the anopheles mosquito. Screen the houses. Persons who have malaria should take quinine regularly.

Syphilis. Notification of the disease, and instruction of the patient. Proper provision should be made for the treatment of genitourinary and venereal diseases. The use of a prophylactic calomel ointment should be advised to those who intend to take risks.

10. A little water should be placed in a large, clean bottle, and then shaken vigorously; if the water is much contaminated an offensive odor will be observed. Germ-laden water should be boiled. The use of chlorinated lime is recommended. Three grains of this substance will purify a barrel of water.

(*To be concluded.*)

Traumatic Syphilitic Gumma.—Lévy and Gaby saw rapidly develop in the site of a contusion a gumma which promptly ulcerated. The patient had contracted syphilis only three months earlier. The gumma, which contained the treponeme, healed promptly under mixed treatment.—*La Presse Médicale.*

Books Received.

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THE SMALL COMMUNITY HOSPITAL. A Series of Eight Papers. By JOHN ALLAN HORNSBY, M.D. 109 pages. Reprinted from The Modern Hospital, St. Louis, Mo. 1917.

SIXTEENTH ANNUAL REPORT OF THE METROPOLITAN WATER AND SEWERAGE BOARD. For the year 1916. 225 pages. Published by Wright & Potter Printing Co., State Printers, Boston, Mass. 1917.

HOSPITAL OF THE PROTESTANT EPISCOPAL CHURCH IN PHILADELPHIA. MEDICAL AND SURGICAL REPORTS OF THE EPISCOPAL HOSPITAL. Vol. IV. 326 pages. Illustrated. Published by Press of Wm. J. Dornan, Philadelphia, Pa. 1916.

LE PALUDISME MACÉDONIEN. Par P. ARMAND-DELILLE, P. ABRAMI, G. PAISSEAU, HENRI LEMAIRE. Préface du Professeur LAVERAN, Membre de l'Institut. 120 pages. Published by Masson et Cie., Paris. 1917. Price, 4 francs.

OTITES ET SURDITÉS DE GUERRE. Par H. BOURGEOIS et M. SOURDILLE. Préface du Médecin-Inspecteur TOUBERT. 190 pages; 78 illustrations and 6 plates. Published by Masson et Cie., Paris. 1917. Price, 4 francs.

L'APPAREILLAGE DANS LES FRACTURES DE GUERRE. Par P. ALQUIER et J. TANTON. 250 pages; 182 illustrations. Published by Masson et Cie., Paris. 1917. Price, 7 fr. 50.

EXPLORATION RADIOLOGIQUE DES VOIES URINAIRES. Par F. ARCELIN. 175 pages; 123 illustrations. Published by Masson et Cie., Paris. 1917. Price 6 francs.

THE FUNDUS OCULI OF BIRDS, Especially as Viewed by the Ophthalmoscope. By CASEY ALBERT WOOD. 180 pages; 145 illustrations and 61 colored plates. Published by H. A. Fox, Chicago. 1917. Price, $15.

FIRST AID TO THE INJURED AND SICK. By F. J. WARWICK and A. C. TUNSTALL. 246 pages, illustrated. Published by William Wood & Company, New York. Price, 80 cents.

THE DIAGNOSTICS AND TREATMENT OF TROPICAL DISEASES. By E. R. STITT. 534 pages, illustrated. Published by P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia. Price, $2.

NUTRITION AND CLINICAL DIETETICS. By HERBERT S. CARTER, PAUL E. HOWE, and HOWARD H. MASON. 646 pages. Published by Lea & Febiger, Philadelphia and New York. Price, $5.50.

AN EPITOME OF MENTAL DISORDERS. A Practical Guide to Ætiology, Diagnosis, and Treatment for Practitioners, Asylum and R. A. M. C. Medical Officers. By E. FRYER BALLARD, M.B., B.S. (Lond.). 211 pages. Published by P. Blakiston's Son & Company, Philadelphia, 1917. Price, $2.25 net.

FRACTURES OF THE LOWER EXTREMITY OR BASE OF THE RADIUS. By LEWIS STEPHEN PILCHER, A.M., M.D., LL.D. 116 pages; 132 illustrations. Published by J. B. Lippincott Company, Philadelphia and London, 1917.

FOOD FOR THE SICK. A Manual for Physician and Patient. By SOLOMON STROUSE, M.D., and MAUDE A. PERRY, A.B. 270 pages. Published by W. B. Saunders Company, Philadelphia and London, 1917. Price, $1.50.

A MANUAL OF ANATOMY. By HENRY ERDMANN RADASCH, M.Sc., M.D. 329 pages, illustrated. Published by W. B. Saunders Company, Philadelphia and London, 1917. Price, $3.50.

MODERN DIETETICS; Feeding the Sick in Hospital and Home. With Some Studies on Feeding Well People. By LULU GRAVES. 214 pages. Published by The Modern Hospital Publishing Co., St. Louis, Mo., 1917.

ALCOHOL, ITS RELATION TO HUMAN EFFICIENCY AND LONGEVITY. By EUGENE LYMAN FISK. Authorized by The Life Extension Institute. 216 pages. Published by Funk & Wagnalls Co., New York and London. Price, $1 net.

HYGIENE OF THE FACE AND COSMETIC GUIDE. Fully illustrated. 257 pages. By RICHARD W. MULLER, M.D. Published by E. P. Dutton & Co., New York $2 net.

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Original Articles.

INCOMPETENCY OF THE ILEOCECAL VALVE VS. LANE'S KINK AS THE CAUSE OF ILEAC STASIS.

BY J. H. KELLOGG, M.D., LL.D., F.A.C.S.,

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THE significance of the ileocecal valve is clearly shown by an observation of Magnus-Levy in an able article in Von Noorden's compendious work on metabolism. After calling attention to the fact that urobilin, a product of the putrefaction of bile, must be classed with indol, skatol, phenol, cresol, and other poisonous products of intestinal putrefaction, he adds:

"The classic research of Jaffé and Nencki has shown that these bodies are not present in the small intestine, confirmed by A. Schmidt and others. They originate, therefore, in the large intestine, in which the microorganisms have the necessary time to produce abnormal decompositions. This fact has become of importance for the recognition of many intestinal troubles."

In health, according to Weintrand in Von Noorden's Metabolism, urobilin is not found in the small intestine; it first appears in the cecum and ascending colon. (Nencki and Sieber, Macfadyen, A. Schmidt, Schlorlemmer.) Since the conditions in the colon are unfavorable to absorption, urobilin seems thus to do little harm so long as it is confined to the first part of the large intestine where it is produced. *But when the ileocecal valve,* which forms a sharp line of demarcation (A. Schmidt), is incompetent, the urobilin is forced back into the small intestine, and is there quickly absorbed along with other poisons.

It appears, then, that the ileocecal valve is the chief barrier against the flooding of the body with the multitudinous toxins which are generated in the colon. So long as the putrefaction products are confined to the colon they do comparatively little harm because of the slow rate of absorption; but when they are carried by reflux into the small intestines they are rapidly absorbed, and the result is an attack of headache, so-called "biliousness," a skin eruption, loss of appetite, depression, or some other indication of a toxemic state.

The condition most favorable to the development of intestinal toxemia is ileac stasis, as originally pointed out by Arbuthnot Lane, to whom also the world is profoundly indebted for demonstrating the fact that a very great number of grave chronic ailments are due to the toxemia resulting from ileac stasis, although he erred in his attempt to find the cause of the stasis in certain harmless attachments of the terminal ileum of embryonic origin, commonly known as "Lane's kink."

The association between incompetency of the ileocecal valve and ileac stasis was first definitely established by the thoroughgoing roentgenologic studies of the alimentary canal by the writer's colleague, Dr. J. T. Case. That the relation was one of cause and effect was proven by the writer by operation for repair of the valve and immediate cure of the stasis by so doing. The restoration of the competency of the valve is shown at the operation, and later by a barium enema. The relief of the ileac statis is easily demonstrated by post-operative *x*-ray examination after a barium meal.

It cannot be claimed that incompetency of the ileocecal valve is the one and only cause of ileac stasis. Stasis may be due to obstructive lesions of various sorts; but aside from cases in which the obstruction is complete or nearly so, incompetency of the valve is a far more potent cause of stasis than simple narrowing of the lumen of the small gut. The propulsive efficiency of the small bowel is very great. Food normally enters the intestine in small quantities and the absorptive activity of this part of the alimentary canal is so great that of the 6,000 or 7,000 c. c. of material which enter the bowel every twenty-four hours only a few hundred are left to be sent on into the colon as unusable residue and this small amount is easily passed along by the powerful propulsive peristaltic waves and "rushes" which normally occur in the ileum even though the lumen of the gut may be very considerably narrowed. Every abdominal surgeon of large experience has encountered cases in which constricting lesions of the small intestine were found but in which no evidence of ileac stasis or other disorder in the bowel function has been observed. Adhesions of the small intestine to the abdominal parietes as well as to the intestine itself and other viscera are very common after abdominal operations but very rarely produce stasis.

This fact casts serious doubts upon the importance of the so-called Lane's kink as a cause of stasis. Besides, Case has demonstrated in scores of cases by *x*-ray examination very marked adhesions of the terminal ileum which produced no ileac stasis. In many of these cases the writer has verified the *x*-ray findings at the operating table when operating for removal of a diseased appendix or dealing with some other lesion requiring abdominal section. While the medical profession and the whole world, for that matter, are under great obligations to Sir Arbuthnot Lane for demonstrating the great importance of ileac stasis as a proximal cause of many

of the gravest maladies, it must be admitted that only a comparatively small number of practical surgeons have ever been convinced of the importance of Lane's kink (adhesions of the terminal ileum) as a cause of stasis. And it may be justly added that the disappointing results which have been experienced by most of those who have resorted to short-circuiting and other procedures suggested by Mr. Lane for the relief of stasis have led to a decided and growing skepticism respecting the soundness of his theories relating to the genesis and the significance of adhesions of the terminal ileum, even among those who most admire the wonderful genius and admirable personality of one of the most able and progressive of British surgeons.

Consideration of the ileocecal valve in relation to ileac stasis reveals a very different picture. Here is a brief summary of the facts which have been elucidated by the observations of Bauhin, Kraus, Hertz, Ad. Schmidt, Elliott, Keith, Cannon, Case, the writer, and others:

1. All vertebrate animals, even fishes and reptiles, are provided with an efficient ileocecal valve. The presence of this check valve between the mid-gut and the hind-gut is as universal as the pyloric sphincter between the fore-gut and the mid-gut. The only possible inference to be drawn from this fact is that the ileocecal valve must have an important function to perform, the nature of which though formerly obscure, is now made clear by the researches of Cannon and Elliott in animals and Case, Schwartz and others in *x*-ray studies of the human alimentary canal.

2. A check valve at the junction of the small intestine and the colon is essential for definite and permanent advance of bowel material because of the back pressure due to the normal tonicity of the large gut and the accumulation of material in the colon which normally empties intermittently and not continuously. The check valve is in constant use in engineering practice under similar conditions in steam engines, heating systems, etc. The ileocecal valve is a most admirable illustration of vital mechanics.

3. In addition to the back pressure resulting from the accumulation of gas, liquids, and semi-solids in the colon, additional pressure reacting against the ileocolic junction is induced whenever the bowels move as a result of the contraction of the diaphragm, the abdominal muscles and of the colon itself.

4. Another factor tending to produce reflux from the colon to the small intestine and necessitating intervention of a check valve at the ileocolic junction is found in the periodical contractions of the cecum and ascending colon.

5. A still more powerful factor tending to produce a back flow from the colon into the small intestine and creating an absolute necessity for the function performed by the ileocecal valve is found in the retroperistaltic action of the right half of the colon.

This reversed action of the colon is a powerful movement which starts about the middle of the transverse colon, and forces the intestinal contents back toward the cecum for the purpose of causing delay sufficient to permit the absorption of a considerable portion of the water content of the material sent into the large gut from the small intestine. The action is most vigorous after meals. It was discovered by Cannon in animals, and demonstrated in human beings by Case.

6. The ileocolic valve when normal is a perfect and highly efficient mechanical device. It even works in the dead subject and in the intestine when removed from the body if care is taken to avoid injury to the parts.

7. When the ileocecal valve is incompetent, even slight pressure upon the distended cecum is sufficient to cause reflux of gas and liquid into the ileum.

8. In the living body incompetency of the ileocolic valve is practically always associated with ileac stasis. The incompetency is nearly always demonstrable by the *x*-ray, but sometimes the *x*-ray fails to show the incompetency even when the condition is very marked. There is little or no evidence that spasm of the gut at the ileocolic junction is a frequent cause of ileac stasis.

9. In most cases of incompetency of the ileocecal valve associated with ileac stasis as proven by *x*-ray examinations by Dr. Case and verified by both the writer and Dr. Case at the operating table in connection with various abdominal operations, Lane's kink was absent; that is, no adhesions of the terminal ileum were found in most cases, and in the very small number of cases in which Lane's kink was present the stasis was no greater than in those cases in which adhesions of the terminal ileum were absent.

10. In some scores of cases in which Case was able to show by the *x*-ray the presence of Lane's kink without incompetency of the valve, ileac stasis was present in only two or three cases.

11. Dr. Case, who has observed ileac stasis in several hundred cases, estimates that he finds the stasis due to obstructive adhesions of the terminal ileum in not more than three or four per cent. of all cases of stasis in the small intestine. His observations demonstrate most clearly that the usual cause for ileac stasis is incompetency of the ileocecal valve.

12. It is well known to abdominal surgeons that ileac stasis is rarely if ever cured by the breaking up of adhesions about the terminal ileum. It was this fact which led Sir Arbuthnot Lane to devise the operation of short-circuiting.

13. When incompetency of the ileocecal valve is associated with ileac stasis, the stasis is cured by repair of the valve and without breaking up the adhesions of the terminal ileum when these are present.

14. The relief of symptoms sometimes obtained by the operation of short-circuiting is rarely ever more than temporary. The ileac stasis ultimately returns through the dilatation of the intestine which is inevitable when the newly made ileocolic junction is not protected by a check valve as under normal conditions. The small intestine may be for a short time able to keep itself empty because relieved of the back pressure from the anti-peristaltic action of the transverse colon. But the absence of a barrier against reflux at the ileocolic junction permits the backing up of fecal matters from the pelvic colon after the blind-ended colon has first been filled, and the small intestine is gradually dilated until several

feet of it may become nearly as large as the colon. Case has demonstrated that incompetency of the ileocolic junction and reflux exist in practically all cases of short circuiting performed by Lane's method, which makes no effort to provide the protection of a valve.

15. The writer has demonstrated that the recurrence of ileac stasis after the operation of short-circuiting may be prevented by making an artificial ileocecal valve. I have also succeeded in constructing an efficient valve in cases in which a short-circuiting operation had been previously done by other surgeons without affording relief. This shows that repair of the valve is the curative measure, and not the short-circuiting. (Of course, there are rare cases in which the colon must be sacrificed.)

16. In cases of chronic ileac stasis the walls of the gut are thin and atrophic, evidently the result of degeneration from over work and chronic infection. The lumen of the gut is normal. In stasis due to obstruction, the intestinal wall is inevitably thickened and hypertrophied, while the lumen of the gut is notably increased, showing the effects of forcible distention. This is never seen in intestinal stasis of the ordinary type.

17. The periodic contractions of the cecum alternating with strong retroperistaltic waves starting in the transverse colon, must inevitably cause reflux of the colon contents into the small gut unless movement in this direction is checked by the ileocolic valve. And this action is not occasional but constant for hours after every meal, so that in a person whose ileocolic valve is incompetent, the ileum is seldom if ever empty. Normally the small gut clears itself of a meal within eight or nine hours, thus insuring the gut a period of rest at least during a part of each twenty-four-hour period. When the valve becomes incompetent, the bowel is never empty and hence never at rest. The continued presence of gas and fluid contents keeps the gut perpetually at work. The result is exhaustion and degeneration. Another potent cause of degeneration is to be found in the chronic infection which inevitably develops as the result of reflux of putrefying materials from the colon. In the rare cases in which Lane's kink is really the cause of stasis the bowel is found hypertrophied and dilated as in cases in which the lumen of the gut is narrowed to the point of obstruction by ulceration or other causes.

As regards the genesis of obstructive adhesions of the terminal ileum, the writer is fully convinced that they are the natural consequence of incompetency of the ileocecal valve. The constant presence of infectious material from the colon not only causes the terminal ileum to sag down in the pelvis but sets up an enteritis which in time develops into perienteritis and thus causes the gut to adhere to whatever surface it may happen to rest in contact with. The same process is seen in the appendix. Cecal stasis keeps the appendix distended with fecal matter thus causing infection with chronic inflammation and adhesions. The appendix is generally found diseased when the valve is incompetent.

This view is supported not alone by theoretical considerations but by several interesting observations at the operating table in cases in which marked incompetency of the ileocolic valve existed with very pronounced adhesions of the terminal ileum. The disposition of the adhesions was such that *they must have been formed after the valve had become incompetent.* This opinion, shared by my colleagues, Drs. Harris and Case, who assisted at the operations, was based upon the fact that the extensive adhesions involved surfaces which are normally invaginated and lie within the colon and hence must have been pulled out before the adhesions occurred. In fact, the relation of the adhesions to the ileocolic junction was such as to strongly suggest that a very apt and partially successful effort had been made to repair the damaged valve, a most striking illustration of the resources of that marvelous workman, the *vis medicatrix naturæ.*

The ordinary, non-obstructing attachments of the terminal ileum, generally known as Lane's kink, have been clearly shown to be embryonic structures, and without pathological significance.

That incompetency of the ileocecal valve is a true structural lesion and not a mere functional disorder as has been suggested by some internists, will not be questioned by anyone who has taken the trouble to make a careful study of the ileocolic junction either in the anatomical laboratory or at the operating table. Inspection alone is sufficient in most cases to determine whether or not the valve is incompetent. When the valve is competent the ileum is narrowed at its junction with the colon, and its constricted terminus is hidden between folds of the colon. A deep sulcus bridged over by a thin layer of peritoneum is seen on each side of the ileocecal fold.

When the valve is incompetent, the picture is strikingly different. Instead of converging at its junction with the colon, the ileum is widely distended so that the terminus is funnel shaped, diverging toward the colon. The sulcus on either side of Treves's fold is obliterated and the line of junction between colon and ileum which is normally found at the free edges of the two lips of the valve projecting into the lumen of the colon is found upon the surface of the bowel, where it may be easily traced above and below the fold of Treves.

The diameter of the normal ileocolic junction is 2 centimeters. I found the average diameter in 82 cases in which the valve was proved to be incompetent to be 5½ centimeters.

A large amount of gas in the ileum and colon is an almost certain sign of incompetency of the valve. It is easy to test the condition of the valve by making pressure on the gas filled cecum while at the same time compressing the ascending colon.

In operating for repair of incompetency of the ileocecal valve it must be remembered that while the lesion is a direct cause of many serious morbid conditions which grow out of intestinal toxemia, the result of stasis and ascending infection of the small intestine, the lesion itself is a result of some other existing morbid condition. The most common cause is some obstruction existing between the ileocecal valve and the rectum. In many cases the cause will be found in obstructive adhesions of the pelvic or ileac colon. The obstruction is more likely to occur in the middle of the pelvic loop or at the pelvi-rectal junction, but may exist at the ileopelvic junction. Obstruction may also arise from a neoplasm. In a certain number of cases no structural changes are found. In such cases the

cause of obstruction is shown by the *x*-ray to be a spastic condition of the distal portion of the colon, frequently associated with colitis.

Incompetency of the valve may be due to other causes than over-distention of the cecum. Max Hertz called attention to the fact that the valve may become incompetent as a result of tubercular or syphilitic ulceration. The writer has noticed several cases in which the incompetency of the valve seemed to be due to a drag upon the ileocolic junction resulting from adhesions of the terminal ileum to the appendix. In such cases, competency is restored by simply breaking up the adhesions. In several instances the incompetency seemed to be due to adhesions formed subsequent to an operation for removal of the appendix.

Whatever the cause of the incompetency of the valve it must be removed, otherwise the natural result will be a reproduction of the incompetency, for it can hardly be supposed that a repaired valve can be prepared to resist the causes which produce incompetency better than a normal valve. If there are adhesions in the pelvic colon, these must be broken up and measures must be taken to prevent their recurrence. The great extent of these adhesions in some cases renders this complication a difficult one to deal with. Good results have been obtained from the following method:

The pelvic colon is attached to the omentum and the omentum at a point a couple of inches higher up is attached to the abdominal wall. This gives the pelvic colon a swinging attachment which holds it in normal position and prevents reformation of the obstructive adhesions and at the same time does not interfere with the peristaltic movements of the gut and also saves the patient from the inconvenience and pain which frequently result from attachment of the bowel to the abdominal wall.

Obstructions due to Jackson's membrane, adhesions, and bands formed at any point along the colon must be properly dealt with. Tubercular ulcers, cancerous growths, obstructions due to diverticulitis, and other obstructive lesions may require excision of a portion of the bowel.

The interesting facts to which Keith has recently called attention concerning the nodes by which the normal rhythmic function of the intestinal musculature is controlled and organized have little if any bearing upon the subjects discussed in this paper for the reason that the function of the ileocecal valve proper is purely mechanical and hence not influenced by the nervous mechanism which controls the musculature of the small intestine including the *ileocolic sphincter*, which lies above the ileocolic valve and is wholly independent of it in structure and function.

Nature of Acne Rosacea.—Arullani looks upon this as a chronic constitutional affection occurring in subjects with flabby and readily dilatable heart, arterial hypotension (even in youth), cold extremities, hyperidrosis, palpitations, and digestive disturbances, the latter also acting as causes of exacerbations. Much of the treatment which is in use by the general run of practitioners is, he thinks, irrational. The keynote should be increase of vascular tension and improvement of blood count and hemoglobin.—*La Presse Médicale.*

THE DIAGNOSIS AND THERAPY OF CHRONIC INTESTINAL TOXEMIA.*

By GEORGE REESE SATTERLEE, M.D.,

NEW YORK.

Chronic intestinal toxemia is a term that has been loosely employed by many authors, but to those who are constantly studying intestinal conditions, it is a distinct entity and, although not a disease but rather a symptom complex of enteric pathology, it must be treated. Like uremia it is a complex; a poisoning of the system, originating in all probability from definite lesions of the gastrointestinal tract. It is often accompanied by pathological changes in the wall of the gut, usually localized to the right side of the colon. So far, the exact nature of the poison is no more proven than is that of uremia.

It is customary to speak of the toxemias of pregnancy and of nephritis as being of non-bacterial origin and of the toxemias of diphtheria, typhoid, pneumonia and other infectious diseases as being derived from the endo- or ecto-toxins or the end products of bacteria because we know that these diseases are of bacterial origin. The limitations of this paper prevent a detailed discussion of the different theories of chronic intestinal toxemia. The author however is strongly inclined to the view that it can be classed among the bacterial infections. A diseased intestinal mucosa and a metamorphosed colon bacillus, capable of yielding a toxin are essential for this theory.[1]

The diagnosis of chronic intestinal toxemia is based upon three chief factors, the history, the *x*-ray, and the symptomatology and physical signs. The history of these patients begins frequently with an attack of acute indigestion and often a so-called ptomaine poisoning following the ingestion of some easily decomposed or indigestible article of food. This is followed by a prolonged interference with the digestive system and by nervous disturbances, the latter frequently predominating. The primary trouble is probably an intestinal putrefaction, the secondary a chronic intestinal toxemia in which the colon bacillus, metamorphosed, plays the important role due to the toxins liberated.

A brief description of the leading digestive symptoms is as follows:

Constipation.—Constipation may be congenital or acquired, usually the latter, but it frequently follows an abdominal operation. Occasionally a history of constipation is absent and the condition is discovered during radiography of the gastrointestinal tract; it is rarely absent but may be replaced by diarrhea or colitis. In all probability, constipation, recognized or not, has been present and an important factor in the complaint. An alternation of constipation and diarrhea is quite frequent, constipation then being possibly the etiological factor. Evidences of this are the presence of fecal masses in the colon.

Flatulence.—This symptom is nearly always present and is evidenced by eructations and passage of flatus per anum. Abdominal distention may be present, with or without relief by the passage

* Read at the Eighteenth Annual Meeting of The American Therapeutic Society, New York, June 2, 1917.

of gas but when marked and continuous is suggestive of intestinal obstruction. There may be considerable gas production with a soft and flat abdomen. Excess of gas bubble frequently remaining in one spot can be demonstrated in the radiographs. Abdominal pain is one of the results of distention of the gastrointestinal tract and the pain may be out of proportion to the amount of flatus. Kinks and adhesions may confine small amounts of gas and accentuate the pain but we must always consider the nervous susceptibility of the patient. A very common complaint is that "everything turns to gas."

Aerophagia is a frequent complication and can be sometimes demonstrated by fluoroscopy of the esophagus during deglutition. The patient frequently begins to belch and swallow gas immediately on entering the office although perfectly quiet while sitting in the waiting room. Palpitation of the heart results from distention of the cardia. It can be shown by fluoroscopy, the cardia gas bubble pressing up on the heart. A feeling of fullness after the ingestion of small quantities of a meal may be explained on these grounds, for when the gas bubble in the cardia is large it is difficult to make the patient swallow the whole meal. Dr. Aaron[2] finds bile in the stomach contents suggestive of this condition.

Flatulence due to abnormal fermentation or decomposition of carbohydrates may sometimes be distinguished from that caused by decomposition of proteins or putrefaction. The former is characterized by the lack of putrefactive odor to the gas expelled and the latter by the foul odor of the gases due to the formation of the putrescible substances, the phenols, indols, and other nitrogenous decomposition products of protein origin. Carbohydrate free diet will often clear up the former and a meat-protein free diet the latter, but very frequently the two kinds of gas formation are closely associated.

The Nervous System.—The mental symptoms are often far out of proportion to the extent of the lesion. Depression is marked and may even extend into a melancholia. The patient is extremely irritable and disturbed by small things that are usually passed by and the character is often completely changed. He is misunderstood by his family and immediate friends, although he appears normal to his acquaintances. There is lack of concentration and general inefficiency. These defects may lead to obsessions and even to dual personality. Attacks of vertigo, semi or complete unconsciousness, or convulsions resembling epilepsy are not infrequent. These attacks can often be accompanied by or traced to an increase in the physical symptom of constipation, flatulence, and "indigestion." In the severest cases delirium, coma, illusions, or delusions may occur. The sensory, motor, and sympathetic systems are usually affected. Myalgias, neuralgias, and neuritides are very common and respond quickly to the proper treatment of the intestinal condition, resisting the usual coal-tar products. The motor symptoms are usually due to irritation to the central ganglia. Irritation of the sympathetic system is shown by vasomotor disturbances, as flushing of the face, tachy- or bradycardia, irritable stomach, dermatographia, polyuria, and interference with the ductless glands.

Joints.—Various forms of chronic arthritis are very common and possibly arthritis deformans. Joint pains and creaks with joint fremitus are very common.

Abdominal examination shows signs of intestinal stasis, crepitation over the colon, especially the cecum. Splashing, tenderness, and a "doughy" abdomen are very common. Signs of enteroptosis are contributing evidences of a tendency to this intestinal condition. They are positively to be looked upon as a frequent accompaniment of intestinal toxemia rather than as a direct cause. This point is of great importance in differential diagnosis as regards surgical intervention. Fecal masses in the colon can often be demonstrated and also collections in the rectum and sigmoid flexure.

Therapy of Chronic Intestinal Toxemia.—The treatment can be subdivided into that for (*a*) intestinal putrefaction and for (*b*) chronic intestinal toxemia proper.

The treatment of intestinal putrefaction consists of a primary purge, preferably castor oil, which should be given for two or three doses, one ounce every other day. The dietary is based upon the withdrawal of all meat protein or an admixture of carbohydrates and fats without complete protein withdrawal. This latter diet is given with the idea that if a sufficient quantity and quality of these substances be given they will withstand destruction and bacterial processes in the upper intestine (E. E. Smith[3]). The employment of this dietary may be very successful, but its efficacy may be shown by the use of glucose and starch enemata. The author believes in no compromise, however, and gives no meat protein for several days. Colon cleansing irrigations of saline solution are very useful here and should be given until all evidence of putrefaction are absent. Catharsis, fasting, and colon irrigations will usually clear up intestinal putrefaction. Fermented milk with lactic acid bacilli, buttermilk, or even sweet milk and cereals and simple stewed fruits alone should be given. Drugs at this stage are harmful. As putrefaction may occur at any stage of intestinal toxemia and often recurs, the treatment may have to be repeated.

Diet.—The diet in chronic intestinal toxemia proper is all important. (*a*) On account of the close association with and danger of intestinal putrefaction, it is necessary to withdraw all meat protein except that contained in milk, cream, and butter. This includes all eggs, meat, fish, shellfish, and meat extracts. After a reasonable time, say three months, an egg and a little bacon is allowed and the patient watched for symptoms. Meat can then be added gradually if the grade of toxemia is a mild one. Relapses should always be treated by a complete withdrawal of meat.

(*b*) Prohibit all white refined flour and substitute whole wheat. The white flour of to-day is so highly refined that the nutritious substance (so-called "vitamines") and salts so necessary for proper metabolism have been removed. Prolonged eating of this white flour has shown bad results in intestinal toxemia, and it constipates. Polished rice should be placed in the same class and forbidden, non-polished and uncoated rice being substituted. If starch digestion is poor, it is unnecessary to eat large quantities of these two articles.

There are numerous difficulties in this dietary of whole wheat products to be overcome. I usually divide the patients into two classes: those who eat at home and those who eat in restaurants. Those in the former class have a much better chance than those who roam around for their meals. We often cannot spend much time on this class unless they will eat in certain specified restaurants where the dietary is cared for. Whole wheat flour does not keep well and is subject to parasites. It is not always easy to obtain. One reason of this is that it is not popular, as the public have not been educated as to its worth and it is not considered as palatable as the white flour. This can be overcome by the education of our cooks who can be taught to make delicious cakes, waffles, griddle cakes, biscuit, gravies, sauces, etc., with the whole wheat flour with but a small addition of white flour if necessary. If we should watch our cooks we would be amazed at the large quantities of white flour used in the preparation of our food.

Oatmeal and whole wheat cereals should be used freely; among the latter the old-fashioned cracked wheat is being revived and is an excellent substitute and a welcome change for the tired palate. The various proprietary and ready-prepared cereals are generally speaking poor foods, especially as all food should be thoroughly cooked.

The modern corn products are also pernicious. Wood[4] says that they are low in nutritious substances, especially fats and phosphorus pentoxide, which is a reliable indicator of the so-called vitamine so essential to nutrition. In the place of these we should use the old-fashioned corn meal containing the sperm. Wood says that foods containing large amounts of finely milled flour should be classed as furnishing a "deficiency diet."

(*c*) Vegetables. Green vegetables are very important in the dietary. One factor in the improvement of our patients during the summer months, I believe, is the abundance of this class of food stuffs. Fresh vegetables are to be preferred to the canned, but cannot always be obtained throughout the winter months except in the large cities where the small venders are of great value. I have tried in vain to get fresh vegetables in country towns during the winter and have had to ship them from the city. It is possible to obtain them if we take the trouble. Dried vegetables are excellent. The large hotels, however, feed their guests largely on canned goods for reasons best known to themselves.

I have had as patients head waiters in some of our best known hotels who inform me that they cannot obtain in the hotel restaurant the simple diet recommended. In certain instances the manager of the hotel has taken the trouble to place the diet within reach. The real reason of this condition is, of course, the lack of public interest and insufficient demand for the "simple life." In the choice of fruit and vegetables, we must be guided by our idea of the condition of metabolism in the patient. A chemical blood analysis is necessary or at least of great help in determining the amount of sugar excess or retention. In cases of flatulent dyspepsia due to carbohydrate intolerance or where the blood sugar is above the normal limit, it may be necessary to restrict the vegetables to the class commonly designated as the 10 per cent. and 5 per cent. (carbohydrate) vegetables or in diabetics to the 5 per cent. vegetables alone. These are special cases where the diet has to be very carefully arranged.

Ordinarily the list of vegetables, all well cooked, includes string beans, young lima beans, spinach, asparagus, brussels sprouts, beet-tops, kale, rhubarb, celery and celery knobs, carrots, beets, squash, mushrooms, parsnips, turnips, vegetable marrow, artichokes, cauliflower, and potatoes, white or sweet. Vegetable salads are useful to vary the monotony. They should be made with well cooked vegetables and lettuce, endive, etc., and dressed with olive oil and lemon juice in the place of vinegar, which may be a gastrointestinal irritant. Macaroni, spaghetti, and noodles, unless made from the whole wheat flour, are not permitted. In severe grades of intestinal toxemia the vegetable fats and oils should be substituted for the animal products as butter and cream, and are indicated when fats are needed for metabolism or for constipation.

(*d*) Fruit. Cooked fruit should be eaten at least twice and usually three times a day. Unless there is carbohydrate intolerance, the best fruits are apples, prunes, pears, and peaches, preferably fresh, but may be dried. Raisins, cherries, apricots, cranberries, huckleberries, blackberries, strawberries, raspberries, bananas—all cooked and preferably fresh—have their usefulness unless some idiosyncrasy exists. Of the uncooked fruit allowed are oranges, lemons, grapefruit, melons, unless some special reason exists for their being withheld. In glycosuric conditions, we must limit the fruit to the 5 per cent. or 10 per cent. (carbohydrate) fruit as indicated.

(*e*) Nuts are a welcome addition to the diet and are usually well tolerated unless gastric digestion is very poor or some idiosyncrasy exists. They are walnuts, hickory nuts, pecans, Brazil nuts, peanuts, beech nuts, pine nuts, and almonds. These may be made up into bread, cakes, or desserts. They may be home ground in inexpensive mills which also grind wheat and corn. The 10 per cent. or 5 per cent. nuts should be carefully followed in glycosuric conditions.

(*f*) Milk Products. Milk is one of the most useful and often indispensable articles of diet. Sometimes it is contraindicated as when an idiosyncrasy exists or when it is constipating. Bacterial content has much to do with tolerance. Buttermilk or fermented milks will often counteract these effects. Sour milk or sour milk cheeses are very useful. The good effect of milk is probably through its lactose content as shown by recent experiments of Hull and Rettger.[5] Rennet is a very digestible and useful product. The cream cheeses are not so efficacious and the hard cheeses, such as American, Roquefort, Camembert, Swiss, and Dutch cheese, etc., are contraindicated on account of tendency to constipate. Cream is usually well borne and in 20 per cent. strength can be taken up to one-half pint per day; it is of aid in constipation.

Sugar is necessary and will make up for some of the calories lost by the reconstructed diet. Brown sugar or molasses helps constipation. Tea and coffee are allowed in moderation provided no contraindications exist. Cocoa or cereal coffee may have to be substituted.

In choosing vegetable foods, it is interesting to consider those that have a high percentage of ash,

the most important of which are phosphorus pentoxide, calcium oxide, and iron. According to the statistics of Henry C. Sherman,[6] their order of value in percentage of edible portion is as follows: Rye and wheat bran, dried beans, cocoa, caraway seed, dried peas, almonds, peanuts, chocolate, oatmeal, rye flour, dried sweet corn, gooseberries, vanilla bean, and cottage cheese.

According to the percentage of 100 calories, the following articles lead: Celery, canned vegetable soup, spinach, mushrooms, lettuce, leeks, pumpkin, rhubarb, asparagus, dried beans, cowpeas, string beans turnips, parsnips, tomatoes, dried peas, fresh peas, cauliflower, and lima beans. The white potato is placed way down the scale chemically, but practical experience in Europe during the war has demonstrated that it is the most necessary of vegetable foods and cannot be wholly replaced by any other one vegetable. The potato should be baked or boiled in the skin, otherwise large amounts of the salts are lost in the water. This could be saved, however.

Among the foods, rich in carbohydrates, which should be avoided in marked flatulent dyspepsia, are in their order of carbohydrate content: corn starch, tapioca, hominy, rice, farina, oats, and prunes. Gelatin, being high in animal protein, should not be used. Alcohol in any form is not to he used, as it is a gastrointestinal irritant.

Agar agar is in great favor with the author. Its use and method of action by extracting water from the walls of the intestine and forming more liquid contents is well known. Its action is perfectly harmless and as a habit former is not bad. In some cases of colitis, however, it is irritating and causes pain and colic. It should be given in dram doses, mixed with the food three times daily; the dosage can be increased or diminished. It can be given in cracker or biscuit form and mixed with bran. It should not be medicated with laxative drugs.

Vaccine Treatment.—Autogenous colon vaccines are the most powerful agents that I know of in the treatment of chronic intestinal toxemia. Their rationale, preparation, and method of administration has been fully described by the author.[7]

It is advisable to make an autogenous colon vaccine from the stool of every patient with a long standing intestinal toxemia. The results of administration are sometimes amazing and their least effect is to cure or improve the patient in about half the time usually taken by other means, if the case is suitable. The interval of dosage has been arbitrarily set at four days for six to eight doses, and then weekly. The severity of the case and the result usually determine their continuance and dosage. The initial dose is from 25 to 50 million and the maximum dose 300 million.

In relapses, which often take place, a few doses of the vaccine with a rigid diet will give quick results. In some cases, the author has accomplished results with the vaccines alone without a special diet, but he is convinced that the best results are accomplished in conjunction with diet.

It is essential to consider the liability to recurrences of intestinal putrefaction and right sided colitis already referred to as the usual lesion found to accompany chronic intestinal toxemia. Catharsis and irrigations should be used only at the discretion of the physician.

Drugs.—Drugs have very little effect upon these conditions except to be detrimental. Intestinal disinfectants, as phenol salicylate, creosote with lime, magnesium salicylate, castor oil in minimum doses, are sometimes of use, but we should always question the diet first and rule out some anatomical condition, such as ptosis or kinks or growths, before even thinking of them. Mineral oil is probably used more than any other form of therapy. In my own experience, it is only a makeshift but very useful where a proper control of the patient, as in dispensaries, is possible. It may also be very useful when traveling, when some laxative is necessary and a proper diet unobtainable. Long continued ingestion of mineral oil will keep up intestinal toxemia because it does not cure the condition. The same objections or even stronger ones exist for olive oil which, however, if pure is excellent in small doses as a food and as a physiological chologogue.

Colon Massage and Vibration.—In competent hands, mechanotherapy is not only very valuable but often essential. The method depends upon the skill and training of the attendant. A good colon masseur is part of the office equipment. Real massage should take the place of all laxatives except as outlined by the diet. Electrical treatment of the abdominal muscles has given excellent results in the hands of many and is often indicated. It is not always easy to apply all this therapy to the busy man or woman, and often the financial means are limited. In many instances instruction will place the treatment in the hands of the patient so that with "medicine ball" abdominal exercises and the ordinary rules for constipation good results may be accomplished. These are, however, the simple cases in which the right colon is not seriously diseased.

Skillful vibration in the hands of the physician himself will often accomplish wonders and relieve in two to four weeks a constipation of over twenty years' duration. We notice the big drop in attendance in our intestinal clinic after a skilled colon masseur has left, for it is true that the poorer class of people generally know what is best for them and when they get results.

Enteroptosis.—Enteroptosis of moderate or severe grade should always be attended to. Posture is the keyword to this situation. Abdominal belts or preferably corsets are often essential. These must not only be mechanically efficient, but must also be applied under supervision of skilled attendants. The patients must be "followed up" and alterations made from time to time. A skilled corset maker and attendant are also part of the office equipment. Posture treatment should be carried on at night by the elevation of the bed. This can be done gradually, beginning with four inches in the very nervous and six in the others, raising by two inches every few nights until the limit of tolerance is reached, which is usually between twelve and eighteen inches.

The *psychological* side must not be lost sight of in therapeusis. One of the principal things that the patient needs is encouragement and suggestion that all will be well. It is often advisable to take the patient into your confidence and explain that relapses are the rule, but that they will be of short duration and less and less severe, and also that the improvement will be slow but progressive. If the doctor loses his patience and interest, the result in

the patient is obvious. The real reason that many of these poor creatures do not get well is difficulty in obtaining the right sort of a doctor, who will persevere and be sympathetic but firm. It is a case of endless detail which does, we must confess, become monotonous. The fault lies often, however, on the patient's side, so that we can frequently foresee failure if we are good character readers. It is our duty, however, to give a fair trial in every case.

Surgical Therapeusis.—In every case where obstructive conditions such as adhesions, kinks, bands, intussusception, tumors, etc., exist, this is indicated, It is the border line cases that give us the most trouble. How is a decision to be reached whether or not a certain case should be operated on? What should be done after the abdomen is opened? At one time a compromise operation called short-circuiting was very popular. The end results have been, in the writer's experience, almost universally bad. Lane advised removal of the colon for every case of constipation that resisted medical treatment. This operation even in the hands of the expert has a high mortality and cannot be generally recommended. Draper has called attention to the functional importance of the left colon, experimentally, and he and Lynch have proved its value clinically. They have also shown why short-circuiting fails.

The so-called partial resection, or developmental reconstruction, of the colon to the second or primitive position, as practised by Bloodgood, Lynch and Draper, Mayo, and others, is a favorite with the writer in selected cases where the cecum and ascending colon are roentgenologically dysmorphic or so diseased as to resist medical treatment outlined above. It is not always possible to foresee the extent or character of the operation before laparotomy, but a persistent large residue of the opaque meal in the cecum with a profound toxemia, with no response to medical measures within a reasonable length of time, positively justifies operation. An operator experienced in this particular line is an absolute essential to success.

When the physical conditions are extremely bad and it is necessary to relieve the toxemia, ileostomy as rediscovered and popularized by Lynch (see Draper[8]) is very popular with the writer. This can be performed under local anesthesia and later a more radical operation done if advisable. The curative effect of simple ileostomy upon what Lynch[9] has called the segmental colitis of toxemia is often amazing. Appendicostomy and cecostomy give excellent results in special cases and can also be done with very little shock. The writer has seen several profoundly toxic and insane patients restored to normal mental equilibrium in this manner.

Plication of the enlarged bowel has given good temporary results, but has more often failed. It does not remove the cecocolonic focus of infection. Suspension of the colon and stomach in advanced and intractable ptosis is sometimes temporarily successful, but the author considers the basis for such operations as essentially faulty, physiologically, as is the short-circuiting technique. After all these operations it is necessary to consider that these are essentially medical cases and must be carefully followed up by medical treatment. In the author's practice medical and surgical therapeutics go hand in hand without any of the old discord and damaging jealousies. The author has seen a large number of operative cases, at first apparent failures, recover through energetic medical treatment.

Conclusions.—1. Chronic intestinal toxemia is a proper and useful term by which to describe a symptom complex which has its primary pathological seat in the cecocolon.

2. Position of the alimentary canal is etiologically important. The carnivorous types of man are predisposed to toxemia. This may be due to other characteristics than mere morphology—which is an outward manifestation of unknown reactions to modern diet and conditions of life.

3. Since most symptoms are protective, constipation probably is. It is not the cause but an accompaniment of intestinal toxemia.

4. No case should be touched surgically until medical treatment, especially by colonic vaccines, has failed. In such cases it is probable that the cecocolon is extensively diseased and that no operation short of developmental reconstruction will be of permanent use.

REFERENCES.

1. Adami, J. E.: *Col. Med. Jour.*, Denver, 1914, Vol. XI, pp. 34-49.
2. Aaron, Charles D.: *J. A. M. A.*, June 27, 1914, Vol. LXII, No. 26, p. 2012.
3. Smith, E. E.: "Chronic Intestinal Toxemias," *Proct. and Gastroenterologist*, Vol. I, No. 1, pp. 20-27.
4. Wood, Edw. J.: *Amer. Jour. Med. Sc.*, December, 1916, Vol. CLII, No. 6, p. 813.
5. Hull, T. G., and Rettger, Leo: "The Influence of Milk and Carbohydrate Feeding on Character of the Intestinal Flora, IV, Diet Versus Bacterial Implantation," *Jour. Bacteriol.*, 1917, Vol. 2, p. 47.
6. Sherman, Henry C.: "Chemistry of Food and Nutrition."
7. Satterlee, G. R.: *J. A. M. A.*, December 9, 1916, Vol. LXVII, No. 24, p. 1729.
8. Draper: "Twenty-nine Cases of Developmental Reconstruction; An Experimental and Clinical Study."
9. Lynch, McFarland & Draper.: *J. A. M. A.*, Sept. 23, 1916, LXVII, pp. 943-948.

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THE DIAGNOSIS OF PULMONARY TUBERCULOSIS IN CHILDREN OF SCHOOL AGE.

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Clinicians are apt to forget the fact established by pathologists that tuberculous infection produces different effects in infants and children than in adults. During the first year of life, if infection is followed by disease—and it is in the vast majority of cases—the malady is acute and progressive, not unlike that observed in rabbits and guinea-pigs after inoculation experiments. In children of school age the vast majority of tuberculous infections are not followed by evident clinical symptoms, as is clear when we recall the large number of children who react to tuberculin, yet are hale and healthy. In the comparatively few cases in which the infection is followed by disease, the lungs are only rarely the site of the lesion. Acute or subacute tuberculous disease of the bones, joints, serous membranes, and, above all, the glands is produced. In fact, in whatever way the virus enters the child's body, the regional lymphatic glands react at once and may produce more or less serious symptoms. It is a noteworthy fact that pulmonary tuberculosis is

exceedingly uncommon in children affected with tuberculous disease of the bones, joints, or glands, excepting as a terminal phenomenon, or after surgical operation on the affected bones, joints, or glands, and then it is usually in the form of acute tuberculous bronchopneumonia.

On very rare occasions we do meet with chronic pulmonary tuberculosis in children of the same type and clinical forms as those observed in adults. When it does occur the symptomatology and physical signs are not unlike those seen in adults, and all criteria for diagnosis in adults hold for children. In fact, because of the thinness of the chest walls and the elasticity of the ribs, auscultation and percussion are apt to give better results which may be more properly interpreted than in adults in whom the thick muscles and excessive adipose tissue, as well as ossification of the costal cartilages, are often disturbing factors in physical diagnosis.

As was just stated, tuberculosis of the lungs is rare in children and the vast majority of cases in which it does occur we find the cardinal symptoms and signs of phthisis in adults to some degree. Because no distinction is made between tuberculosis of the lungs and tuberculosis of the intrathoracic glands, a great deal of confusion has arisen,, and it has been stated that special skill and care is needed to diagnosticate the disease in children of school age.

Children with pulmonary tuberculosis, if the disease is active, cough, have fever, nightsweats, tachycardia, emaciation, etc.

The cough may be mild or severe; it may be paroxysmal, coming on in fits and at times ending in vomiting, just as is the case with the emetic cough in adults. It may disturb sleep and be a strong factor in deteriorating the general health of the little patient. In the early stages, when the tracheobronchial glands are implicated and swollen, there may be hoarseness and at times a croupy cough or one not unlike that of whooping cough. I have seen cases in which pertussis was diagnosed. The emaciation is usually progressive, but very often, especially in mild and sluggish cases, the loss in weight may not be at all evident; the child may hold its own. But when we bear in mind that healthy children constantly gain in weight, going hand-in-hand with the increase in their height, it is clear that a growing child whose weight remains at the same level for months despite an increase in stature, is decidedly losing.

The fever of phthisical children may be of any type. In those afflicted with progressive disease it may be continuous, reaching 102° to 104° F. in the afternoon and stay at that level, or one degree less, during the morning hours. It may be remittent or, in the later stages, intermittent, accompanied by chills or profuse sweats. In most cases during the incipient stage the fever is mild, reaching 101° or 102° F. in the afternoon and dropping to normal or, more commonly, to subnormal during the early morning hours. This fever can be detected in some cases only when the temperature is taken systematically three or four times a day, per rectum, for one or more weeks.

It must be emphasized that fever in children is not of that same diagnostic significance as in adults. In children instability of the temperature is very common and it does not take much to raise it. The least excitement or excessive exercise may elevate it. Slight gastric disturbances may act in the same manner. Many children with acute or chronic rhinopharyngeal catarrh, enlarged tonsils or adenoids have fever for months, while at times it is very difficult or impossibe to discover the cause for the frequent increase in the temperature, and it would be manifestly wrong to attribute all febrile manifestations in children to tuberculosis. In fact, a mild subfebrile temperature in children is not incompatible with excellent health. It is only in connection with other symptoms and signs of tuberculosis that a subfebrile temperature spells tuberculous disease.

In respect to nightsweats it must be emphasized that many healthy children sweat at night to the great dismay of their parents, some of whom have heard that this is a sure sign of tuberculosis. A point which has not been appreciated to the extent it deserves is that nightsweats due to phthisis occur during the early morning hours after the child has slept for four to six hours. But these sweats are very often overlooked by mothers who are asleep during these hours. But the sweats in non-tuberculous children usually occur, if at all, soon after the child is put to bed and these sweats are almost always noted by mothers who become alarmed, especially if the child happens to cough for any reason. Inquiry should therefore always be made as to the exact time the nightsweats occur, and if they occur early in the evening, they may be disregarded, unless there are other valid reasons for assigning them diagnostic significance.

The rate of the pulse is an important diagnostic criterion in these cases. Active tuberculosis of the lungs may be excluded when a child under ten years of age has a pulse rate of less than 80 per minute. Tachycardia is an almost invariable rule in phthisis in children; even more so than in adults. In progressive cases with high fever, the rate may be over 120; in far advanced cases the same holds true. In the early stages of sluggishly progressing or quiescent disease of the lung, it is hardly ever below 100 per minute in children under seven years of age and above 90 in older children.

But these symptoms may be present singly or in combination, in children with perfect lungs but suffering from focal infection of the hyperthrophied glands of the throat and nasopharynx, especially the tonsils and adenoids. Emaciation in children due to malnutrition from any cause is often accompanied by fever which may go on for weeks or months. Cough is a frequent symptom of nasopharyngeal catarrh due to any cause.

Enlarged glands on the neck should not be taken as confirmatory of the tuberculous character of the ailment. These glands enlarge in children having adenoids, carious teeth, pediculosis, etc. Indeed, over 50 per cent. of children of the poorer classes have more or less enlarged cervical glands, and tuberculosis is not the cause of the glandular hypertrophy in the vast majority.

Enlargement of the supraclavicular glands, on the other hand, is of greater diagnostic significance. It is in nearly all cases due to tuberculosis of the apex of the lung on the affected side, especially the pleura. To be sure, it is rare to find these glands

enlarged, but so is pulmonary tuberculosis rare in children.

With any or all the above symptoms found in a child of school age we should suspect pulmonary tuberculosis, but no diagnosis of the disease should be made unless the lesion in the lung is localized by physical exploration of the chest. A careful examination will reveal the local lesion in nearly all cases if there is one at all. The signs are practically the same as those found in adults, especially those in children over eight years of age. Nearly all the above symptoms may, however, be found in children suffering from tuberculous tracheobronchial adenopathy, but the prognosis in this form of the disease is much better than in disease of the lung. The physical signs of enlarged thoracic glands also are quite different from those of pulmonary tuberculosis. In pulmonary tuberculous disease the lesion is almost invariably localized in the apex, and the statements made by some authors to the effect that it is found at the base, or in the region of the hilus is due to a confusion of disease of the thoracic glands with pulmonary parenchymatous disease.

We usually find that the affected side lags behind in motion during respiration; in more advanced cases there may be seen some retraction, manifesting itself in deeper excavation of the supra- and infraclavicular spaces. Percussion yields an impaired note over the affected area, and when the disease is extensive it may be dull above the second or third rib anteriorly and over the supraspinous fossa posteriorly. Because the intrathoracic glands are, as a rule, implicated in the tuberculous process, the interscapular space on the affected side is dull. That light percussion is necessary to bring out these points is self evident; in children this is even more important than in adults. But it must never be lost sight of that dullness localized over the lower parts of the chest, even when unilateral, and when resonance over the apex is normal, is only rarely due to tuberculosis. Only when there is a pleural effusion, a thickened pleura, or in the terminal stages when the tuberculous process has extended all over the affected lung, may we find impairment of resonance over the base; but then we no more deal with an early lesion. Dullness over the lower part of the chest is frequently taken for an indication of tuberculosis when it is in fact due to a thick, adherent pleura following pleurisy, dry or with effusion. But if it is always borne in mind that pulmonary tuberculosis in children should not be diagnosed unless the lesion is found in the apex, many errors may be obviated. Bronchiectasis, which will be discussed later on, may also give an impaired or dull note over the lower part of one side of the chest, but here it will be found that the note over the apices is normally resonant.

Auscultation reveals tuberculous lesions in the chest of a child more clearly and reliably than in adults if the little patient is not fretful, but is willing to cooperate with the physician, which is not frequent with those under five years of age. Harsh breath sounds, or bronchial breathing, when localized over a circumscribed area in the upper part of one side of the chest, should be looked at with suspicion. It spells tuberculosis if at the same time there is also found impairment of resonance over the same area and there are functional symptoms. In most cases there will also be found some crepitant or fine subcrepitant rales, like the sounds emitted when something is fried on a pan. The same sounds when localized over the base of a lung should not be considered as of tuberculous origin without further proof. Bronchiectasis is very frequent in young children, more frequent than is generally appreciated, and in this disease we find impairment of resonance, bronchial breathing, or absence of all breath sounds, combined with subcrepitant rales over a circumscribed area in the lower part of one side of the chest, usually posteriorly. Following attacks of pleurisy or pneumonia, the same physical signs may be found for months, though the little patient appears, and is, in excellent health. But pneumonia and pleurisy in children do not predispose to tuberculosis. After recovery the child is no more liable to develop phthisis than the average child of its age. When "unresolved pneumonia" occurs, the pathological lesion is, as a rule, bronchiectasis.

I have seen several cases of multiple abscesses of the lung, verified by operation, which gave such local signs and which were considered tuberculous by some because of these findings on physical exploration of the chest. The fever in these cases ran a very peculiar course. For a week or two the temperature is around normal and the child feels quite well. But then, without any assignable cause, the temperature shoots up high to 104° or 105° F. or even higher, and remains at that level for two, three, or more days when it again declines, remaining at a normal level for a week or two. I have seen several such cases treated as tuberculous, sent to sanatoriums and kept there for months. The last case that came under my observation had stayed in a sanatorium for several months and was then transferred to a hospital for advanced consumptives, where the diagnosis was made, an operation performed, and the little patient recovered. The fact that in these cases a correct diagnosis may save the patient's life is important. A surgical operation will reveal multiple pulmonary abscesses, or pleural vomicae.

In many children suffering from adenoid vegetations of the nasopharynx there may be found some impairment of resonance over one of the apices, usually the right, and bronchial or bronchovesicular breath sounds; but only rarely crepitant rales. Inasmuch as they also cough, and may have fever and lose in weight, or not gain, which is the same as losing in children, the diagnosis of tuberculosis is apt to be made. But when we bear in mind that the fact that a child has adenoids is sufficient to account for the symptoms, and that children with adenoids are no more likely to be tuberculous than others, we may in most cases avoid such errors. Similar physical signs may be found in children with valvular heart disease, especially mitral stenosis. In fact, these children often expectorate dark blood clots. But when we bear in mind that tuberculosis is extremely rare in persons with heart disease, we may avoid such errors.

The *x*-rays are of immense value in the diagnosis of pulmonary tuberculosis in children if properly interpreted. The opacities seen at the hilus of most children may be an indication of enlarged glands,

and when the glands are calcified the shadows may be quite clear and distinct. But calcified glands in the chest are harmless, as a rule—the lesion has healed. In cases of pulmonary tuberculous lesions in children the opacities will be found in the parenchyma of the apex, just as in adults. But here again very incipient lesions may not at all reveal themselves on the plate, because infiltrations permit the rays to pass. Only caseated, sclerosed, or calcified tissue shows distinctly on the plate. And when opacities are found in apical fields they are always to be judged in connection with the constitutional symptoms. In other words, *x*-ray findings alone, without constitutional symptoms, do not justify a diagnosis of pulmonary tuberculosis; while constitutional symptoms, combined with positive findings on physical diagnosis, are sufficient to render the diagnosis conclusive.

We have left the question of tubercle bacilli in the sputum to the end because, as in adults, positive sputum should be the last which should convince us of the nature of a doubtful case. It is worthy of note that the statement made by many writers that children do not expectorate, and even when they do the sputum only rarely shows the presence of tubercle bacilli is based on the confusion of tracheobronchial adenopathy with pulmonary tuberculosis. In tuberculous glandular disease of the chest there is usually no sputum available; and if there is it is derived from the nasopharynx and is bacteriologically negative. It is of the so-called "closed" variety of tuberculosis. But when there is a pulmonary lesion the child coughs and expectorates sputum in which tubercle bacilli may be found in the vast majority of cases. In fact in nearly all the cases I have seen the sputum was positive when there was a pulmonary lesion. But, as was just stated, we must not wait for positive sputum in children as in adults. The diagnosis may be made by a careful analysis of the symptomatology and the signs elicited by physical exploration of the chest. By correlating the facts thus obtained, we may, in the vast majority of cases, arrive at a correct diagnosis. What we must bear in mind are the following points:

Pulmonary tuberculosis is exceedingly rare in children of school age.

In the comparatively few cases in which it is found, the physical signs and the symptomatology are practically the same as those found in adults.

The chronic and subacute nasopharyngeal affections in children, which are very prevalent, may be responsible for symptoms which are not unlike those of pulmonary tuberculosis.

Moderate elevation of temperature in children is very frequently due to focal infection of the nose and throat; it may occur without any assignable cause and is not incompatible with excellent health. Alone it is not to be considered pathognomonic of pulmonary tuberculosis.

Cough, expectoration, and even hemoptysis are more often caused by enlarged tonsils and adenoids, and also by organic heart disease than by pulmonary tuberculosis.

When a child fails to gain in weight it is not invariably an indication that tuberculosis is the cause; in fact, it is exceedingly rare that tuberculosis of the lung is the cause. Even if tuberculosis is responsibe, the lesion is, in the overwhelmingly large proportion of cases, in the glands, bones, or joints. When the tracheobronchial glands are affected, the disease is not at all dangerous; nearly all recover and it is extremely rare that it should suppurate and break through a bronchus, causing death by suffocation or bronchopneumonia. In rare cases some intercurrent disease may spread the tuberculous lesion and produce an acute pulmonary disease.

A lesion found by physical exploration of the lower parts of the chest is not likely to be tuberculous in character. Pulmonary tuberculosis should be diagnosed in a child showing signs of a lesion in a lower lobe of a lung only when tubercle bacilli are found in the sputum, or when all our resources have been exhausted in attempts at finding another cause for the disease.

Exposure to infection should not be overestimated in children of school age. Very few escape infection with tubercle bacilli before reaching the age of fourteen; the majority of those who have been infected do not suffer any visible inconvenience because of that infection. If disease is produced, the joints, bones, serous membranes, or, most frequently, the glands are the seat of the disease. These diseases are serious and are apt to be protracted, but the ultimate outlook is good, excepting when the meninges are affected, or when a surgical operation is performed in cases of bone, joint, or gland tuberculosis; such operations are frequently the cause of bronchopneumonia which results fatally.

The tuberculin test is of no diagnostic value in children over four years of age. It surely indicates infection, but what we want to know is whether the child is sick, and this information tuberculin does not supply.

57 East Ninety-third Street.

MILK BACTERIA WHICH PROLIFERATE BEFORE, AND THOSE WHICH SURVIVE PASTEURIZATION.

NEW METHODS APPLIED TO MEET AN AS YET UNREMOVED MENACE.

By J. M. W. KITCHEN, M.D., M.S.,

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He who thinks that the public milk and butter supplies are good enough, or that it is an easy task to apply practically a successful plan for the solution of those problems is in error.

I find it necessary in intelligently reporting progress in this connection to explain my personal relation to the milk reform movement, even at the risk of appearing to be egotistical in taking a prominent position in that work. Although I have done some important work in this connection, I am learning something new almost every day in regard to this great many-phased subject. During the last five years I have discovered some facts that are of scientific value that I believe are as yet not known to most medical men and to sanitary experts. I am giving all the shortening balance of the time and energies of my life to this movement, and it is necessary for me to have help in many directions if I am going to secure any practical application of

various matters that I assume have been evolved by me. The great obstacle that I and all the rest of the world are up against in this matter is the vast ignorance which generally prevails. I confess that if I had known how dense that prevalent ignorance is, I would have been discouraged in taking up the burden of this particular work. As I am already advanced in years, and life is an uncertain matter at the best, I ask to be allowed to herewith place on record some special information that has come to me since my communication to the MEDICAL RECORD, published in the issue of May 16, 1914.

That the present milk supply is so far from being as satisfactory as it is supposed to be, was a fact that I did not realize prior to the time I took up this special work. I undertook the work because I thought it my duty to do so, inasmuch as I had been experimenting in dairy matters for thirty-five years at my New Hampshire dairy farm and summer residence, as a matter of pleasurable interest. During that time I made various discoveries of scientific interest that, in connection with a certain inventive capacity, have led me to originate what I claim is a completely successful plan for securing a public milk supply that will be substantially entirely safe and sufficiently wholesome, at a cost that the masses will feel willing to pay. It had become obvious that the clean-milk movement that was inaugurated by Dr. Henry L. Coit and fostered by the Medical Milk Commissions, although of considerable benefit, had not been entirely satisfactory because of the cost of such milk, because raw milk cannot be known to be assuredly safe, and because none of this milk is given even the partial protection of ordinary pasteurization.

In seeking to solve a problem of this kind, one must first of all know what is generally known, and then gain knowledge requiring much experimental investigation. The situation disclosed to me by such study indicated as follows:

First: That all milk is more or less infected, at the point of production, with various types of germs that collectively may for convenience be classified as putrefactive bacteria, the proliferation of some of which at least may occur at temperatures much lower than the temperature that will inhibit acid-forming fermentations. There is no reason to assume that the products of fermentations of the so-called putrefactive types are harmless. Some of these products are unquestionably seriously poisonous. The evidence in hand points to some of them as being the direct immediate cause of much infantile mortality.

Second: Small infections of these bacteria may, under favorable conditions, develop into vast hosts, excreting unwholesome or dangerous products, and small infections may be largely composed of objectionable types.

Third: Large primary infections may produce large amounts of objectionable ferment products in relatively short periods of incubation.

Fourth: Pasterization as usually practised does not destroy all of those so-called putrefactive types, and especially those that are most resistant, including a few spore bearers, and which are most likely to develop malign ferment products! There is no evidence in hand to show that objectionable ferment products are eliminated by the heat of ordinary pasteurization, nor does very high sterilizing heat destroy some bacterial poisons.

Fifth: Milk may at various times become infected from tuberculous cows that do not react to the tuberculin test, or that are not discovered by physical examinations. The impracticability of a general thorough testing of cattle is well known. Furthermore, there are occasionally, and sometimes frequently, accidental, unforeseen, and unpreventable infections from typhoid, dysenteric, and various other pathogenic forms, whose presence in so good a culture medium as milk, is, of course, a public menace. The milk commissions report the incidence of previously undetected reactors in a large number of certified herds.

Sixth: Bacterial infections work through the cardboard substance of, or past the sealing surfaces of the ordinary paper-pulp milk-bottle closures; and infections of the pouring surfaces of the container may infect the milk during its pouring. In the old style of bottle, practically every bottle lip becomes infected, either harmlessly or harmfully.

Seventh: Milk is almost always distributed to consumers under conditions in which the temperature of the milk is sufficiently high to allow of bacterial and spore proliferation in the milk. In fact, no milk consumed has hitherto been subjected to sufficiently extended intense temperature influences to prevent germinal growths in it, both before and after pasteurization. This being so, we may assume that even condensed forms of milk contain more or less putrefactive products of questionable character.

Eighth: Governmental investigations show that about 20 per cent. of milk, cream, and also butter, are infected with undestroyed tuberculous bacteria of the bovine type.

Ninth: I have discovered that some putrid products found in milk and butter, and which had been supposed to result from bacterial action in milk *after* the production of the milk, really originate from putrefactive action in the sebaceous glands of the cow's hide, and became diffused into the air inspired and thence into the milk from the fluids of the cow's body, at the time of the production of the milk.

Tenth: The presence of putrefactive volatile products in milk and butter are more or less masked by low temperatures, but are thrown off and disclosed by high temperatures.

Eleventh: Aeration during cooling of milk retards the elimination of volatile contaminations, while aerating during heating of the milk promotes their elimination.

Twelfth: Under the prevailing methods of testing and inspection, there has been no practical way devised to indicate just where individual points of danger may be. Hence, to overcome that menacing uncertainty, *all* the supply should be protectively treated.

Note here that about the same proportion of butter is virulently infected as of milk, though the danger from butter is not so great as from milk, inasmuch as germs do not proliferate in fat; and attending motile conditions are less favorable for germinal activity in solidified butter. Also note that butter germs are carried through the alimentary tract in a large measure embodied and retained in the butter. Also note that only minor parts of the

supply of milk, cream, and butter are even partially protected by pasteurization, and that about two-thirds of the pasteurized supply is only flash-protected; and only one-third by the holding method. So-called pasteurized butter is butter made from cream that has been only more or less thoroughly pasteurized, but is subsequently reinfected from "starters" by inoculation and fermentation, and is compounded with infected salt, butter-color, and wash-water. An entirely new method of making butter should be adopted to secure absolute safety and wholesomeness in that product.

In view of the fact that practically all methods of bacterial testing of market milk give little or no information as to the specific character of the infections, it is permissible to point out that there is not a single package of milk, cream, or butter sold to-day that can be known to be absolutely safe and entirely wholesome. Certainly, while that condition prevails, the character of market milk, cream, and butter is not as good as it should be.

With such a situation existing, is it any wonder that even the most earnest students of the question have hitherto failed to provide any entirely practical remedy for the situation?

Let me recite now what is scientifically known as to certain related facts:

Milk of all degrees of cleanliness is probably always more or less infected with bacteria that proliferate at temperatures lower than those which are at the present time generally applied in preserving milk, although the optimum temperatures for growth may be between 70° and 100° F. It is also definitely known now that a number of varieties survive the ordinary pasteurizing temperatures. The publications of the United States Department of Agriculture, through its Bureau of Animal Industry, indicate without question that so many types of bacteria survive the 140° or 150° F. of heat, with a 30-minute holding, and the most resistant of which are open to suspicion as being noxious, that it is reasonable to conclude that some advanced method of treating milk should be practiced other than what is now in general use. All pathogenic germs are supposedly destroyed by efficiently conducted ordinary pasteurization; but there are a number of bacteria that survive the heat of 170° F. maintained for 30 or more minutes, including some of the acid-forming types. It is thought that all of the streptococci succumb at 175° F. Some of the peptonizing and spore-forming types resist even a temperature of 200° F. maintained for longer than five hours.

All of which goes to show that the treatment of milk requires something in addition to a mere temporary pasteurizing heating. The bacteria which resist ordinary pasteurizing heat have been variously classified as acid-forming, acid-coagulating, liquifying, peptonizing, alkali-forming, gas-forming, and inert types. We, however, know so little about the individual character of a large number of the milk bacteria that, in considering the matter from a practical remedial point of view, I have thought it well simply to classify these bacteria into two types, namely: the pathogenic, and the putrefactive, which produce putrefactive smells and tastes even after a 200° F. of heating and long holding; the latter comprising the non-pathogenic types, including those that are destroyed by ordinary pasteurization, as well as those which survive that heating. Ordinarily the heat of pasteurization, which is usually about 140° F., destroys 95 per cent of the bacteria, while at 150° F. 99 per cent may succumb. But it is obvious that even in the 1 per cent that survive there may, under favorable proliferative conditions, be reproductive increases of innumerable bacteria. Some bacteria are much more resistant than others. The numerical incidence of the primary infection has little to do with the numbers that survive. Some very clean milks show a large residue percentage of undestroyed bacteria.

The largest proportion of the bacteria destroyed are those which succumb in a thirty minutes' holding, most of which are presumably harmless. Still, several hours of holding may greatly reduce that residue. Rapid cooling after pasteurization does not appear to have any result in reducing the bacterial content, but slow cooling after pasteurization largely increases the development of the undestroyed germs. Heating milk at various temperatures between 130° and 200° F. varies the proportion of the several types that survive. The peptonizing germs seem to be more resistant to heat than any of the others that are commonly present, and as some poisons are split proteins, such survivors are open to suspicion as being dangerous.

We have to admit that up to the present time we do not know which of the infecting germs are those which develop the most objectionable toxins; but inasmuch as we know that toxic principles are developed in milk, it is merely a matter of common sense to treat the entire supply in such manner that no proliferation of any undestroyed germs in the milk can occur to any objectionable extent. If milk is given a markedly acid fermentation, it is reasonable to assume that some of the formed acids will constitute part of the more objectionable ferment products. It has even been proposed to encourage a lactic acid fermentation before pasteurizing, in order to secure a deterrent effect against the possibly objectionable undestroyed germs that survive pasteurization; but inasmuch as there is no sufficient evidence to show that lactic acid destroys those germs, is it not better to prevent *all* fermentation at all times in milk?

After five years of special study of possible remedies, following some thirty years of experimental investigation, I believe that I have finally evolved a plan which, if applied, will be remedially successful. We may, of course, accede to the generally held idea of preventing infections so far as it is practically possible; but as a matter of fact, so far as the general milk supply is concerned, a considerably large infection is the usual condition and cannot practically be prevented.

The remedy is quite simple, but involves such changes in treating milk that new working capital must be invested in installing new equipment. At first it would seem that so simple a plan as that which has been evolved ought to have been perceived to be the obvious thing to do by every one. Yet it apparently has not been obvious or practised, and in fact it is not practised to-day. In working out this remedy, the first thing that seemed to be needed was the evolution of a final container that

would prevent infections of the milk in the container during and after pasteurization, and of the pouring surfaces of the container's lip; and, also, that would permit of a successful application of the pasteurization of the milk in the container, after the sealing of the container, and furthermore, that would meet the peculiar commercial requirements of milk distribution. This feature of the problem consumed three years to accomplish, even starting with the ground that had been gained in the valuable practice of the Nathan Straus Laboratories.

Inasmuch as infections always do occur more or less in milk during its production, and usually more than less, the next idea applied was to prevent *all* fermentations in milk from the time prior to the loss of the natural power in milk to inhibit germinal growths, up to the time of the delivery of the milk to the consumer. This was practically accomplished by continually applying the influences of either hot or cold temperatures so intense that substantially all germinal proliferative action is prevented in the milk. Strange as it seems, this has never been done before as a continued process. This procedure entirely prevents any fermentative destruction of any of the nutritive properties in milk, and prevents the formation of and accumulation in milk of putrefactive fermentation products. Note here that the temperatures secured from icing, while effective against the quick souring of milk, do not sufficiently preserve the milk from the formation of putrid contaminations; especially if the milk has a large primary infection, or if it has been held for a long time before consumption. Putrescent character in food is certainly not desirable, and all milk that has not been counteractively treated shows putrescent character after a certain time of holding. The next remedial idea evolved was to aerate the milk for a much longer time and with greater thoroughness than is usual, to eliminate volative contaminations, and to accomplish that performance in a non-infecting atmosphere, either so hot or so cold that no proliferative bacterial action can occur in the milk during its aeration. This performance is easily effected at the distributing or producing plants. Preferably, the hot method should be adopted, because the desired effect can be more quickly attained, and because the milk can then be coincidently given a pre-heating, though only to a non-scorching degree, before placing the milk in the final container for complete, quickly-effected pasteurization at a higher heat. Note here that aeration during cooling restrains quick, thorough elimination of volatile diffusive contaminants; and that by the pre-heating of the milk at, say, below 135° F., a considerable shortening of the time of higher heat application can be effected, and thus some scorched taste in the milk be prevented. It is the empyreumatic changes in the taste of pasteurized milk that is objected to by so many consumers. It is more than questionable whether that change in taste has any undesirable effect of a digestive character. Nevertheless, consumers object to it. The application of sufficiently intense temperature influence should always be applied to milk to destroy pathogenic infections, no matter whether intense heat or intense cold is utilized in preventing fermentations before or after pasteurization.

The best gustatory result can be secured by a mixed cold and hot treatment; but if that practice is adopted, a more cleanly, and hence more costly, production must be practised; inasmuch as the so-called putrefactive germs that survive will proliferate in the intestinal tract as freely, if not more so, than in the unconsumed milk itself, with resulting autointoxicative effects. If the mixed treatment is applied, the milk should be deeply chilled by mechanically effective refrigerations applied at the farm, during transportation and in the special compartment in which the bottled milk is finally heated after its pre-heating. Here, after its pasteurization, the milk is cooled nearly down to its freezing point. Fifty degrees F. is not cold enough to prevent a large amount of reproduction of various bacteria. Although bacteria are not destroyed by temperatures below 35° F., still, proliferative action is so slow at those low temperatures that any objectionable fermentative effect may be disregarded.

This mixed method of treatment has two objections: (1) the low temperatures do not destroy bacteria, and (2) the method increases the cost of the milk one-half a cent a quart beyond that of ordinary market milk. This cost, however, is much below the cost of "certified" milk; for all the special costs of equipment and management of "certified" establishments are not needed to secure decently clean milk. Even "certified" *raw* milk is not good enough. It should all be pasteurized in a final container that will prevent infections of the contained milk, and should be *deeply*, mechanically chilled both before and after pasteurization in order to secure entire safety and highest wholesomeness; and also it should be pasteurized by more effective applications of heat than is usually given in ordinary pasteurizing processes.

The latest idea that has come to me, and which I think will ultimately be universally applied, especially in connection with the general supply of market milk and in the treating of cream for butter production, is to heat the milk or cream, and coincidently aerate in one operation, at the farmer's plant before the milk has lost its self-preservative power against germinal reproduction, to such a high degree, and so to maintain that degree of heat during transportation and holding, that all germinal life in the milk that is likely to be damaging is destroyed, and spore developments are prevented. Virtually the milk thus treated is in a high state of heat from the time of its production up to the time of its delivery to the consumer. In this method even the animal heat is economically conserved. Now this does not mean boiling milk. Some new procedure must be carried out to get the effect. In order to secure this effect without the scorching results of a sterilizing heat, I apply the principle of using large volumes of heat of moderate degrees of intensity for longer periods of time, instead of using heat of high intensity in lesser volumes for shorter periods, which later practice must be applied if a large amount of milk from numerous sources of supply is to be heated in the short time that is available for handling the milk by purveyors of city distributing plants.

If my method of heating is applied at many individual farmers' plants, the requirement of great celerity in heating is avoided; the formation of all putrefactive fermentative products in the milk is

prevented, and for practical purposes the cause of their formation is eliminated. It does this without changing the taste or chemical character of the milk more than the ordinary methods of pasteurization, but will eliminate most of, though not all of, the putrefactive and acid-forming germs. There can be no more objection raised against boiling milk for individuals of vigorous digestive ability than in soft boiling of eggs for consumption by such individuals; and if that objection does not exist, even less objection would stand against the now referred to new method of heating milk at a higher degree of heat applied in larger volumes than that of ordinary pasteurization, and holding the milk at that heat for a long time; even allowing that such heating may destroy the natural ferments in the milk, a possibility as to which, as yet, there has been no definite, generally accepted conclusion.

So long as prejudice exists against heating milk for the feeding of some infants, it may be well to adhere to the principle of applying, along with all possible cleanliness in production, the elimination of all volatile contaminations, heating to eliminate all pathogenic danger, and deep refrigeration against bacterial putrefactive reproductions before and after pasteurization. There should be no cessation from or restriction of that ideal for delicate babies, no matter what the cost. But such complicated precautions are absolutely unnecessary in connection with the milk supply of the vast major part of consumers.

We know that some bacterial poisons will resist very high degrees of heat without losing their toxic character. This being so, the importance of providing against their possible formation in milk by applying the herein stated ideas will be obvious, and will solve the great milk question. Practical action can be applied in this connection, but the whole world is as yet largely uninformed as to the matter. The adoption of the new methods requires that new capital be invested in installing new equipment and in educating the consuming public. At present, dealers are entrenched behind the ignorance of consumers, and health officials have no money in hand to educate consumers. I do not believe that any initiatory action can be secured unless some altruistic effort backs up already going concerns, as occurred in the "certified" movement, or organizes new purveying concerns. Although it is probable that such investment of capital would bring satisfactory returns; at the start, ignorant inertia and commercial selfishness must be overcome. Then the example will be followed by those who are less progressive and more selfish. Health officials, as well as the medical profession, should act to encourage investment of the newly applied capital that is needed.

The method of heating and aerating milk and cream at the farmer's plant is also the solution of the related problems of infected butter and the utilization of skim milk as a human food. Properly proportioned admixture of skim-milk powder and corn meal is the commercial solution of the high cost of living for millions of human beings; but at the present time there is no sufficiently effective practice in which a connection can be made between the easily decomposed skim milk of the farm and the general food consumer. Consequently, skim milk is wastefully utilized in feeding the lower animals, at an economic return to the farmer of less than one-sixth of its nutritive value as human food, and as compared with the cost of lean beef to the consumer.

There is still the question left open as to which of the above referred to methods is best suited for special purposes. For adults, and children over three years of age, in a normal condition of health, there can be no question as to the economic, sanitary and hygienic advantages of the continuously maintained hot method of control in preserving milk. So long as prejudice exists in medical minds as to heated milk there ought to be some source of supply for infant feeding in which the mixed treatment is applied, although it invariably involves a higher cost of production and preservation. Very clean milk, if deeply refrigerated before the milk has lost its inhibitive power against germinal growths, and if that deep refrigeration is continuously maintained, is practically a fresh milk for many days, and ordinary degrees of pasteurizing heat do not destroy the digestive zymogens. That method is theoretically the ideal, but in view of the vast amount of illuminative antebellum reports from Europe as to successful results from feeding infants with milk that had been subjected to the high heat of boiling, one feels justified in predicting that the clumsy, uneconomical method of preserving milk by ice refrigeration will at some time in the future be entirely replaced by a continuous method of applying heat in large volumes of low degrees of intensity.

It is nonsense to advance the proposition that a pasteurized milk cannot be considered as a "certified" milk. Depending on cleanliness of production alone was in harmony with the scientific enlightenment of twenty-five years ago; but it is *not* in harmony with the knowledge that we now have to help our practice. Certification of milk should include besides knowledge that it has been produced in the most cleanly manner, knowledge that it has been treated in such a way that accidental and unforeseen pathogenic infections have been prevented or overcome, and that *all* fermentative action in it has been entirely prevented, as well as volatile diffused matters eliminated that have become absorbed by and held in the milk.

The method herein referred to for securing a more effective application of heat, both in effectuating a greater destruction of bacteria and in preventing all fermentations and spore developments, has as a basic principle the application of the needed heat through a longer contact with heating surfaces that have been heated by steam that has been expanded under atmospheric pressure only, *i.e.* of water vapor of a temperature less than 212° F., instead of having been in contact with heating surfaces higher in temperature, such as is common in connection with the application of steam under higher than atmospheric pressure, and which surfaces are usually so hot as to scorch quickly the parts of the milk that have immediate contact with such highly heated surfaces. This scorched part becomes admixed with the bulk of the milk that is in the aggregate only heated to 150° F. or less. In my plan, by having the milk heated at the producer's plant immediately after its drawing, and

coincidently aerating the milk during its heating, a better pasteurizing effect is secured, fermentation is not initiated, and a more complete elimination of "cowy" volatile contaminants is gained. By shipping the milk in jacketed cans, in a highly heated state, we provide against loss of heat, a further reduction of bacterial life is reached, and probably a softening and increased digestibility of the milk is secured, as is the case in the use of the "fireless cooker." By giving the milk a relay heating at the distributor's plant after its bottling, and at a temperature of about 200° F., subsequent fermentation and spore development are prevented during its distribution to the consumer. Through this simple process, *absolutely* safe and *wholesome* milk can be secured for the masses at a cost to consumers very much below the cost of certified raw milk; in fact, as low or lower than grade A refrigerated milk, and of a gustatory character fully as good as that of milk that has been subjected to the change effect of ordinary pasteurization. This method enables unusual increases in bacterial counts, as from mastitis, to be followed to the individual herd at fault.

THE AUTOSERUM TREATMENT FOR CHOREA.*

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In bringing before you this evening the subject of chorea and its treatment, I wish to give a brief description of this condition from an historical and from an etiological standpoint, and then speak of a new form of treatment which we have found so beneficial at the German Hospital in New York. Chorea was the name originally given to the cases of dancing mania which occurred along the Rhine, at the beginning of the fifteenth century. These cases of real chorea were followed by cases of pseudo-chorea which were in children or persons who imitated the real chorea. This became so extensive as to warrant being called an epidemic. Such epidemics have also occurred in Italy and France. In our own country, in 1803, such an epidemic occurred in Tennessee, and was well described by Douglas Robinson in 1825. Real chorea must be differentiated from the ordinary types of habit spasm such as twitching of one eye which is so common in children.

Chorea is a nervous disease which is usually characterized by involuntary movements of various muscles of the face, hands, and arms. It is accompanied by great muscular weakness and prostration. Not infrequently it follows attacks of rheumatism and tonsillitis, and is usually accompanied by endocarditis. A true chorea usually called chorea minor, was first described by Sydenham in 1686 and his description is so classical that it cannot be improved upon to this day. The literature is so extensive on this subject that it is hardly necessary in a paper of this character to go into it any deeper.

It is most common among females. We have found in our investigations of this subject that the proportion is 3 to 1, and it is most common between the 5th and 11th years, usually coming on at the end of the first half of the school year. We rarely see this condition during the summer months, so that worry, exposure to cold, dampness, and infections of the nose and throat and of the respiratory organs, seem to be forerunners of this condition.

We have almost reached a point, with our newer ideas on this subject, where we feel that chorea is an infection of the nervous system, the infection being similar to that which is caused by so-called rheumatic joints, the exact organism of which we have been unable to isolate. The disease acts like an infection and responds like an infection. By infection I do not mean that pus is present and that the patient runs a usual infection temperature, although most of our patients with chorea have a slight temperature. This belief is held to by numerous workers in the same field. Numerous examinations of the spinal fluid of cases of chorea by the newer laboratory methods of Rosenow have failed to show the exact cause present. As far back as 1850 Germain Sée stated that chorea was due to a rheumatic affection of the brain and spinal cord. This same belief has been shared by Osler, Townsend, Berkely, Koplik, and Goodman. That the poison is a microbe is suggested by the frequent unilateral character of the disease. It is almost invariably more marked on one side than the other. This, according to Cautley, indicates a local cerebral lesion rather than a general cerebral toxemia. It is probable that more than one organism can give rise to chorea, for attacks follow many infectious diseases.

Probably functional instability of the nervous centers is a potent cause and may depend upon malnutrition. One case which came under our observation at the hospital was in a child six years old who had been practically starved for some weeks and entered the hospital with little more than skin and bones. Proper feeding without autoserum improved the child's condition markedly and aided in its rapid recovery. The disease is most commonly seen among the poor and poorly fed.

The morbid anatomy in cases dying of chorea is that of any case dying from extreme emaciation. Endocarditis has been noted in 105 out of 115 autopsies collected by Osler; Sturgis found organic heart disease in 75 out of 80 fatal cases. Usually the mitral valve is affected but sometimes the other valves may be involved. The muscle of the heart usually has undergone fatty degeneration and not infrequently a small amount of inflammatory exudation may be seen between the muscle fibers. Reichardt in 1902 found changes in the nervous system which he believed were due to a general toxemia such as degeneration of the anterior and posterior root fibers in the cord and small-celled infiltration throughout the brain; also, small hemorrhages in the neighborhood of the basil ganglia. Neuwerck has noticed these hemorrhages also. No observer has ever been able to demonstrate any abnormality in the cortex of the brain.

It may be of interest to hear something about the chemical examination of the spinal fluids of children with chorea. Leopold and Bernhard[2] made 21 careful chemical examinations of the spinal fluid of children with chorea and the figures obtained

*Read at meeting of the Flatbush Medical Society, March, 1917.

for nonprotein nitrogenous constituents and for reducing substances showed no variation from the normal. The number of cells counted was normal except in 4 cases and the globulin reaction was negative in every case. No child with chorea has given a positive Wassermann reaction, which, in a series of 21 cases, would indicate that syphilis plays no role in this disease.

I will not take up your time with too many of the symptoms of chorea; they are probably all too well known to most of you; on account of their frequency and the long duration of the disease these cases usually pass through several hands before they are well. The onset usually takes from one to six weeks, the child seems more nervous, laughs and cries for little or no cause and is unable to fix its attention. Irritability of temper, awkwardness, and sleeplessness are common symptoms. As the condition progresses the muscles used in expression and in movements requiring the most careful coordination, suffer first and most extensively The child makes faces, drops things, is unable to pick up even a pin without going through many twists of its hands. Eventually the child is unable to stand, walk, or sit and flings itself about the bed so that it may have to be restrained. In many of our cases the children are in a constant perspiration, due to very active muscular exercise, as an athlete after running. The mental condition becomes much impaired and the children seem stupid or unusually dull. They are slow in answering or understanding questions. The motor disturbances show involuntary movements of practically all the muscles of the body, the tongue is protruded with a jerk and held out very often by closing of teeth. Speech defects are common and they sometimes lose absolute control of articulation. With speech defects there are voice defects which are due to movements of the muscles of the larynx. These speech defects are similar to the movements of the body, the voice rises and falls in rapid alternation. The reflexes are sometimes normal but very often diminished or absent. As I have said above, the general health becomes much inpaired and the blood picture is that of a child in secondary anemia. The heart becomes rapid and there is usually a loud systolic murmur at the apex, which can be heard posteriorily.

The prognosis in cases of chorea is usually good. Mortality has been placed at 2 or 3 per cent. This includes the adults. I have never seen a death in a child from chorea. I have seen one adult with this condition who died at the Brooklyn Hospital.

This is enough of a general description of the disease and I will now call your attention to a new form of treatment which we have used at the German Hospital, New York City, for the past two years, with some very remarkable results.

About three years ago Dr. A. L. Goodman[1] of the German Hospital suggested the use of autoserum in the treatment of chorea. This treatment, known as the Goodman autoserum treatment, consists in the taking of the blood from the arm of a patient suffering from chorea, separating the serum from the blood, and then injecting the serum into the spinal canal of the same child after withdrawing 15 to 20 c. c. of the spinal fluid. Since this treatment was first suggested there have been about 100 cases of chorea major treated in this way with very remarkable results in some of the cases.

At first the simple withdrawing of the spinal fluid was tried but no appreciable change in the movements of the arms, face, or legs was noted. This simple withdrawing of the fluid was later followed up by the injection of the serum of the child so affected.

Before going into the exact method of preparing the serum for use I would like to call your attention to a few precautions which we have found necessary before using the serum.

The patient should be kept in bed without medicine of any kind, such as choral, bromide, or arsenic, for four or five days before any treatment is instituted. In one case we injected a patient during the time it was under chloral and bromide medication which almost proved disastrous. The patient went into a coma which lasted for four or five days and we believed this was due to the fact that the child's nervous system was saturated with these drugs.

Another important precaution is to ascertain if the child has tuberculosis or syphilis, as these cases do not do well if injected. Children with enlarged thyroid do not do well if injected with autoserum—but improve when treated with extract of the thyroid gland.

Method of Treatment: Fifty c.c. of blood is withdrawn from one of the veins in the arm and then rapidly centrifugalized, which separates the serum from the blood. The serum is then pipetted into a sterilized vessel and placed in the incubator and kept at the temperature of the body. A lumbar puncture is performed in the usual manner and 20 c. c. of the spinal fluid is allowed to flow out. In cases of chorea this is usually under a little pressure. After 20 c. c. of the spinal fluid have been withdrawn the blood serum at the body temperature is then slowly injected. This usually takes about 5 to 8 minutes and the patient is kept in a recumbent position in bed for at least one or two hours after injection, for if allowed to sit up immediately after injection heart collapse sometimes follows. If the serum injection is to be of any benefit in a case of chorea, improvement should be noted in two or three days, in the very bad cases the muscular twitching of the mouth and movements of the arms become lessened, and one part of the improvement which seems to me as very satisfactory is that the children take their feedings much better after their first injection. This first injection is followed in 5 or 6 days by a second one which is performed in the same manner.

There are one or two things which develop the day following injection which should be noted but at the same time are not serious symptoms: A slight rise in temperature, vomiting, an increase in the pulse rate, and in some cases a slight stiffness of the neck. These all disappear within a few hours. Some of the patients have had a slight amount of frontal headache. However, these symptoms do not all appear in every case. It probably is due to a slight increase in the intracranial pressure.

Summary: It may be of interest to know that of the cases treated, five per cent. have had a recurrence within a year. This is considerably lower

than under the usual form of treatment. I believe that autoserum should be used in all cases of chorea minor, especially where they have resisted other forms of treatment. The usual routine treatment was formerly to keep the children in bed from 6 to 8 weeks, give them chloral, bromides, sodium salicylate, arsenic and warm baths, all with more or less uncertain improvement in the child's condition. With autoserum the course of the illness can be much shortened and the general improvement of the patient will be more rapid. I remember while working in the hospitals in Berlin and Strassburg that after 4, 5 or 6 weeks of arsenic, sodium salicylate, and bath treatment, the children were kept out in the sunlight and fresh air, without medication, for 6 to 10 weeks longer. With autoserum, if a child is to improve at all, it should be practically well within 3 weeks.

We have been unable to explain definitely why this method of treatment has been so satisfactory, but it is based on the supposition that we are dealing with an infection of the nervous system and that the child has developed in its blood certain substances or anti-bodies which have the ability to overcome the infection in the nervous system, whatever that may be. As yet, there have been only a few reports from other hospitals. Here in New York at the Fordham Hospital and the Jewish Hospital (Brooklyn) there have been a few cases injected with very satisfactory results, I believe. Faber has reported in the *California State Medical Journal* his observations on five or six cases and he also has found satisfactory results.

REFERENCES.

1. Goodman, A. L.: The Autoserum Treatment of Chorea. *Archives of Pediatrics*, 1916.
2. Leopold, J. S., and Bernhard, A.: Studies in the Chemistry of the Spinal Fluid in Children. *Am. Jour. Diseases of Children*, January, 1917.

70 East Seventy-seventh Street.

SOME DISFIGURING AFFECTIONS OF THE EYELIDS.

By DOUGLASS W. MONTGOMERY, M.D.,
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If the mouth may be considered the door of the face, the eyes are its windows, and the eyelids are the curtains. The eyes are the most expressive feature of the face, and the eyelids contribute more to the expression even than the eyeballs. Any deforming disease of the lids, therefore, makes itself quickly felt in the appearance of the face, even if the disfigurement itself cannot be precisely defined by the observer. It is because of this that any references to the eyelids in general literature are so interesting, as they are apt to show how these diseases strike the layman. Blepharitis marginalis is one of these deforming diseases.

Blepharitis Marginalis.—Blepharitis marginalis is an inflammatory condition of the free border of the eyelids, and is part of a general disorder of the skin called seborrhea. In seborrhea the skin becomes thick, dull, heavy looking, and often the surface is oily. In fact, the trouble primarily has to do with the fatty constituents of the skin, and as the skin is above all things a fatty organ, the importance of any interference with its fatty constituents or its fat production may be understood. The skin has great masses of fat beneath it, and its sebaceous and its sweat glands and its general surface produce an abundance of a fatty substance called cholesterol. Cholesterol is impervious to bacterial attack, it is non-fermentable. If, however, a fermentable fat instead of a non-fermentable fatty substance is excreted by the fat and sweat glands and by the general surface of the skin, bacteria will attack both it and the skin, and will give rise to many forms of catarrhal disease. This is just what happens in seborrhea. Seborrhea may cause an oily surface or it may give rise to a dry, branny surface—in the one case causing seborrhea oleosa and in the other pityriasis, a word derived from the Greek, *pityron*, bran, and therefore self-explanatory.

In any case of seborrhea the edges of the eyelids may be affected. The oily secretions of the very large sebaceous glands, the Meibomian glands, which lubricate the free edges of the lids and the lashes, may be altered, and they may secrete a hard brittle granular fat resembling barley sugar, which sticks to the lashes, and in the morning "gums up" the eyelids disagreeably. The patient may be constantly occupied in picking off these crusts. Instead of being tough and gummy the secretion may be free flowing and watery, and in either case the secretion is apt to give an opportunity for the residence of bacteria, which under ordinary circumstances would be harmless, but which in these people give rise to blepharitis marginalis and to inflammations in the Meibomian glands, commonly called styes.

Cervantes jokingly refers to how deforming these secretions from the eyelids may become. When Don Quixote demanded of the silk merchants that they should confess Dulcinea to be the most beautiful woman in the world, one of them waggishly requested Don Quixote to show them her picture, and then, with that small evidence, he said they would readily comply even if she were blind of one eye and that from the other there distilled vermilion and brimstone. Don Quixote disdainfully rejected the proposition and affirmed that nothing distilled from his lady-love's eyes but amber and civet.

It does not appear from this that Don Quixote mended the matter much as far as appearances went, but he satisfied himself.

Incidentally it may be remarked that sulphur had much to do with the physiology of the eye in olden times, as it was supposed to cause the glow occasionally seen through the pupil in man and frequently in the lower animals, as in the rabbit and cat, which we now know to be caused by the reflection of light from the retina. I have no doubt the reference to sulphur by the silk merchants was particularly insulting, as being intimately associated in ancient literature with vile odors and with hell. Civet, on the other hand, was appreciated as a perfume, and amber was highly regarded as shielding from disease.

Blepharitis marginalis may exist in young people, but it is an obligatory accompaniment of old age, that condition which has been compared to a hospital into which all diseases may enter. In old age seborrhea is naturally present both because

of the fatty degeneration of the tissues, including the epithelial tissues, and because of the anemia due to the failure of the blood making organs. The word anemia has come to mean not an entire lack of blood, as it logically should, but a lowering of the red coloring matter of the blood. This lowering of the red coloring matter causes a paucity of oxygen, which in turn leads to a faulty oxidation of the fat and the fat making starches and sugars. This interference with the digestion or burning of fat, starch, and sugar, has a decided effect on the great fatty organ, the skin. This relationship between anemia, old age, and seborrhea leads us to consider one of Hamlet's observations.

Hamlet was rather free in his criticism of his neighbors. He indicated, for instance, that amber and plumtree gum distilled from old Polonius' eyes, and he did not regard this as a compliment either, for he goes on to state that this distillation, together with weakness of the hams and a plentiful lack of wit, were the distinguishing characteristics of the old fellow.

This plumtree gum, or pituita, played as great a rôle in ancient medicine as did sulphur. The blood, the bile, the atrabile, or black bile, and the pituite or phlegm were the four humors of the body, which, when disordered, gave rise to disease. The pituite or phlegm was thought to come from the brain by way of the pore or dimple in the floor of the third ventricle, and on through the pituitary gland, and the solid, bony floor of the sella turcica to the pharynx. Some of it also went out through the optic nerves and eyes, and some through the cribriform plate of the ethmoid bones to the nose. The free and easy way a fluid had of passing through a solid structure, as even through the solid floor of the sella turcica, constituted one of the peculiarities of the old physiology. Previous to the discovery of the circulation, the blood was supposed to pass from the right to the left side of the heart through supposititious pores in the cardiac septum.

This pore in the floor of the fourth ventricle is now conjectured by Gaskell to be the last indication of that pharynx or passage between the primordial alimentary canal, represented by the central canal of the nervous system, and the new alimentary canal, our present one. What eons of ages this anatomical development represents, and what a short moment of time exists between Gaskell and Rabelais!

The phlegm, or pituite, was considered the most dangerous of all the humors, as disorders of it gave rise to the most serious and quickly fatal diseases.

Usually catarrhal inflammation of the lids is sluggish, partaking in this respect with the general character of seborrhea. The process, however, may be quite active, giving rise to marked redness, and this is particularly apt to occur in those who overindulge in alcohol. This is the reason why Bremond asserts that the "hospitaller" or lay brother hospital attendant, mentioned by Friar John as having eyes as red as an alder-wood bowl, was a drunkard.* As a child I well remember a carpenter who had eyelids every bit as red as the above mentioned hospitaller. He used to wear gold rings to keep the inflammation out of his eyes, but he nevertheless was well aware of the real cause of his trouble, as his favorite name for whiskey was "red eye." The easily fermentable fats, such as butter and cream, and the easily split corbohydrates, such as the sugars, are strongly sebiagogic. Alcohol, as being a modified carbohydrate, and being more readily absorbed and more easily split than sugar, is more highly sebiagogic in its action, as the shiny, greasy faces at a formal dinner often show.

There is a dirty yellow discoloration which occurs principally about the mouth and also on the eyelids, and which is associated with anemia and frequently with seborrhea. It sometimes is a decided lemon color, and is the same lemon yellow that occupies the entire complexion in Bright's disease. As I have encountered it, it occurs more frequently in women than in men, and is peculiar in that the person herself rarely observes it. Mothers frequently observe it in their daughters, and many a girl is sent repeatedly to wash her face, when in reality the digestive organs or the blood or both are at fault. It is rarely noticed by the patient as occurring on the eyelids, except as a generalization, as contributing to "a bad complexion." It may gradually deepen as years go by, till, at the age of forty or forty-five, the lids grow to be buff colored. The combination of a dull yellow, Swiss-cheese complexion with chamois leather lids is not unusual as part of the picture of a seborrhoic face.

As before remarked, one of the peculiarities about this discoloration, both about the mouth and about the eyes, is the infrequency of its being noticed by the patient. Many a woman who wears out the carpet in front of her looking glass has to have her attention especially drawn to it before she sees it. And when the physician finally does succeed in making the patient see the disfigurement, it does not follow that his services are further required.

The seborrhoic deformities are among the most common troubles of the human race, and their incidence answers the question so bluntly put by Guy de Maupassant, "Why are children so beautiful, and why do adults and those along in life become so ugly?" It is largely a matter of eating, or of anemia, or of a too sedentary mode of life. The question of eating resolves itself, as a rule, into overindulgence in the delicious, easily split, easily fermentable fats such as butter and cream, and the very attractive, easily split carbohydrates, such as the sugars, and their modification, ethyl alcohol.

No matter how earnestly one may advise one's patients, from my personal observation it will be a long time before eating for fun will cease to become fashionable. After spending my time and energy in exposing my reasons for a reasonable course of eating, I often conclude that John the Baptist was the wisest of all orators. After preaching some time in Jerusalem, he finally retired to the desert, where he presumably addressed the eyeless winds. The subsequent political events in Jerusalem, including the final catastrophe on Calvary, justified his course. If his subject had been dietetics I am persuaded the event would have been equally brilliant.

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*Rabelais Médecin, par le Dr. Felix Bremond, Gargantua, Ch. XXXIX, note 132.

OUTLINES OF NEW WORK CONCERNING THE ALCOHOLIC PROBLEM.*

BY T. D. CROTHERS, M. D.,

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A RESEARCH Foundation has been established on the assumption that there is a great unknown continent of causes that have never been explored back of the use of alcohol as a beverage. This is sustained wherever inebriety and alcoholism has been studied with any degree of accuracy. Physicians who are treating the acute symptoms that call for help are astonished to find that when physical and psychical causes are recognized and means applied for their removal the most positive results follow. Thus, a surgeon who removes a spicule of bone that has evidently been pressing on the nerves, finds that the patient recovers from what is considered chronic alcoholism supposed to be incurable. Trephining the skull and lifting a depressed bone is followed by a total change in so-called habits and conduct. Finding pus pockets and removing them is also a surgical operation that is followed by the most unexpected results of cure. In the field of clinical study, correcting constipation and states of local congestion, also changing the diet, cutting off tobacco and a great variety of measures of this kind have restored many a poor inebriate. On the psychical side of inebriates, there are equally startling cures from psychical measures and means. These are the unmistakable hints of a new field or active, predisposing, physical and psychical causes which are not only associated with but have preceded the drink craze.

The present tremendous effort by reformers concentrated in prohibition is based on the theories of the past and assumes that moral causes and the vice element in human nature is sufficient to account for the great alcoholic evil. The commercial and sociological world are frightened at the extent and magnitude as well as destructiveness of alcohol as a beverage and they, too, have joined the wave of reform with most enthusiastic faith that the obliteration of the saloon and alcohol as a beverage will afford a complete relief from the present conditions.

When the disease theory was mentioned many years ago for the first time, it was most bitterly condemned. Later it was accepted in part and finally the quacks occupied the field with claims of specifics and positive cures from remedies and secretive means. This has somewhat passed away, but the thinking public realizes that there is a chain of physical causes that have never been studied. Scientific research everywhere brings out the fact that all the phenomena of disease are the direct result of a distinct range of causes that moves uniformly, controlled by exact laws which can be known. Thus the epidemics and mysterious diseases which have prevailed in the past are traceable and are found to be governed by exact laws of cause and effect.

The alcoholic problem, statictically, is this: There are over a million persons in this country using spirits and drugs either in moderation or excess. There are at least fifty or sixty thousand direct deaths from this cause yearly and many, many thousands who die indirectly from the same cause. Evidently, this army is recruiting all the time and is not diminishing. The religious, educational, social reform effort, while doing grand work, has not succeeded in diminishing the disease, mortality and frightful losses that come from this source. The obvious reason is that the causes are unknown and the measures of their prevention have not been applied along scientific lines.

This is the field the Research Work has entered upon. One of the most prominent phases is the periodic drinker. His use of spirits is mysterious and inexplicable. At one time he is a rigorous abstainer in possession of all his faculties, at another, he is an impulsive maniac—idiotic and unreasonable. The contrast between these two conditions is a subject of numerous theories, comments and opinions. This condition may change any time, or go on to death. The symptoms are so positive that it is assumed that a study would show some preceding causes which move with uniformity and could be predicted. A single instance seemed to furnish a distinct answer to this question and indicate a line of study of the most intense interest. Thus, in this case, a man of unusual intelligence and capacity drank to great excess at irregular intervals then recovered and resumed his business as before. These attacks were distinctly preceded by intestinal derangements and fears of cancer. This would extend to visits to specialists and most careful examinations with instructions of what to do, which he followed for a time, then suddenly drank to great excess. Here was a distinct delusion preceding his drink attack. It was found that before this broke out, he showed unusual attention to business, making elaborate plans to prevent losses. Another instance, equally prominent, suffered from an attack of so-called rheumatism with an equal alarm and anxiety to prevent it.

A very practical inquiry was made to determine if these attacks were preceded by symptoms, premonitory and significant of the approach of the drink paroxysm. Inquiry covering a number of persons under treatment showed that in every instance such symptoms were apparent although they varied largely in the individual. Inquiries made of thoughtful physicians who had patrons of this class brought out strong confirmations. The few medical papers written on this form of drink referred to this in particular, and one author indicated that in his opinion every case had premonitory symptoms although they were not always recognized. In a paper which I read on the Auras of Inebriety before the American Medical Association some years ago, this fact was brought out in some detail and the whole was based on the studies of several hundred persons. Recently this appearance of symptoms is so common as to be expected and when they do not appear the fault is evidently with the observer. These symptoms seem to group themselves into two classes, both physical and psychical. The former includes nearly all the so-called functional disorders and symptoms of prominent physical disease; the latter covers a wide range of mental symptoms, one of which is very misleading and by which the patient shows undue anxiety to help others of his class. He will become

*Read before the Society for the Study of Inebriety, at the annual meeting in New York City, June 12, 1917.

wildly enthusiastic in reform work and exhibit unusual buoyancy and startling dogmatism, then suddenly stop and become a victim himself. Observation shows that often the most enthusiastic temperance reformers whose efforts border on the intemperant acts and words very often relapse and become abject victims themselves. Every great revival illustrates this and often the most ardent converts to radical change of life are the first to break down.

Our studies covering a large number of instances were without exception distinct and positive in the premonitory symptoms and auras which preceded the drink craze. There was no accident or chance in this. It pointed to distinct unknown causes, irritations and morbid impulses that gathered and finally culminated in an intense overwhelming desire for the narcotism of alcohol. Of course these causes are largely unknown to the patient unless they are repeated in about the same way under similar conditions. Even then a recollection of them is faulty. A person of this class whose premonitory symptoms are of great irritation and suspicion before the drink attack breaks out may have an indistinct memory of this having occurred before. This memory does not carry with it any intimation of the almost certain sequelæ. He reasons that the causes of his present disturbance are different from that of any other time and when his friend intimates that he has acted that way before the idea that this preceded the drink attack is repellant.

There are others in which these distinct auras create alarm and dread of the approaching drink attack. A few of such persons make great efforts to stop this storm at the beginning. An instance of this kind is that of a man occupying a very responsible position, who becomes an insomniac several days before the drink craze breaks out. He has learned to put himself under the care of a physician, who gives him drastic cathartics and other remedies for a brief period; then the condition passes away and he sleeps well until the approach of another storm. These have been broken up so that the free interval is greatly lengthened and the symptoms minimized and overcome with a good prospect of their final obliteration.

There is a great wealth of illustrations along this particular line. The inference is very evident that all persons of this class could be greatly helped and many of them cured by a study of the early symptoms. The auras and changed conditions would go before the outbreak.

Our preliminary work fully sustains the following general conclusions:

First—There are definite physical and psychical states preparing the soil and sowing the seed for the outbreak and development of what is called inebriety and alcoholism. These are manifested by positive changes of character, conduct and mental activity. These are so tangible and real as to be observed by both professional and laymen, and be the subjects of comment and observation among the friends.

Second—Whatever the actual causes may be, either dating from heredity, toxemias or exhaustion, they give distinct intimations, often long in advance of the direction of their development and the form in which the outbreak will appear. Of course the memory of the pleasing effects of alcohol, either as a medicine or socially, gives form and shape to these impulses. Perhaps at first, experimentally to determine whether they will relieve present conditions and, aftr this fact is established, they dominate everything.

Third—Obviously there is an increasing army of highly sensitive active brain and muscle workers in this country. Sooner or later there comes the dominating impulse for relief and if alcohol has brought this in the past, it will be sought for in the future. The active results from continued strains and drains suggest relief from many sources, and these are the premonitory symptoms. The fever and chills in malaria indicate the presence of germs and toxemic conditions, and the dominant thought is what to do, in the same way. The premonitory symptoms going before alcoholism or inebriety are distress signals, actually danger signals which must be recognized in any method of treatment.

Fourth—This general study shows beyond question that not only periodic inebriates but so-called immoderate drinkers have distinct symptoms of disease, before the outbreak and the assumption is amply verifiable that a study of these symptoms would open a most fascinating field of prevention and cure. Studying the symptoms after the disease has appeared from the standpoint of moral theory must necessarily be disappointing.

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Medicolegal Notes.

Physician's Claim Under Workmen's Compensation Act.—In proceedings under the Indiana Workmen's Compensation Act for medical treatment of an employee of the defendant employer, who was injured in an accident, the Indiana Appellate Court holds that where an employer duly authorizes a physician's treatment of an injured employee beyond the thirty-day period prescribed by the act, the insurer is liable therefor.—Kirkoff Bros. vs. McCool (Ind.), 116 N. E. 439.

Issuing Prescription for Intoxicating Liquors—Intent.—An information under the Missouri statute making it an offence to issue a prescription for intoxicating liquors to be used otherwise than for medicinal purposes charged merely the issuance of the prescription which was set out and which was the end of the charge against the physician. It then started off with a separate paragraph and a new sentence to the effect that said liquors were to be used otherwise than for medicinal purposes. This did not charge the physician with that purpose, but covered only the purpose of the person who got the prescription. The information was thought held insufficient.—State vs. Bradford (Mo.), 195 S. W. 523.

Effect of Election of Remedies Against Physician.—Owing to the nature of the relation between a physician and a patient the latter, in the case of a claim of malpractice by the former, ordinarily has a choice of remedies, and may sue the physician either in contract or tort. If he elects to sue in tort, and actually commences and prosecutes his action to a final adverse decision, his right to sue as for a breach of the contract or the breach of a duty imposed by law, by reason of the defendant's calling and the relation between the parties, is lost. And this is true although at the time of the commencement of the action for the tort it was barred by the statute of limitation. The election to sue in tort and the prosecution of such suit to final judgment relates back to the original transaction out of which the action arose, and constitutes an irrevocable election of remedies as they then existed on the part of the patient.—Stokes vs. Wright (Ga.), 93 S. E. 27.

Military Medicine.

LETTERS FROM AN M. M. R. C.

A DOCTOR joining an officers' training camp is apt to be hypercritical of the instructors who lecture. He expects the same ability as that found among most college professors, and in this he will be disappointed. The men from the regular army who are detailed to act as instructors at the various officers' training camps look upon their job as more or less of a bore. Very few of those chosen to fill this position are qualified by experience as lecturers to hold their audience no matter how interested they may be in their work. The principal subject on which they lecture is both dry and complicated, so complicated, in fact, that no one is expected to know it without the text book open before him. "The Army Regulations" and "Manual of the Medical Department of the U. S. Army" are two books which must become part of yourself as soon as active service is started. Although proper form of wording is required for all official communications and reports, no one unaided would be able to dig out from "Army Regulations" exactly what was wanted. The principal instruction given on this "paper work" is the only key to what would otherwise be a mystery. I have before mentioned the absolute necessity for these reports to be correct even to dots and dashes and that they would be returned over and over again by the surgeon general's office with growing sarcastic comment on your ability till they were finally made right by you.

As an indication of when your daily routine of clerical work begins I need merely mention that your morning "sick report" must be in the hands of the adjutant of your regiment at 6.30 A. M. Of course, this does not mean that you have held your daily clinic before this hour. It does mean that so many men have reported themselves to you as being ill and you have set a time later in the morning when you will treat them or else you have sent them to the hospital if they seem very ill. Although illness is looked upon as an unfortunate adjunct to army life, little except absolutely necessary consideration is paid to it. You are taught in your lectures that the only thing that counts in the army is the fighting man power. In time of battle you are told to rush back the slightly wounded first so that their chance of rapid recovery will be greater. Those more seriously wounded where chances of recovery hold elements of doubt must wait till the last for their turn of treatment. Here is a radical difference of viewpoint between the civilian doctor and the army one. If a man appears at sick call and says that he feels desperately ill you make a note of this fact and send him to the hospital. He will be reported as such on your morning report but the man himself will not be examined or receive any treatment, in all probability, till near on to midday. Your clerical and other military duties will preclude much of anything else till this hour. As a warning let me state that the ordinary military hospital found at most of the posts is the last place in the world a doctor wants to be found ill in. The officer of the M. R. C. will receive the same consideration as the poor private in the bed alongside.

At seven o'clock every patient who can get out of his bed must leave the ward till inspection is over. This is accomplished about 9 A. M. If he cannot leave the bed, his extra blanket that was allowed for the night is taken off and bundled regardless, with all the rest, in a closet out of sight. The toilet accommodations are also closed during this hour of inspection. This is rather rough on a man who has taken a dose of salts at 5 A. M. For those that are confined to their beds another pleasant little diversification of the hospital sergeant or orderly is the exact alignment of cots. This is done by a series of kicks, jerks, and pushes till from one end of the ward to the other each cot stands on the exact line. It is an operation that the orderly has his assistant help him in; one sighting down the line and the other doing the "rough stuff." I fancy the sensation must be great for a man who happens to have a raging headache.

To go back to the instructors: The principal theme of all their discourse is literally this: "When you are in the army you must learn to pass the buck!" This is not told you as a joke. It is apparently the real underlying factor in your advancement. By "passing the buck" they mean that you must never be caught being responsible for anything. If at monthly inspection any deficiencies in the surgeon's instrument case are noted by the superior inspector, the doctor who has this case at the time becomes responsible for the loss and must pay for it out of his pocket. There is no delay about this. The Government will take good care to repay itself out of the salary coming to this doctor.

This responsibility is not only for drugs, instruments, and equipment immediately under his control but also applies to all the equipment of the men under him; underclothes, socks, uniform, arms, tent, bedding, and mess equipment. Of course, this officer in turn passes the buck whenever he hands over any equipment to the soldiers of the Hospital Corps. They in turn have to sign and are charged up with anything that is lost or displaced. Reasonable wear and tear is, of course, allowed and is passed on by a board of survey. There is one doctor that I know of who was on the Mexican border recently who is having to make up over four hundred dollars for short supplies that he had been saddled with. If you requisition forty overcoats for your men and there are only thirty-six in the box that comes to you, you are responsible for the lot of forty, unless you had a responsible witness at the time the box was opened to prove that there were only thirty-six in it. Your personal statement that such was the case is of no consideration. If a new sterilizer (say at an original cost of $200) is from any cause destroyed or burnt out through accident which the survey board considered avoidable—the responsible doctor is charged up for a new one. How this system of accountability and responsibility is going to work out on a battle field is to be shortly shown.

Of course, each instructor has a good chance to deliver his own personal viewpoint concerning the Medical Reserve Corps during his lectures. The most virile expression came from one who was assigning a lot of graduates from an Officers' Train-

ing Camp to regimental detachments. It is reported that he bade them farewell in about the following words: "You better forget it at once if you think the Government is under any obligation to you. You are more than repaid for your services with the four or five dollars that you get a day. The Government owes you nothing and you owe it everything. Don't for a second think the Government has to send you or ought to send you on some detail near your home. As a matter of fact, it will probably make a better soldier of you the further you are detailed from your home. In this as in all other matters your personal inclinations will have nothing to do with the case. If you attempt to use pull, and I hear of it, I will do my best to see that you are sent as far as possible away from the place that you wanted!" Naturally, such discourse is extremely disconcerting to the many who have volunteered, and in so doing have not only broken up home and family ties but have given up a paying practice of much over four or five dollars a day. The forty or fifty men who received the above admonition came back looking as if a bucket of ice water had been thrown in their faces. No discourse could have been more indiscreet or more harmful under the circumstances, and certainly none could be better calculated to make the men discontented and possibly to regret the step they had taken.

It is needless to say that the regular army is very short of instructors for the Medical Division. To overcome the situation instructors are now being chosen from the Medical Reserve, who have shown qualification along these lines during their apprenticeship. What the future holds for these new army instructors remains to be seen. Being made an instructor and proving an efficient one of course will put an end to any aspiration to immediate service in France. A beginner at an Officers' Training Camp will find that if he excels in any one subject he is likely to be made instructor in this subject. If you are particularly military looking and learn to drill well it is almost certain that sooner or later you will fill this position as instructor. As in ordinary life, it often does not pay to outshine the average. There are many capable surgeons in the Medical Reserve Corps who now hold positions as Sanitary Supervisors and other such non-operative positions in our forts and camps and will probably continue holding the same till the war is over. If Washington finds that you can satisfactorily fill the shoes of one of its regular men you will surely replace the latter.

Under the present rule of advancement in rank it is reasonably certain that at the end of three months' active service a man may expect to be called before an examining board, and if his efficiency record is satisfactory his name will be recommended for promotion up to the rank of Major. Once a Major always a Major seems to be about the status of this rank. This is somewhat disappointing to the Major who starts as such. If the Government intends drafting doctors they will probably start them at the rank of second lieutenant. After the first raise in rank the second will possibly be more tardy in its eventuation except perhaps in certain cases where there may have been marked service in the field of action.

HEMOGLOBINURIA FROM MARCHING.

THE literature of this subject is very sparse, although the affection is of great interest to the military surgeon. Pari reports a case in the *Gazzetta degli ospedali e delle cliniche* for June 24 which occurred in an infantry soldier aged twenty of previously good health. After marching he complained of backache and passed a dark red urine. He was interned in the barracks hospital for several weeks and then assembled with others at the medical clinic. After the walk of about 3 kilometers he had a second passage of red urine. He was now carefully examined and found to be in fair condition, but somewhat pale. The urine first passed in the clinic was almost black, and analysis showed an uncomplicated hemoglobinuria. The Wassermann test was negative. Subsequent passages of urine were normal. That the condition was not paroxysmal was apparent when it was found that hemoglobin appeared in the urine whenever the patient walked for one or two hours. The Ehrlich test (keeping the feet in cold water) was negative; hence mere cold could be excluded. The orthostatic test—standing for 20 minutes—caused albuminuria, but without hemoglobinuria. The marching test caused slight increase in leucocytes, this being marked in the polynuclear neutrophiles, while the small lymphocytes were notably diminished. The resistance of the red cells was normal. After several weeks of arsenic therapy the march test gave a negative result, although the blood count was altered as in the first count, and on one test albumin appeared in the urine. Apparently this affection need not disqualify from military duty. The nature of the hemoglobinuria in this case at least was obscure, for the results of the cold and postural tests were negative.

Deafness from Corticocerebellar Commotion.—According to Foy in a paper on reaction movements in war otology any deaf soldier who is normal in his middle and internal ears as far as characteristic tests are concerned and is suspected of exaggeration or simulation may be regarded as a victim of neuropathic or commotional deafness if he presents disturbances of peripheral sensibility and abnormal reaction movements, whether spontaneous or induced. These include movements with closed eyes, induced movements of the head, nystagmus of various kinds, etc.; the most recent and valuable being Moure's staff test, in which with eyes closed and head inclined the suspect turns five or six times around an upright pole, then stops, opens his eyes, straightens his head, and marches a few steps straight ahead. Under this test a normal subject will deviate to the side of rotation, while the inexcitable subject goes straight ahead. A hyperexcitable subject will all but fall. In such deafness recovery is quite possible.—*Revue de Laryngologie.*

Prat's Gangrene.—Tieves refers to the rigidity of the muscles in certain traumatized limbs which appears to herald the appearance of gangrene and cites cases in which this stiffness was present in the muscles below the site of injury and persisted until the evolution of the gangrene. The mech-

anism is not difficult of comprehension because the rigidity is clearly the result of ischemia from injury to some bloodvessel higher up. This absence of blood then is due to the same cause as the necrosis of the extremity which it precedes (pregangrenous myoischemia). Only in theory can this condition undergo involution. All cases described have been as final as rigor mortis. Conservative surgery is very venturesome in such a condition and therefore amputation is the treatment. Prat was the first to call attention to this symptom.—*Paris Medical.*

America Medica Somnolenta.—How soon will the medical profession of the United States, as a whole, wake up and realize that doctors must come forward and volunteer their services to the Government? In civil life, when great casualties occur, the doctor readily offers his services and usually is the first on the scene to save human life. How much more important is it, then, that in this critical situation, he should come forward and offer his valuable aid to preserve not only human lives, but the life of the nation itself? Application blanks for commissions in the Medical Reserve Corps are being printed in many medical journals [see MEDICAL RECORD, July 21, August 18 and 25] or will be sent by the Surgeon-General's Office, or can be secured from members of the Local Board of Examiners.—*Boston Medical and Surgical Journal.*

For Ambulance Hospital on Russian Front.—Plans are being actively pushed for the establishment of an American Ambulance in Russia. One of the ventures for raising funds for this purpose was the building of grand stands and the sale of seats for the farewell parade of the National Guard on August 30.

Red Cross Shipping Service.—In order to handle the quantities of relief and medical supplies that are being shipped to the Red Cross Commission in Europe the Red Cross Transportation service has been inaugurated. The new service is made possible by the cooperation of the French, British, and Italian Governments, the United States Shipping Board, and the leading steamship and railroad companies. From now on practically all the cargo space the Red Cross needs will be found for it, many lines carrying this freight without charge. A. C. Fetterolf, freight traffic manager of the Mercantile Marine Company, has been named manager of the ocean shipping and will serve without salary.

Centralization of Relief Work.—The American Relief Clearing House which was established in Paris shortly after the outbreak of the war is to be succeeded by the American Red Cross for France and Belgium in an effort to organize and coordinate the work in these countries. The officers of the new branch are: Major Grayson P. Murphy, Commissioner for Europe, and James Perkins, assistant.

American Army Takes Over Ambulance Work.—Steps have been taken for the transfer of the American Field Service with 1,100 men in the ambulance branch, and 800 in the transport branch, by the American Army. The ambulance branch is to go under the control of the medical service and the transport under that of the Quartermaster General. Representatives of the medical service have gone to visit the thirty-four ambulance sections along the front and invite the men to enlist for the duration of the war under the same conditions of service as are now existing. Henceforth any man who wants to drive an ambulance must enlist as an ordinary private in the hospital corps by application to the Surgeon General in Washington.

Relief Mission to Serbia.—The War Council of the American Red Cross announces the sending of a commission to Serbia to begin relief work. The War Council has appropriated $200,000 for the purchase of medical and other supplies that will be needed among the refugees of Macedonia. A special appropriation was made for the purchase of milk and 48,000 cans of condensed milk have been purchased. It is estimated that 150,000 fatherless families in various parts of that country are facing destitution. Cordenio Arnold Severance of Minneapolis heads the commission. The deputy commissioners are: Dr. Severance Burrage, sanitarian, formerly of the Massachusetts Institute of Technology; Dr. Frederick T. Lloyd, physician, of Boston; Dr. Eugene A. Crockett, surgeon, of Boston; Fater Francis Jager, University of Minnesota, Minneapolis, and Edwin D. Haskell, secretary, Minneapolis.

Favor Cancellation of Physicians' Leases.—The Rotary Club of Chicago has found that a great many physicians who have entered the service are embarrassed by unexpired leases and believes that such leases might better be waived during a time of national peril like the present. They have written letters to 20,000 American physicians in an effort to set on foot a movement to secure legislation, looking to the abrogation of leases of members of the Medical Reserve Corps.

Work of the Russian Red Cross Commission.—The Red Cross has authorized the publication of a cablegram from Dr. Frank Billings, head of the commission. This dispatch says that already they have established a big working headquarters and a supply house. The mission has been most cordially received by the Provisional Government and is now in active co-operation with the sanitary department of the Army and with the Russian Red Cross, and is about to get in touch with the zemstovos and unions, these three associations being the great relief organizations of Russia. In response to a request from Dr. Billings, the American Red Cross is sending large quantities of medical and surgical supplies to meet the urgent need of the Russian military hospitals.

The commission carried with it $200,000 worth of such material, including among other supplies more than 50 microscopes and 45,000 slides, 4,600 clinical thermometers, 288 operating knives, 23,000 lengths of catgut, 1,700 ice caps, 175,000 morphine sulphate tablets, and 200,000 antiseptic tablets.

In the new consignment, for which the war council appropriated $160,000, there are 180,000 tablets of quinine sulphate, 1,000 pounds of chloroform, 10,000 tablets each of atropin and strychnine for hypodermic injection, 50,000 doses of anti-typhoid vaccine, also tetanus anti-toxin and diphtheria, smallpox, cholera and plague vaccine, 10,000 pounds soap, 25 dozen hot-water bottles, 10,000 pounds of gauze dressings and pads, 10,000 bandages and rolls, 1,000 blankets and

6 dozen stethoscopes, and various laboratory supplies.

The shipment also includes 5,000 c.c. of digitalis, 1,000 cocaine tablets, 20 collapsible operating tables, 14,400 needles, 200 pounds rubber tubing, 20,000 pounds absorbent cotton, 5,00(safety pins.

Plan School of Brain Surgery.—The joint committee on ophthalmology and oto-laryngology of the Medical Board, after making a canvas of 150 large hospitals of the country in order to learn how many men were specializing in brain surgery and sending a similar letter to the leading neurologists of the country, held a conference at which a general plan for the organization of a section on brain surgery was discussed. A tentative plan has been outlined for the establishment of schools for the instruction of surgeons classified in the brain surgery section. If necessary these schools can be established in Chicago, Baltimore, New York and Philadelphia. Each school will be under the direction of a skilled brain surgeon. The course will be arranged along a clinical, anatomical, and operative line, and will extend over a period of from four to six weeks. A plan to secure good laboratory work in connection with the operative work of the brain surgery is under consideration. This branch of the service is considered most important, not only from the standpoint of the soldier but because of the neurological material which will have a great scientific value if properly preserved. This committee is collecting a list of names of physicians for the position of surgical assistant in brain surgery, and who are also capable of doing neurological laboratory work.

Activities of the Committee on Ophthalmology.—The Council on National Defense authorizes the announcement that its committee on ophthalmology has been engaged in activities directed to the perfection of plans for doing this special work. An investigation has been made of the ophthalmologists in the Medical Reserve Corps, who are available for ophthalmological work and who may be called upon for active duty. In order to prevent the introduction of trachoma into the Army a group of specially qualified ophthalmological surgeons has been selected for the purpose of examining all suspected cases of this disease. Tests for the detection of malingerers claiming visual defects have been selected and submitted for approval and also a list of eye instruments for use at base hospitals. Plans have been prepared for the utilization of one ward at each cantonment hospital for eye examinations.

Oral Surgeons Wanted in Army.—In the field of oral surgery special arrangements have been made whereby men of large experience and ability in general surgery in conjunction with dental oral surgeons will do much of the oral surgery. Such an arrangement as this has been made necessary because of the limited number of experienced oral surgeons and the unwillingness of men of really large experience in surgery to limit themselves to strictly mouth surgery. In view of these facts the following proposition has been submitted: "That surgeons in charge of oral surgery, shall, unless otherwise specified in individual instances, have charge of injuries and surgical diseases of the mouth and its essential structures, including the bony structure and soft parts of the face and also of the neck when the major part of the injury is situated above the clavicle. Provision is made that when injuries of these regions require the special attention of laryngologists, oto-rhinologists, oculists, or neurologists, such special advice will be available. The average oral unit will properly consist of an operator competent to do major surgery and his assistants, a dental oral surgeon with more or less special training, and an ordinary dental practitioner. The Joint Committee on Head Surgery requests that names of any men specially qualified along the lines just outlined be presented to the committee for consideration.

Dr. James S. Brown of Montclair, N. J., who has been active in Red Cross work, has been commissioned Major in the Medical Reserve Corps.

Dr. Dubaouchet, formerly chief surgeon of the American Ambulance, has been commissioned Major in the United States Army.

National Society to Train War Cripples.—The National Society for the Promotion of Occupational Therapy met on the land ship *Recruit*, on September 2, to discuss ways and means of training crippled soldiers so as to fit them to resume their former occupations or to train them for new ones. Those who have investigated the re-educational schools of France and England say it is almost impossible for a man to be so badly crippled that he cannot be trained with the aid of artificial limbs to some occupation. The society elected P. W. Jackson president, and Mrs. Winifred Brainerd chairman of the executive committee.

Fatalities in Battle.—The Committee on Public Information has obtained from official sources the most nearly accurate figures possible on the percentage of fatalities in relation to casualties on the western front. These figures, taken when the casualties were greatest in proportion to mobilized strength and combined with the highest proportion of deaths, show losses due to deaths from wounds and killed in action to be approximately 11 in every 1,000 of mobilized strength. According to the figures presented by the French High Commissioner in his letter to the Secretary of War, the high-water mark of casualties in the French Army was reached early in the war—at the battles of Charleroi and the Marne. The casualties in that period were 5.41 per cent. of the mobilized strength, or 541 men in every 10,000 with the colors. Military experts in this country agree that the killed in action and died of wounds have never at any time in this war exceeded 20 per cent. of the total casualties. This gives a figure of 108.2 fatalities from these causes in every 10,000 mobilized strength, or practically 11 men killed in action or died of wounds for every 1,000 men with the colors.

Ambulances for Red Cross.—The Ford Motor Company has donated credit amounting to $500,000 worth of automobile ambulances, parts, and the like, which the Red Cross may designate. This gift is considered particularly valuable in view of the responsibilities assumed by the Red Cross for the support of the American Red Cross in France.

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BLOOD PRESSURE IN THE AGED.

THE trouble with generalities is that they are too general. Thus the saying that a man is as old as his arteries, while it bears a certain amount of truth, must not be accepted too unreservedly. Nevertheless, the question of blood-pressure becomes a more and more important one as the span of life draws near the allotted three score and ten. and this should not be estimated by a casual feeling of the pulse on one side, a glance at tortuous temporals, or the patient's account of vertigo, headache, etc. The most accurate methods available must be used and their results interpreted by the most modern knowledge of the subject.

In this connection two recent articles by Dr. L. M. Bowes (*Journal of Laboratory and Clinical Medicine*, Jan. and June, 1917) may be quoted. He studied three hundred and eleven cases, all but two of the patients being between sixty-five and ninety-five years of age. In the first of the two articles, Bowes calls attention first to the technique and the necessity for taking readings of both sides, as they usually vary considerably, especially in arteriosclerosis, although it must be borne in mind that the pressure may be low in this condition, if chronic myocarditis is supervening. Bowes further concludes that high systolic pressure associated with high diastolic pressure, indicates cerebral hemorrhage or nephritis; a sustained hypertension, both of systolic and diastolic pressure, indicates cerebral hemorrhage, while hypotension means cerebral embolism; a sustained high systolic with a low diastolic is suspicious of cardiac trouble, especially aortic regurgitation; a high pulse pressure is frequent in arteriosclerosis and aortic regurgitation and a sustained high pulse pressure usually results in a failing heart; a systolic pressure of one hundred may not keep a man from his daily business; lowering blood pressure means failing heart, and acute enteritis lowers blood pressure.

In his second paper the author gives the results of his studies of diastolic pressure. When this was high (above 95) he usually found some abnormal condition,—cerebral hemorrhage, mental symptoms, valvular heart disease, or the like. The diastolic pressure may be raised or not in arteriosclerosis, depending on the heart and kidneys. He found it low in aortic regurgitation and chronic myocarditis. Bowes studied fifty patients who had been hard smokers for from forty to seventy years, but was not able to determine that this habit had the effect on the blood-pressure which is popularly supposed. He found some old men who had been inveterate smokers all of their lives who had a systolic pressure of from one hundred and sixty to one hundred and ninety mm. and diastolic pressures of from eighty to ninety. The writer lays especial stress on the diastolic index which he says may prove of great value—in surgery, for example, just before the amputation of a limb.

These studies remind us that, in spite of a wealth of casual allusion to the subject, too little use is made of the sphygmomanometer in daily practice. A careful examination of both the systolic and diastolic pressures of both sides of the body and interpretation of these results in the light of such work as this of Dr. Bowes, may aid greatly in diagnosis and prognosis. One fact in its favor is that it is not too difficult a diagnostic method for every-day use.

INTRAVENOUS INJECTIONS OF FOREIGN PROTEIN AND PEPTONE IN TYPHOID FEVER.

THE favorable influence in the course of typhoid fever of the intravenous injection of typhoid vaccines has been known for several years. The idea is growing, however, that this influence is not due to specificity but to the mere presence in the blood of foreign protein. It is possible to abort the disease outright, but the reaction provoked may be so severe as to be more deadly than the disease. Mauté, a Morocco physician, was imbued with the idea that a nontoxic protein injected slowly and cautiously could be made to influence favorably the course of typhoid without any untoward results. An abstract of his paper will be found on page 257 of the MEDICAL RECORD and it will suffice to state here that he employed dead cultures of a harmless saprophyte. The results obtained were not unlike those which follow intravenous injection of suspensions of colloidal metals.

Quite independently of this line of activity Professor Nolf of Liège (*Archives Médicales Belges*, February, 1917) has been making an extensive trial of intravenous injections of peptone in typhoid fever. A solution of these bodies when thrown rapidly into a vein causes an anaphylactoid shock and hence its use in medicine has usually been discountenanced. Nolf succeeded in proving that by very deliberate injection of peptone into a vein the pharmacodynamic action was the reverse of that heretofore obtained, while the action on the course of typhoid much resembled that of the dead, "inert" culture used by the Moroccan. The question is raised as to the nature of the active substance which is present in peptone as well as in albumin proper.

Whether or not this plan of treatment will ever come into general use is perhaps beside the mark, but it has been shown by these experiments that after the disease is about ten days old an intravenous injection will depress the fever to a greater or lesser extent for about forty-eight hours or more, when a second injection may be made and so on until the normal period of defervescence is anticipated or reached. In especially favorable cases something like an abortive effect is seen. In some other cases the patient may be kept almost fever free so long as the injections are continued. In the less favorable cases the fever curve is kept down so that the mean daily temperature is much lower than what would be normal for the case. There seems to be a difference in the activity of the two types of injection. The action of peptone seems to have been sharper but shorter; that of the culture was much slower, both in the descent and in the subsequent rise. Hence a second injection of the culture was sometimes sufficient to break up the fever curve entirely. In a few cases a single injection alone caused permanent defervescence. It is possible that the presence of paratyphoid cases gives the narration a more favorable coloring than would appear in selected cases of true typhoid.

SPECIFIC TREATMENT OF LEISHMANIASIS.

THE general belief of the practitioner has been hitherto that a specific remedy can apply only to a single clinical entity and that there can be but one specific for a disease. This, of course, is purely an *a priori* conception, for to-day we realize that in a given affection due to bacteria several substances could be efficacious as microbicides not only in the particular affection but in others which perhaps have little in common with it.

In an article on the specific treatment of leishmaniasis by Dr. Fernández Martínez, which appears in the *Gaceta Médica Catalana* for July 15, the adjective specific appears to relate to a group of remedies which have shown specific value in other well known affections. Some of these are quinine, arsenicals, mercury, and antimony. All attempts to cure kala-azar with serums and vaccines seem to have failed. On the other hand, cures are claimed for a number of drugs, including the above. Recoveries have even been credited to the action of iron. On the other hand, many patients go on to death, the disease being uninfluenced by treatment of any sort.

Tartar emetic has been claimed as a specific for all the leishmaniases, but is also asserted to be a quasispecific for other affections due to microparasites, for example granuloma venereum, and, we believe, certain trypanoses. Moreover, it is said to be as efficacious locally in lesions of the surface as when given internally. This form of curative activity should perhaps be termed quasispecific.

The author claims some remarkable results in kala-azar from intravenous injections of tartarized antimony, a remedy which is also curative in leishmaniasis americana (espundia). In Oriental sore local treatment is added. Failure of the antimony treatment the author would accredit to error in diagnosis. Before he had used antimony Martínez got some very good results from cacodylate of iron, but in some of these cases relapses occurred. As already implied, not a few other remedies have temporarily cured or greatly benefited individual cases of kala-azar. Wine of antimony also gave good results. Two questions remain to be answered: First is antimony free from danger? It has been accused of causing severe renal disease. Second, is an antimony cure permanent or will some of these cases relapse in time or become reinfected? Some evidence points to acquired immunity, other data to acquired susceptibility. The author in summing up seems to hold a mental reservation about the free use of a drug like antimony. He suggests that autovaccination may yet prove to be at once the harmless and curative remedy which is desired.

MILK AND THE HEALTH OF CHILDREN.

IT is certain that, at the present time, when maternal feeding of infants appears to have fallen into disrepute, the condition of the milk supply is one of our most important public health problems. As Dr. C.-E. A. Winslow pointed out in a paper read before the annual meeting of the Ontario Health Officers' Association and published in *Canadian Practitioner and Review*, August, 1917, the normal infant can usually manage to get along even with poor milk in winter, and it can endure a high summer temperature if fed at the breast. It is the combination of putrefactive bacteria in its food and high atmospheric temperature which undermines its vitality and leads to serious and so often fatal results. Clean milk and safe milk are by no means synonymous terms, because milk is so easily infected. There is no such thing as an absolutely safe milk supply, and according to Winslow and many other authorities, milk designed for infants' use, even if procured from undeniably hygienic sources and safeguarded from pollution and infection in the most elaborate manner, should always be pasteurized. Even if by this process certain vitamines normally present are destroyed, it is better that their loss should be replaced by orange juice or some other container of vitamines than that the infant should be subjected to the menace of an infected or polluted milk supply. Furthermore, it must always be borne in mind that pasteurized milk itself must be guarded, as it can easily become infected; also that pasteurization should be carried out scientifically and carefully. Otherwise it but engenders a false confidence and may be the means of spreading disease even more widely than if the process had never been performed.

SYNTHETIC ALCOHOL.

ALCOHOL can be obtained by a variety of syntheses and chemical reactions, but thus produced it is far more costly than alcohol distilled from grain, pota-

toes, etc. As a result of the war, the scarcity and rapid increase of cost of grain have made it necessary to resort to syntheses, one of which seems to be sufficiently unexpensive to allow of further unlimited conservation of grain. In the *Correspondenz-Blatt für Schweizer Aerzte* for July 21, Fleissig briefly outlines a process already in use in Basle. Calcium carbide is obtained in great quantities for various industrial purposes by expelling the CO_2 from limestone in a kiln. The calcium oxide left behind is now heated in the electrical oven with coal and the resulting expulsion of carbon monoxide leaves calcium carbide intact. If water is allowed to drop into that substance acetylene gas is formed. Acetylene plus water yields aldehyde (acetic aldehyde); to obtain this reaction a catalyser is required and mercury sulphate is usually selected for the purpose. If now aldehyde is hydrogenized in the presence of certain metals (nickel, platinum), alcohol is formed. The ingredients for this synthesis of alcohol comprise respectively limestone, water, coal, and electrical energy, for other reagents can all be made (save the catalysers) from the basic ingredients (H and O from the electrolysis of water). To make a ton of alcohol one needs 2500 kg. of coal and 4000 kg. of limestone. To make a ton of grain alcohol by distillation, 11,000 kg. of wheat are necessary. The discovery, if the method is practical, should be welcome not only to the munitions makers but to the medical profession as well, because the lowered cost of alcohol (also incidentally of acetic acid) will cheapen the production of many useful drugs, such as chloroform and formaldehyde.

Dr. Osler's Loss.

THE most heartfelt sympathy of the medical profession of America goes out to Sir William Osler on learning of the death of his only son from wounds received in a recent engagement in Flanders. The young man, Edward Revere Osler, who was born twenty-one years ago in Baltimore, was a second lieutenant in the British Army.

News of the Week.

Medical Students to Complete Their Studies.—In response to the urgent appeals of physicians and medical instructors, a supplemental regulation has been drawn up, with President Wilson's approval, permitting medical students and hospital interns to complete their studies and exempting them from service in the ranks. The following telegram explaining the new regulation has been sent by Provost Marshal General Crowder to the governors of the various States:

"Hospital interns who are graduates of well-recognized medical schools, or medical students in their fourth, third, or second year in any well organized medical school, who have not been called by a local board, may enlist in the enlisted reserve corps, provided for by section 55 of the National Defense Act, under regulations to be issued by the Surgeon General, and if they are thereafter called by a local board they may be discharged on proper claim, presented on the ground that they are in the military service of the United States.

"A hospital intern who is a graduate of a well-recognized medical school, or a medical student in his fourth, third, or second year, in any well-recognized medical school, who has been called by a local board and physically examined and accepted, and by or in behalf of whom no claim for exemption or discharge is pending, and who has not been ordered to military duty, may apply to the Surgeon General of the army to be ordered to report at once to a local board for military duty, and thus be inducted into the military service of the United States immediately, to be discharged from the national army for the purpose of enlisting in the enlisted reserve corps of the medical department. With every such request must be inclosed a copy of the order of the local board calling him to report for physical examinations, affidavit evidence of the status of the applicant as a medical student or intern, and an engagement to enlist in the enlisted reserve corps of the medical department.

"Upon receipt of such application with the named inclosures, the Surgeon General will forward the case to the Adjutant General with his recommendations. Thereupon the Adjutant General may issue an order to such intern or medical student to report to his local board for military duty on a specified date, in person, or by mail or telegraph, as seems most desirable. This order may be issued regardless of the person's order of liability for military service. From and after the date specified such person shall be in the military service of the United States. He shall not be sent by the local board to a mobilization camp, but shall remain awaiting the orders of the Adjutant General of the army. The Adjutant General may forthwith issue an order discharging him from the military service for the convenience of the Government.

Present Prevalence of Poliomyelitis.—A recent Public Health Report states that occasional cases of poliomyelitis are reported from all parts of the country. This has been so for a number of years. During the present summer, however, the only localities in which the reported prevalence of the disease has been such as to indicate the presence of outbreaks are: Washington County, Vt., where 53 cases were reported during June and July; Haverhill, Mass., where, from June 1 to August 22, 31 cases were reported; New Castle, Pa., where there were 29 cases reported during the same period; Alleghany County, Md., where 23 cases were reported; Marion County, W. Va., Rockingham County, Va., Belmont County, Ohio, and Pope County, Minn., have also reported slight outbreaks of this disease.

United States Civil Service Examinations.—The United States Civil Service Commission announces an open competitive examination for experts in the prevention of infant mortality, for both men and women. There are vacancies in the Children's Bureau, Department of Labor, at salaries ranging from $2,400 to $3,600 a year, with actual traveling expenses and a per diem allowance in lieu of subsistence while absent from headquarters on official business. The duties of appointees will be to plan and conduct investigations into the causes of infant, child, and maternal mortality in selected communities, to inquire into the methods of their prevention, etc. Graduation from a medi-

cal school of recognized standing, and at least three years specialization in the hygiene and diseases of childhood, or in the prevention of infant and child mortality by public or private agencies, are prerequisites for consideration for these positions. The Civil Service Commission also announces an open competitive examination for experts in child welfare, at salaries ranging from $1,800 to $2,400 a year. These positions are open to men and women. The prerequisites for consideration for these positions are an educational training at least equivalent to that required for a bachelor's degree from a college or university of recognized standing, including two or more years' special training in sociological or industrial subjects, and at least three years' experience in professional sociological or industrial investigation, or in journalistic or literary work, including the writing of special articles primarily relating to sociological or industrial questions. Another competitive examination, for women only, as assistants in the prevention of infant mortality, is announced. These positions carry a salary of $1,800 to $2,400 a year. The duties of the appointees will be to assist in conducting rural and urban community investigations. The requirements are graduation from a school of nursing connected with a general hospital having a daily average of thirty or more patients, and a continuous hospital training of not less than two years. The applicant must have had eight months' study at a school of recognized standing, giving postgraduate work in public health or visiting nursing, and at least two years in infant and welfare nursing or in public health or visiting nursing. Applicants for any of these positions should apply for form 2118, stating the title of the examination desired, to the Civil Service Commission at Washington, D. C., before September 18, where further information may be obtained.

Medical and Surgical Relief for Injured Civilian Employees of the United States Government.—Under the terms of the Federal Compensation Act of September 7, 1916, civil employees of the United States, when injured while in the performance of their duties, are entitled to "reasonable medical, surgical, and hospital services and supplies" for the injury, whether or not disability has arisen. Section 9 of this act provides that, where practicable, such services and supplies shall be furnished by United States medical officers and hospitals. Officers in charge of works where there are United States medical officers and hospitals available for this purpose are requested to inform all employees that such services are available to them in case of injury. An official statement just issued reminds all United States officers in charge of dispensaries that such dispensaries should furnish as complete medical and surgical service as possible, and to promote this service the commission will pay the necessary carfare of injured employees who are able to return to the dispensary for treatment. In places where there are United States medical officers, hospitals, or dispensaries other than the United States Public Health Service, and it is practicable to utilize their services for the treatment of injured civil employees, the commission should be notified of this by the United States officers in charge of the works upon which civil employees are engaged. In places where there are no United States medical officers, hospitals or dispensaries, the commission approves the selection by the injured employees of reputable physicians licensed under State laws to practice medicine or surgery. In places in which there is no United States hospital, provision is also made for the care of injured employees in a general hospital as ward patients.

Examination for Medical Assistant, District Attorney's Office.—The Civil Service Commission of the State of New York announces an examination for the position of Medical Assistant, in connection with the District Attorney's Office of Kings County. Applicants must have been residents of Kings County for at least three months prior to Sept. 26, 1917, and must be physicians or surgeons for at least ten years duly licensed to practice medicine in this State. The duties include the examination of the dead body and of all the premises where it is found for the purpose of ascertaining all the facts which will aid in the elucidation of the time and circumstances surrounding the death; and ascertaining by autopsy such facts as may be shown relative to the cause of death, and also assistance to the District Attorney in preparing the case for trial. The office of the position carries with it a salary of $4,000 a year. For application forms and other information application may be made to the Civil Service Commission, Albany, N. Y., not later than Sept. 26, 1917.

Dr. W. H. Dale, formerly of Harrisburg, Pa., has been appointed to succeed Dr. Harry E. Clay as member of the State Board of Health of Oregon.

The Tri-State District Medical Society of Iowa, Wisconsin, and Illinois held its annual scientific and clinical meeting in Dubuque, Iowa, Sept. 4, 5, 6, 1917, under the presidency of Dr. William B. Peck of Freport, Ill.

Health Department to Regulate Private Laboratories.—The Board of Health of New York City has added a new section to the Sanitary Code, in accordance with which "No laboratory offering facilities for the diagnosis of communicable disease shall be conducted or maintained in the City of New York without a permit therefor issued by the Board of Health or otherwise than in accordance with the regulations of said Board."

County Hospitals for Tuberculosis Mandatory in New York State.—At the recent session of the Legislature a law was passed as a war measure so that the State will be prepared to treat cases of tuberculosis discovered in examining drafted men or those found in the army itself, making the establishment of county tuberculosis hospitals mandatory in New York State. The Board of Supervisors of every county in the State, containing a population of 35,000 or more, shall establish a county hospital for the care and treatment of persons suffering from tuberculosis. Each county hospital shall be available for patients on or before the first day of July, 1918. Contracts for tuberculosis hospitals must be awarded by January 1, 1918. This law affects twenty counties, eight of which had previously taken steps toward the erection of a hospital. The State Charities Aid Association has published a pamphlet consisting of a compilation of the laws of the State relative to county hospitals which may be obtained upon request by addressing the State

Charities Aid Association, 105 East 22d Street, New York City.

State Makes Low Mortality Record.—Although the population of New York State has increased more than 67 per cent in the last quarter of a century, there were fewer deaths in July, 1917, than in July, 1892. Had the rate of 1892 prevailed during July, 1917, there would have occurred 12,000 more deaths than actually did occur. July was formerly one of the months that showed highest mortality; it has now become one of the healthiest of months, largely due to the reduction in the infant mortality. From a total of 2,237 infant deaths due to diarrhea in July, 1910, the number of such deaths declined to 1,133 in 1913, and in July, 1917, to 437 deaths, one-fifth the number of deaths from this cause only seven years ago. This is reflected in an infant mortality rate of 70 per 1,000 births in contrast with the July rate of 186 per 1,000 births in 1910. Accidental injuries and deaths have shown very little tendency to decrease. Thus far this year there have been reported 5,103 fatal injuries in the State, or 700 more than the average for the last five-year period. The increase in accidental fatalities has been chiefly due to automobiles.

Public Health and Food Administration.—An advisory committee on public health has been appointed to aid the conservation division of the United States Food Administration. It is composed of the following members: Drs. W. H. Welch, chairman; Leonard P. Ayer, Herman Biggs, D. L. Edsall, Cary T. Grayson, W. Hewlett, T. C. Janeway, F. G. Novy, R. Pearce, and H. Gideon Wells.

Obituary Notes.—Dr. DOUGLAS MACROBBIE, a practitioner of Hamilton, Ontario, met a violent death on August 20. He was a graduate of the University of Toronto, in 1896, and was 45 years of age.

Dr. GEORGE HIRAM MATSON of Columbus, Ohio, for eleven years secretary of the State Medical Board of Ohio, dropped dead on August 21, presumably of heart disease. He was a graduate of the Ohio Medical University, Columbus, in 1905, and also a graduate of the College of Pharmacy of the Ohio State University, in 1892.

Dr. N. FAY TILTON, a graduate of the Ohio Medical University, Columbus, in 1901, and a practitioner of Marion, Ohio, was killed in an automobile accident. He was a Lieutenant of the Medical Reserve Corps and president of the Marion County Medical Society.

Dr. JOHN ORLANDO ORR died suddenly at his home in Toronto on August 22, aged 56 years. He was a graduate of the University of Toronto, in 1884, and afterwards studied at Kings College, London. He was a member of the British Medical Association, the British Laryngological Society, and the Dominion Medical Association. In 1903 he became manager and secretary of the Canadian National Exhibition.

Dr. JOHN H. TARBOTTLE, formerly connected with the State Hospital at Dayton, Ohio, a graduate of the Starling Medical College, Columbus, Ohio, died on August 18 as the result of injuries sustained in an automobile accident.

Dr. SKIDMORE HENDRICKSON, for 25 years a practicing physician of Brooklyn, died at Monsey, L. I., on August 20, aged 76 years.

Correspondence.

MILK SICKNESS AND TREMBLES CAUSED BY RESIN OF WHITE SNAKEROOT.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In the *Ohio Naturalist*, 1906, I set forth the evidence which led me to the conclusion that the disease known as trembles in cattle, sheep, and horses was a poisoning caused by their eating the white snakeroot. Later, Mr. Crawford of the Bureau of Animal Industry, after some experiments in feeding aqueous extracts of this plant, concluded that it was not the cause of trembles, and criticised my work in a bulletin published by the U. S. Department of Agriculture. Recently the North Carolina Experiment Station has taken up the question again and fed white snakeroot to sheep. This has verified my claim that this plant is the cause of the trouble. The publication by the U. S. Department of Agriculture mentioned above prevented the general acceptance of my conclusions, excepting in Ohio. For example, L. H. Pammel of Iowa in his book on "Poisonous Plants of the United States," after quoting from my article in the *Ohio Naturalist*, adopts the conclusion of Crawford.

It was not until ten years after the publication of my article that any experiment station made a thorough test of the effects of feeding white snakeroot to sheep or other animals. I hope that it will not take another ten years for the results of these experiments to become generally known throughout the extensive region where people and domestic animals are suffering and dying from this disease; nor ten years before the North Carolina or some other Experiment Station will investigate the claim I now make that the constituent of white snakroot responsible for the poisoning is a resin. My earlier impression that the poisonous constituent of the plant was aluminum phosphate (see article in the MEDICAL RECORD May 15, 1909) was an error which I have disproved by a long series of experiments. Aluminum is more common in plants than the books of botany had led me to think, and I have even found small amounts of it in the blood of a steer and of a sheep which I had no reason to think were diseased.

By means of a Soxhlett extractor I have made quantitative determinations of the ether extract in many samples of white snakeroot, the material having been gathered in different localities and different years. Last fall I gathered leaves of this plant from woods which had served as pasture for cows whose milk and butter had caused milk sickness in all three members of a family, the daughters having recently died from it, the mother who was seriously ill surviving until late in the winter. Leaves from these woods yielded ether-extract to the extent of about 9 per cent. of their dry weight; nearly all of this extract was resin.

The extract when taken with food by rabbits affects them as they are affected by eating white snakeroot. Fed to a guinea pig, it produced similar effects, but the animal was killed by a dog before the experiment was completed. Cats will not ordinarily take enough of the resin to kill them, although they may be induced to take enough to show some of the symptoms characteristic of trembles.

The melting point of the resin is about 100° Fahr. When it is poured on shelled corn that is stirred while warm, the kernels receive a thin coating of resin, and rabbits will continue for a number of days to eat corn that has been treated in this way, or the resin for them may be put on zwiebach or lettuce or cabbage. Much green feed probably tends to diminish the effect of the resin by preventing or lessening constipation.

The resin has a pronounced effect on the kidneys and produces a general passive congestion of the small intestine and various other organs.

E. L. MOSELEY.

NORMAL COLLEGE,
BOWLING GREEN, OHIO.

RESEARCH WORK INTERRUPTED.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In the fall of 1916 I was requested by the Commissioner of Health, through Dr. Park, director of the bureau of laboratories, to investigate the effect of alcohol upon the life processes of warm-blooded animals, including man. After a thorough reading of the voluminous literature on the subject, a series of well-planned and well-controlled experiments were made, and a preliminary report stating that small quantities of alcohol had apparently no deleterious effect was submitted to the Commissioner.

The commissioner's zeal for prohibition apparently gained over his discretion and devotion to scientific ideals, for I was not allowed to publish the results of my scientific research; I was not only prevented from completing my research, but was asked to hand in my resignation. Upon my refusal to do so, charges of "disobedience" were preferred against me and I was dismissed while on my vacation, all records of my experiments having disappeared in the meanwhile.

I leave it to the members of the profession to pass judgment upon such doings. My colleagues in New York City, with whom I have come in contact as chief of the Whooping Cough Clinic and as consultant in the Meningitis Department, will, I trust, make their protest heard in defense of the freedom of scientific research, which is the basis of medicine.

PAUL LUTTINGER, M.D.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

MEDICAL EXAMINATIONS AND REEXAMINATIONS.

LONDON, Aug. 4, 1917.

A SELECT committee is inquiring into the conduct of medical examinations, more especially of re-examinations. Sir Ryland Adkins, giving his experience, said he felt they were not working out in a way to give the tribunals the assistance they would like. They were faced with remarkable contrasts in the classifications of persons brought before them. When we have men rejected in the autumn of 1915 and again in August last coming before us with a constant record from private doctors of A or B1, it is difficult to know where duty lies. He found the difficulty greater since the act authorizing re-examinations. We know doctors are men of ability, devotion, courtesy and good-will; but we know also that they are overworked, and often, if not always, obliged to do things too quickly, and that therefore their results are wanting in weight. His impression about complaints of tearing up of certificates was that though he would be the last to credit every such story, it was impossible to sit on a tribunal week after week and listen to them without concluding there must be some ground for them. One remedy, he suggested, would be that medical men of fifty years old or upwards should sit upon the board, two-thirds of which should consist of experienced local practitioners. No single doctor should pass a decision of his own accord. He further referred to the raising of men from low to high categories with "almost inexplicable quickness," and declared this had a bad effect upon public opinion, as did also the fact that presidents of boards could over-rule the decisions of other members. Asked if complaints had been made of examinations being too rapid and cursory, he replied yes, in many cases, and on further inquiry it was found there was something in this, though not so much as had been suggested. He could not throw any light on war-office statistics, which showed nearly 60 per cent. passed it in March, as against 20 per cent. in August. Out of thirty-eight men passed for general service and sent to the Special Medical Board seven were rejected and the remainder placed in a lower category. These should have a right to have their cases reconsidered, but how the exigencies of war would allow that he did not know. He could throw no light on war-office statistics. Instances of the uncertainty of Medical Board decisions were reported. In one a man passed but was reexamined on appeal and exempted. In another, the man was passed in October, but when called up the following June was found unfit. He had meantime sold his business at a considerable loss. Another man, after joining the Army Service Corps, was found unfit on account of mitral disease in one of its worst forms. Referring to the complaints, the chairman pointed out that a man might be maimed for life by negligence of the examiner, and suggested that a record should be kept of the doctor responsible for passing a man, so that he could be identified.

OUR LETTER FROM PARIS.

(From Our Regular Correspondent.)

HEADQUARTERS ARMY MEDICAL DEPARTMENT—TREATMENT FOR WHOOPING COUGH—NEW TREATMENT FOR PLEURISY—THE MINERAL SPRINGS OF FRANCE.

PARIS, August 6, 1917.

THE medical and commissary departments of the Headquarters Staff have removed from the building at 27 rue Constantine to a hotel in the rue Ste. Anne, having rented the entire building. It took only a week or two to demonstrate that the original location was much too small to accommodate all of the departments.

Colonel Bradley, Chief of the Medical Department, has been almost constantly out upon inspection tours, choosing hospital locations near the front, and the press of work kept the clerical force working at all hours, until quite recently, when five o'clock was set as the quitting hour and Saturday half holiday was inaugurated at the same time.

My attention was recently arrested by an article in the *Paris Médical*, Feb. 3, advocating a very old remedy for whooping cough administered in a new way. The author advocates the administration of the tincture of drosera between meals, ten drops for each year of age, three times a day, augmenting the dose rapidly by three to five drops each time until the initial dose has been tripled. The remedy is well tolerated by the stomach. The author has arrived at a dose of 400 to 600 drops of the remedy in 24 hours without causing any inconvenience. In infants he gives the same number of drops as the child is months old, three times per day, augmenting the dose by two drops each administration until arriving at 120 drops a day. The only adverse symptom observed from these massive doses is at times some nervous excitability, which he attributes to the alcohol of the tincture. The author claims that this remedy reduces the violence and frequency of the coughing paroxysms and noticeably the frequence, oftentimes to one-quarter of the daily number prior to the treatment, and the vomiting ceases nearly always, which is of great importance in nursing infants. He also claims that the remedy will almost at once relieve spasm of the glottis.

Professor Tuffier, at a recent meeting of the Academy of Medicine, reported a series of cases of purulent pleurisy and extravasations of blood into the pleura which had become purulent. After having exposed the technique of his procedure, which consists in evacuating the pleural cavity, introducing the Carrel irrigating tubes and sterilizing the inflamed surfaces until all infection is shown to be absent by the microscope, then closing the pleural opening to heal. Dr. Tuffier gives the result in twelve cases thus treated, ten of which were purulent. All were cured, but the remarkable feature of the cure was that the lungs recovered all of their functional activity, which infrequently follows the other forms of treatment.

The incalculable burdens put upon the future generation by the monstrous ambitions of Germany can in a degree be appreciated only by those who have come into intimate contact with the horrors of this war. We believe, without exception, everyone possessed of this knowledge feels that Germany should be punished in every department of her national life, and France is awakening to the fact that the prevalence of this idea in the minds of the Allied nations forms an exceptional opportunity for her to put forth an organized effort to attract to her shores universal patronage for the various lines in which she has heretofore found Germany to be the most active and most successful competitor.

Estimated from an American standpoint, I do not think that the French can be called successful advertisers. They are too self-satisfied; they believe the attraction of Paris and the country is a sufficient advertisement for themselves and this has nowhere been more clearly exemplified than in the treatment of her mineral springs and health resorts. While Germany has been advertising her springs and watering places all over the world and particularly in the United States, attracting thousands annually, France has allowed hers to pursue the quiet order of their ways, their virtues to be discovered by those who chance to visit them; but there is a promise that all of this will be changed. Various articles have recently appeared in the medical press, looking to arouse the profession and the public to the need of concerted action to formulate some plan of campaign to attract the American traveler to the watering places of France. The Prince of Monaco has donated 800,000 francs for a Congress of Hydrology and Climatology to meet at Monaco at the close of the war, and it is the intention of the French delegates to make this the starting point of an organized propaganda to make known to the world the wonderful wealth in variety and excellence of her mineral springs, for which she has no superior in the world.

146, Avenue des Champs Elysees.

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 23, 1917.

1. The Medical Profession and Social Progress. Andrew F. Downing.
2. Studies in Infant Feeding. A. W. Bosworth and H. I. Bowditch.
3. Basic Principles in the Symptomatology of Bright's Disease. H. Elwyn.
4. An Epidemic of Dysentery at the Boston State Hospital. Mary Elizabeth Morse.

2. Studies in Infant Feeding.—A. W. Bosworth and H. I. Bowditch present a study of the mineral constituents (ash) of milk. They state that in most, if not all, of the methods of modifying cow's milk for infant feeding, the mineral elements present receive very little attention, being passed over with the statement that modified cow's milk will always contain a larger percentage of ash than breast milk, and hence will furnish all the mineral elements necessary. The time has come, however, when this phase of the feeding problem can no longer be treated in this manner, and more care must be taken to see that the mineral elements are properly balanced. While bottle-fed infants receive an excess of mineral elements, they retain a much smaller percentage of the minerals ingested than do breast-fed babies. This is due to the fact that these elements, as they are present in cow's milk, are not completely available for food for infants. This fact has been demonstrated by experiments now being made by the authors. It has been shown by one of the authors that, while dicalcium phosphate is a normal constituent of cow's milk, it is not a constituent of human milk. As this salt has always been found in large quantities in the feces of infants fed upon cow's milk, and is absent or present in very small amounts in the feces from breast-fed infants, an investigation was made of the availability of this mineral salt as a food. When infants were fed a synthetic milk in which the only inorganic salt present was the dicalcium phosphate, from 64 to 100 per cent. of the salt fed was recovered, the smaller recovery being in infants from eight to nine months old, and the complete recovery from infants one to four months old. These investigations have also shown that under ordinary conditions any excess of soluble calcium received in the food is precipitated in the intestines as calcium carbonate or insoluble calcium soaps, and is not available as food, and that the addition of lime water to milk, although increasing the actual calcium content of the milk, really brings about a precipitation of insoluble calcium phosphate, leaving amounts of soluble and available calcium and phosphorus which are less than those to be found in breast milk, a fact which should receive more attention in connection with the feeding of certain children, as, for instance, those having rickets, spasmophilia, etc. It has been the general practice to consider the quantity of mineral elements present in the milk to be represented by the ash. The amount of the ash—about 0.7 per cent.—has usually been considered as containing all the mineral elments in the milk, and the figures obtained by the analysis of such an ash have been quite generally accepted. Such an analysis does not represent the true mineral content of the milk, for under

conditions ordinarily surrounding the determination of ash some of the sulphur and phosphorus in the casein molecule will be lost by volatilization. If this loss is taken into consideration the true mineral content of cow's milk of average composition will be found to amount to 0.8 per cent. of the milk. As the result of extended studies the writers give a detailed statement of the forms in which the mineral elements are to be considered as being present. On the basis of these analyses it would seem that the good results obtained in the feeding of eiweiss milch are due to the fact that the available mineral content of this milk approximates very closely both in form and quantity that found in breast milk.

3. Basic Principles in the Symptomatology of Bright's Disease.—H. Elwyn deplores the confusion in current literature on Bright's disease due to the description of a multiplicity of types. He states that Volhard and Fahr in their monograph on Bright's disease have demonstrated that there are three elements of the kidney to be considered, namely, the tubules, the glomeruli, and vessels of the kidney. After reviewing the symptomatology in connection with these elements he suggests the following classification: Tubular nephritis may be classified into acute tubular nephritis or nephrosis, and chronic tubular nephritis or nephrosis, both with or without amyloid deposit, and the special form of necrotic tubular nephritis or nephrosis, of which the sublimate kidney is the prominent example. The affections of the vessels of the kidneys may be either a benign sclerosis of the kidney vessels or benign hypertension, and the malignant form of kidney sclerosis, or malignant hypertension, or a combination form. The writer believes that by classifying Bright's disease in this way and by a knowledge of the principles underlying the symptomatology of these forms, one gets a better view of the prognosis and definite indications for treatment.

New York Medical Journal.

August 2, 1917.

1. The Value of Roentgen Rays in the Diagnosis of Carcinoma of the Stomach. Russell H. Boggs.
2. A Case of Heredocerebelar Ataxia (?) Presenting Unique Features. Francis X. Dercum.
3. A New Combination Catheterizing and Observation Cystoscope. Leo Buerger.
4. Cellular and Humoral Factors in Anaphylaxis and Immunity. Wilfred H. Manwaring, Arthur H. Meinhard, and Yoshio Kusama.
5. The Diagnosis of Gastric Ulcer, Duodenal Ulcer, and Gastric Cancer. Albert Woldert.
6. Clinical Neurological Examinations. J. Clarence Keeler.
7. Local Anesthesia in Sixty Cases of Acute and Chronic Appendicitis. Joseph Wiener.
8. A Case of Acute Inflammatory Glaucoma Produced by the Instillation of One Drop of One Per Cent. of Homatropine. Marcus J. Leavitt.

4. Cellular and Humoral Factors in Anaphylaxis and Immunity.—Wilfred H. Manwaring, Arthur R. Meinhard, and Yoshio Kusama present an analysis of the anaphylactic and immune reactions by means of the isolated mammalian heart and the isolated mammalian lungs. These tissues can be readily perfused free from circulating blood, and tested under controllable serological conditions. These perfusion experiments have shown that in anaphylactic and immune animals there are four essential factors: (1) Cellular anaphylaxis, or the hypersensitive condition of the fixed tissue cells; (2) cellular immunity, or the increased resistance of the fixed tissues; (3) humoral anaphylaxis, or the toxin producing power of certain normal and anaphylactic blood elements; and (4) humoral immunity, or the antitoxic power of certain immune blood elements. The analyses have further shown that these factors may coexist in the bodies of anaphylactic and immune animals in the following combinations: (1) Cellular anaphylaxis and apparently normal blood condition. This is illustrated by the four week anaphylactic guineapig. The lungs tested in the presence of normal blood are thrown into a typical anaphylactic response. The blood perfused through normal lungs produces no immediately recognizable reaction. (2) Cellular anaphylaxis and humoral anaphylaxis. This is illustrated by the fourteen day anaphylactic guineapig. The lungs, freed from anaphylactic blood, are markedly hypersensitive. The blood perfused through normal lungs produces an immediate typical reaction. (3) Cellular anaphylaxis and humoral immunity. This seeming paradox is illustrated by the lungs of immunized guineapigs. Freed from immune blood, the lungs are markedly hypersensitive. The blood, perfused through anaphtylactic lungs, prevents a reaction. (4) Cellular immunity and humoral anaphylaxis. This second seeming paradox is illustrated by the heart of the anaphylactic rabbit. This heart, freed from anaphylactic blood, is distinctly resistant to a primary toxic protein (active foreign serum). The blood, perfused through a normal heart, produces a typical anaphylactic reaction. (5) Cellular immunity and humoral immunity. This is illustrated by the heart of the immune rabbit. The heart is distinctly resistant. The blood prevents a reaction in the normal heart. (6) Humoral anaphylaxis and humoral immunity. This third seeming paradox is illustrated by the blood of partially immunized rabbits, which contains a thermolabile anaphylactic element, partially neutralized or held in check by a thermostable immune element. (7) Cellular anaphylaxis and cellular immunity. A fourth seeming paradox is illustrated by the heart of a sensitized rabbit. Tested in a blood free condition, this heart usually shows an increased resistance to a primarily toxic protein (active foreign serum) and at the same time an acquired susceptibility to a nontoxic protein (inactive foreign serum). From their observations the writers believe that it will probably be necessary to reduce anaphylactic and immune reactions to lower physiological terms than those at present employed, before seeking to apply current immunological theories.

7. Local Anesthesia in Sixty Cases of Acute and Chronic Appendicitis.—Joseph Wiener says he has been using local anesthesia in more and more acute cases of appendicitis and thinks that peritonitis, far from contraindicating performance of the operation under local anesthesia will gradually become an indication for this operation. When we consider that the system is already struggling to throw off a peritoneal infection, and that the organs of excretion are doing a large part of this defensive work, the danger of handicapping these organs still further is apparent. Of the sixty cases which furnish the basis of this communication, forty-one were chronic and nineteen were acute. The acute cases included empyema of the appendix, gangrene, large abscess of the appendix and two cases of well marked peritonitis. Including both the acute and chronic cases the average time of operation was twenty-two minutes. Postoperative distention was strikingly absent in most all of the cases, and the writer considers this one of the great advantages of local anesthesia. With the exception of the peritonitis and abscess cases, nausea and vomiting were almost uniformly absent in these cases. The average stay in bed including both acute and chronic cases was a little less than seven days. The local anesthetic consists of the following: Threequarters of an hour before operation the patient receives a quarter of a grain of morphine hypodermically. Just before operation this dose is usually repeated, unless the patient appears drowsy from the first injection. A one per cent solution of novocaine to an ounce of which twenty drops of 1:1,000 solution of epinephrin have been added is used. Tablets of novocaine with epinephrin are a great convenience. The writer dissolves five one-grain tablets in an ounce of water and this suffices for the complete operation. He finds the postoperative course in these cases in striking contrast to what we see in cases that have had ether. A few hours after the operation there is little wound pain, which is easily controlled. Peristalsis is usually established early. Almost all the patients have been able to take and retain fluids within a few hours after the operation. There is an entire absence of the mental depression so common after ether. The writer says he intends to use this method in an ever increasing number of cases, and believes that in not a few cases it will actually be life-saving.

Journal of the American Medical Association.

August 25, 1917.

1. Roentgenographic and Microscopic Studies of Tissues Involved in Chronic Mouth Infections. Arthur D. Black
2. The Importance of Diet as a Factor in the Production of Pathological Changes. William Salant.

3. State Organization for Mental Hygiene. Owen Copp.
4. Exophthalmic Goiter and Other Forms of Pathologic Kinetic Drive. George W. Crile.
5. Experimental Hyperthyroidism. Edward C. Kendall.
6. The Constitutional Disturbances that Come with Chronic Goiter. Charles N. Dowd.
7. The Diagnosis of Tuberculous Laryngitis. Julius Dwortzky.
8. A New Operation for Movable Kidney. Willard Bartlett.
9. Bacteria Vaccine Therapy. James P. Leake.
10. Ectopic Gestation: Diagnosis and Treatment. L. J. Ladinski.

2. **The Importance of Diet as a Factor in the Production of Pathological Changes.**—William Salant discusses the rôle that diet plays in the causation of disease and refers to different lines of inquiry furnishing evidence of its growing importance in pathology. That diet as a factor in the causation of disease is not confined to the so-called deficiency diseases is suggested by the results of pharmacologic investigations which have been brought to light within the past few years, for it has been shown that a definite relation exists between diet and pathological changes produced by well defined chemical substances, such as acetonitril, caffeine, chenopodium, and tartrates. The writer states that Rieger and he have frequently been impressed by the difference in the reaction to caffeine which was exhibited by dogs receiving different amounts of protein. A high protein diet, it was found, was conducive to increased resistance to this drug. In experiments on the toxicity of chenopodium carried out on different animals it was found that fatty oils modified the action of this substance. The toxicity of the oil of chenopodium for cats and rabbits which had received cottonseed or cocoanut oil was diminished at least 50 per cent. in some cases. Rabbits fed on carrots resisted much larger doses of the tartrate than those which received oats and cabbage. Further investigations made more recently on the toxicity of this substance shows that the resistance of the animal was very markedly increased when carrot leaves were fed from four to eleven days before injecting tartrate. A high degree of resistance to tartrate was also shown when sweet potatoes were fed. A dose of 2.0 per kilogram failed to produce nervous symptoms or furnish evidence of renal irritation. Sodium tartrate proved to be most toxic when the diet consisted of oats. Experiments with tartarate on cats that received different diets failed to show any marked difference, but it may be remarked that in these animals the toxicity was markedly increased in starvation, which was also noticed in rabbits. That protection is also afforded by diet against the injurious effects of some of the heavy metals was furnished by the results of experiments with zinc malate. Small quantities of this salt given intravenously to rabbits produced marked albuminuria in twenty-four hours. Rabbits which were fed on carrots for some time previous to the injection of the zinc malate exhibited a decidedly greater resistance to zinc poisoning. Studies were also made as to the effect of diet on the permeability of the kidneys in tartrate nephritis. These indicate that the injury to the kidney caused by this salt varies considerably with the diet. From 0.2 to 0.3 gm. of sodium tartrate given subcutaneously may retard the elimination of phenolsulphonephthalein to a very considerable extent in rabbits when fed oats alone. The amount of dye eliminated had decreased by a half to two-thirds about five hours after the administration of 0.2 sodium tartrate per kilogram. When carrots alone were given for three or four days previous to the injection of tartrate, and if this diet was continued for some time after the injection of the tartrate, renal permeability remained quite satisfactory. The effect of this diet was noted even when the dose of the tartrate was doubled. The writer does not intend that the evidence he has presented shall be taken as a warrant for generalization, but believes this subject is full of promise of valuable results to medicine.

4. **Exophthalmic Goiter and Other Forms of Pathologic Kinetic Drive.**—George W. Crile. (See MEDICAL RECORD, June 16, 1917, p. 1072.)

5. **Experimental Hyperthyroidism.**—Edward C. Kendall. (See MEDICAL RECORD, June 16, 1917, p. 1072.)

6. **The Constitutional Disturbances That Come With Chronic Goiter.**—Charles N. Dowd. (See MEDICAL RECORD, June 16, 1917, p. 1072.)

8. **A New Operation for Movable Kidney.**—Willard Bartlett describes this operation which he has used on 20 patients, 19 of whom have been followed for periods varying from a few months to five years. These bear evidence to the permanency of the results. The other patient died suddenly on the ninth day after the operation. The operative technique is divided into the following six steps: (1) With the patient lying on the left side I have employed the incision of my old teacher, von Bergmann, which bisects the angle formed by the last rib and the outer edge of the erector spinæ. (2) As soon as the abdominal cavity is opened, all the fat is removed from the inside of the posterior abdominal wall, leaving the muscles perfectly bare in the kidney fossa, the object being the ultimate formation of broad adhesions between the kidney surface and these denuded muscles. (3) The fatty capsule of the kidney is divided longitudinally with the entire of the organ and caught with clamps at several points. The exposed kidney is lifted out of the abdomen, and at the same time the fatty capsule is inverted over on to the pedicle, being divided to a considerable extent above so that when the kidney lies completely outside the wound edges the inverted fatty capsule occupies a position beneath its lower pole. (In some cases the fibrous capsule will adhere to the kidney very firmly, while in others it will tend to move with the fatty envelop; hence no definite rule can be formulated which will always govern the treatment of this structure. In the majority of cases, it has been left undisturbed. (4) With a needle and catgut, the cut edges of the fatty capsule which were originally grasped by clamps are united, thus transforming this inverted structure into a rather considerable ball of fat, which in most instances is about half the size of the kidney itself. (5) This ball of fat now constitutes a pedunculated flap and is transposed into the defect into which the kidney formerly slid. To insure its remaining in the desired location, it is anchored to the inner aspect of the abdominal wall directly under the lower angle of the wound by a stitch of the catgut which was used to unite its component parts into one spherical mass. (6) The posterior abdominal wall is completely closed in layers without drainage. By this procedure three objects have been accomplished: (1) The self-lubricating lining of the extraperitoneal cavity has been removed. (2) The cavity itself below the kidney has been filled up. (3) The bared kidney and bared muscles of the posterior abdominal wall are definitely opposed to each other for adhesions to form.

10. **Ectopic Gestation.** Dr. L. J. Ladinski. (See MEDICAL RECORD, June 16, p. 1060.)

The Lancet.

August 4, 1917.

1. On Meat Inspection, with Special Reference to the Developments of Recent Years. William J. Howarth.
2. A Contribution to the Microscopical Histology of Malaria, as occurring in the Salonica Force in 1916, and a Comparison of These Findings with Certain Clinical Phenomena. Leonard S. Dudgeon and Cecil Clarke.
3. Treatment of Tuberculous Eyes by Local Application of Tuberculin. Henry A. Ellis and H. M. Gay.
4. Notes on the Drainage of an Infected Hemothorax. A. Neville Cox.

2. **A Contribution to the Microscopical Histology of Malaria.**—Leonard S. Dudgeon and Cecil Clarke were led to make this investigation because during an epidemic of malaria in the Salonica Army in 1916 sudden death was not uncommon, and the committee which was appointed to inquire into and report on the fatal cases noted that a large proportion of the patients died within twenty-four hours and no less than 57 per cent. died within the first two days of admission to the hospital. Further, collapse and even sudden death occurred as an initial phenomenon of this disease. The observations presented include the cerebrum, cerebellum, medulla, heart muscle, adrenal glands, liver, spleen, kidneys, and intestinal tract. Examination of the heart showed, in addition to fatty degeneration, blocking of the capillaries with infected red cells in most instances. The microscopical changes in the adrenal gland were very numerous. The most constant alteration from the normal histology was the diminution in the lipoid substances. This loss occurred in all layers of the cortex. The chromaffin substance in the medulla was also greatly reduced in amount. The cerebrum, medulla, pons, and

cerebellum were examined from three cases and in all three the lesions were both severe and widespread. In each case the patients died in coma. Thrombosis was present and was more marked in the white matter. The spleen, liver, and kidneys showed extensive fatty degeneration with areas of necrosis. Thrombosis of the capilaries and arterioles in many of these cases was a striking feature. In those specimens in which thrombosis of the vessels was present foci of necrosis predominated. The hepatic changes were numerous. The deposit of pigment, which has long been regarded as a constant characteristic of malarial fever, was present in every case. The bile examined in some of the fatal cases of malaria by Captain Clarke was found to be sterile, and in thirty-five cases at a mobile laboratory the authors found the blood sterile in every case. Captain Elworthy in one of the laboratories in Salonica made blood cultures in eighteen cases of proved malarial fever with negative results in each instance, while samples of the bile in eight fatal cases of malaria and cultures from the spleen in six cases were found to be sterile. The widespread changes occurring in the tissues and the rapid spread of the infection in so many cases on the one hand and the cardiovascular phenomena on the other have led some to believe that this outbreak of malaria is different from all others. It has been suggested that this difference depends on the virgin soil which has been placed at the disposal of the parasites, or on the parasites, or on the quinine. The writers recall Sir Ronald Ross's remarks that "some authors consider that there are two, if not three, varieties or species of malignant malarial parasites" with which they feel disposed to agree.

3. **Treatment of Tuberculous Eyes by Local Application of Tuberculin.**—Henry A. Ellis and H. M. Gay observe that tuberculous affections of the eyes seem especially prevalent in children. In the cases coming under the authors' notice every superficial part of the eye and appendages has been found to be tuberculously infected. The large proportion of girls affected—thirteen boys to twenty girls—suggests that dust is domiciliary rather than external. All the thirty-three cases so far treated have proved curable in any time from six weeks to three months, and so far only one relapse has occurred among cases in which the treatment has been completed. The treatment consists in instilling tuberculin into the conjunctival sac directly, in various dilutions of increasing strength. First in every case the cutaneous test is made on the forearm. This not only aids in the diagnosis but records the susceptibility of the patient to tuberculin. Cases are by this means classified into definite classes: (1) Hypersensitive, giving a marked reaction to a solution of tuberculin from 1 in 500 to 1 in 10,000; (2) sensitive, reacting doubtfully to 1 in 500; (3) subsensitive, giving a marked reaction to 1 in 10 T; (4) insensitive, giving either no reaction or a very slight one. Tuberculin should be used differently in each of these types as would naturally be expected. As a rule the cutaneous reaction in eye cases demonstrates that they belong to the sensitive and hypersensitive classes, as would be expected, since they generally belong to the group of double infections. The authors describe the dosage in each of these classes of cases.

British Medical Journal.

August 4, 1917.

1. The Investigation of the Significance of Disorders and Diseases of the Heart in Soldiers. T. Clifford Allbutt.
2. On Gunshot Injuries of the Chest, with Special Reference to Hemothorax. John Rose Bradford.
3. Factors in Field Ambulance Work which Help the Work in Casualty Clearing Stations. K. M. Walker.
4. Dermatitis Due to Explosives Used in Air Raids. J. H. Sequeira.
5. Statistics of Defective Vision Obtained at Recruiting Medical Board. Charles H. Harford.
6. A Method of Supination by Plaster. B. J. Verrall.
7. A Simple Means of Ascertaining if a Sterilizing Hut Is Hot Enough to Destroy Lice and Nits in Clothing or Blankets. A. Bacot.

2. **On Gunshot Injuries of the Chest, with Special Reference to Hemothorax.**—John Rose Bradford discusses more especially the cases observed from the third or fourth day up to about three weeks after the occurrence of the injury. Hemothorax is the most common result of a chest wound, both pneumohemothorax and pneumothorax being relatively rare. In a series of 328 cases of gunshot wounds of the chest only eight cases of the former and four of the latter were observed. In a study of the morbid anatomy of wounds of the chest made by Henry and Elliot in a series of 100 cases observed in a base hospital in France, dealing only with cases that succumbed from the third day to the third week, one of the most striking facts ascertained was that within these limits of time death from hemorrhage as a result of a wound of the chest was very rare. In a series of seventy-eight fatal cases of simple hemothorax there were seventy in which either infection or an additional visceral complication, or both, were present. In the remaining eight cases in which death might have been due to hemorrhage, purulent bronchitis was present in three, and in four cases no record existed as to whether sepsis was present or not, thus leaving but one case in which hemorrhage alone could be definitely asserted to be the cause of death. Septic infection is therefore by far the most frequent, and heretofore the most important cause of death in cases of hemothorax that survive the first few days immediately following the wound. Secondary hemorrhage is also extremely rare, there being only three such cases recorded in this series of 100 cases. In the treatment of sterile hemothorax, if the amount of bloody fluid is small there is no need for any special active treatment. If the effusion is at all large early aspiration may be required to relieve the distress. The fluid should be removed by aspiration about the end of the first week. Aspiration with oxygen replacement is better than simple aspiration. Further, with oxygen replacement practically all the fluid in the chest can be removed at one sitting. For practical purposes it is not necessary to measure accurately the intrapleural pressure; it is sufficient to regulate the introduction of oxygen by the presence or absence of symptoms. Free drainage is required in all cases of infected hemothorax, and it is of the utmost importance that this should be provided as early as possible as the organization of the deposit of lymph on the visceral pleura produces a great impediment to the rapid expansion of the lung after the removal of the fluid, and this organization proceeds rapidly in cases in which delay in operating takes place. Removal of the infected fluid by free drainage is, however, not sufficient treatment in all cases; the inflammation in the pleural sac and the septic clots must be treated by the local application of some efficient antiseptic applied either by periodical washing out of the cavity or else by the instillation method and the Carrel-Dakin technique. Recently the latter method has been applied with success to cases of infected hemothorax, and a few cases have been so successfully treated that the operation wound for the excision of the rib has been closed by secondary suture before the evacuation of the patient for England.

4. **Dermatitis Due to Explosives Used in Air Raids.**—Dr. J. H. Sequeira has previously called attention to a form of dermatitis caused by handling powder from high-explosive bombs and aerial torpedoes. He states that he has now seen fifty-nine cases of dermatitis of this kind and that they all fall into two groups. The clinical picture is distinct. The initial staining is nearly always of a distinct orange tint, especially well seen on the palms of the hands. After the lapse of nine days, as a rule, the patients complain of intense irritation and itching, which interferes with sleep. This is followed by the appearance of closely set discrete vesicles the size of hemp seeds. These are on the palms and along the sides of the fingers and in the interdigital clefts. In many cases huge confluent blebs form. In a few instances the lesions rapidly become infected and pustules form. The eruption is at its height about the fourth or fifth day, and the epidermis gradually separates, leaving a raw, rather dry, red surface. In some instances the feet were affected after the hands, probably being infected from the hands. Occasionally the face is also involved. In three cases submitted to bacteriological examination the *Staphylococcus epidermidis albus* was found in one instance, and the *Staphylococcus pyogenes aureus* in another. In several cases in which a blood examination was made there was a marked eosinophilia. As a prophylactic measure, it is important to avoid touching the powder or material impregnated with the powder. Its removal from walls or other surfaces can be effected by moistening the surface with a weak solution of

sodium bicarbonate (one teaspoonful of sodium bicarbonate to a quart of water). When the eruption has developed the hands should be washed as little as possible, but the alkaline solution may be used without risk. The best local application is a liniment of calamine (calamine 70 grains, lime water 1 ounce, and olive oil 1 ounce). In a septic case daily spraying with malachite-green sublimate solution is of great value. The substance which is the cause of the dermatitis appears to be hexanitrodiphenylamine.

La Presse Médicale.

July 23, 1917.

The Infundibular Syndrome in a Tumor of the Third Ventricle.—Claude and Lhermitte refer to the fact that the hypophysis is not an "excitable" organ and that the socalled syndrome produced by its excitation really proceeds from the interpeduncular area. The following case is related in a mechanician on a submarine who was known to have suffered from syphilis and paludism. On admission to a neurological service he appeared sickly—pale and thin. He was completely off his food and very asthernic. At night he was much troubled with thirst. On physical examination he was apparently 100 per cent. sound but he complained of amblyopia and in addition to polydipsia showed polyuria. The association of these symptoms with visual disturbances led to lumbar puncture with practically negative results. A special eye examinatoin led to the diagnosis of simple bitemporal hemianopsia. Everywhere the research for clean cut signs of organic disease met with negative results. An equivocal lymphocytosis and albuminosis in the spinal punctate suggested a possible syphilitic basilar meningitis involving the chiasm and tuber cinereum; the patient was placed on intensive mercurial treatment. A few days later there developed cardiac arrhythmia with muffling of heart sound. This was in turn followed by speech disturbances which suggested pseudobulbar paralysis. Both classes of symptoms soon vanished and were followed by various sleep disorders—narcoleptic seizures with amnesia of a retrograde type. A careful neurological examination gave only negative results. Next in order was a recurrence of the cardiac syndrome with tachycardia and embryocardia. To this succeeded an attack of complete amaurosis. At this juncture the patient was found to have tuberculosis of the right apex. Confusional delirium was now added to the picture. Despite his serious condition he developed a mental state of euphoria which persisted to the last. For about a month he was free from symptoms aside from polyuria and several attacks of narcolepsy with alternations of visual acuity. Death took place as a result of tuberculous bronchopneumonia. Autopsy showed a normal hypophysis and sella. The lesion in the case appeared to be an epithelial cyst of the third ventricle.

American Surgeons and Hysterectomy for Cancer.—Tayle refers to the belief in America that Ries preceded Wertheim in devising the operation known by the latter's name. Ries of Chicago actually read his initial paper in 1895 before the Frankfort Medical Society and this paper appeared promptly in a German journal. In April and May of the same year John G. Clark of Philadelphia performed a radical abdominal operation for cancer and his paper appeared in the Johns Hopkins Hospital Bulletin for that year. In 1896 Kelly and Clark reported 8 cases of this radical abdominal operation. Hence not only Ries but Clark preceded Wertheim by over 3 years, for the latter did his first radical operation in 1898. Those who might look upon this essay of priority as hastily inprovised are referred by the author to Cullen's great work on cancer of the uterus in which the whole matter is threshed out. For this book was composed during 1898-9 and while the work of the pioneer Americans is given in full, Wertheim is not mentioned simply because his work was not yet on record (his first article appeared in 1900).

Il Policlinico.

July 1, 1917.

Lumbar Puncture in the Treatment of Certain Forms of Essential Cephalalgia.—Mingazzini, the neurologist of Rome, has been testing the efficacy of lumbar puncture for several years in essential headache. It is of course known on all sides that this resource will at times relieve headaches due to increased intracranial tension from miscellaneous causes. In a series of 24 cases he has cured patients of habitual paroxysmal headache. Most of them were women in the childbearing period who suffered from recurrent headaches with marked constitutional reaction—evidently false migraine. In some cases headache was so severe as to produce mental confusion. The author was careful to exclude syphilis and the wine drinking habit in excess. The punctate was normal as a rule with tension but slightly increased. To select a few cases at random, patient No. 25 was a married woman aged 35, never pregnant, who drank daily a tumbler of wine. In 1911 she had been operated on for gastronephroptosis. Cephalalgia began in 1914 and appeared early in the day, lasting for 24 hours or more. There were associated disturbances of vision which at times induced hallucinations. Neurological examination was negative. After a series of lumbar punctures she made a good recovery. Patient No. 50 was a girl of 15 who drank daily one glass of wine. Morning headaches had appeared at puberty. Neurological examination negative. Punctate normal, no increased tension. One puncture seems to have cured the patient. Most of the women patients, however, took no wine at all, so that a slight indulgence could hardly have been a factor in causing the headache. A survey of the material shows considerable variety in the type of headache despite the uniformly favorable results of puncture. For example, in one there was a history of nephritis. In a second series of 15 cases there was no cure but much relief; the patients were of much the same type—women at or near the childbearing period with negative neurological examination. Finally in a third series of 8 patients puncture gave no relief whatever although the material was of the same type as in the favorable series. The author analyses his subject to an extreme extent in an attempt to set up a theory of cause and cure. Of 47 patients treated but 6 were males. We may use the expressions essential headache and persistent headache (whether these appear daily or with longer remissions) but it is evident that we are dealing only with a symptom. We know that lumbar puncture undertaken for other symptoms may cause headache outright. Complete failure to relieve habitual headache by puncture opens up a host of possibilities—of cerebral syphilis, tumor of the brain, etc., but also of neuralgia or the action of some toxic principle on the meninges. Of great suggestiveness is the borderline increase of albumin and leucocytes in the punctate which may suggest an inflammatory factor.

Treatment of Gonorrhea with Hot Baths and Dakin's Solution.—Duncker combines Weiss's vapor bath principle with injections of weak Dakin's fluid. Instead of the vapor bath, however, which may or may not raise the body temperature to 42° C. (a temperature at which the gonococcus cannot survive) he places the patient in a hot bath of 47° or 48° C., keeping him under water for fifteen minutes. Protargol injections, when used, are heated to 42° or 43° C. Infusion of camomile or uva ursi was added in equal volume to Dakin's solution. While in individual cases an abortive effect was obtained the average duration of treatment was cut in half. The technique is somewhat complicated and could hardly be employed offhand. The temperature of the bath water is raised very gradually, under pulse control (pulse should not exceed 130-140). It may be necessary to lift the feet out of the tub and support them on a board.—*Nederlandsch Tijdschrift voor Geneeskunde.*

Treatment of Nervous or Essential Insomnia.—Lesieur and Peuret state that chloral should be reserved for a different class of conditions—eclampsia, tetanus, restlessness after cranial wounds. Nearly all hypnotics contain the ethyl radical (C_2H_5) in combination with elements of varying toxicity. One of the most promising of these, because least toxic, is malonylurea. A combination of the two is at once broken up in the system into urea and CO_2. The full name of the substance is diallylmalonylurea. Like some notable predecessors in the field it is at present sold as a proprietary. It is said to cause sleep, after a dose of 1 to 2 decigrams, in thirty minutes or less.—*Le Caducée.*

Book Reviews.

CATARACT; Senile, Traumatic and Congenital, by W. A. FISHER, M.D., Professor of Opthalmology, Chicago Eye, Ear, Nose and Throat College. Price, $1.50. Chicago: Published by Chicago Eye, Ear, Nose and Throat College, 1917.

THE volume is one of 109 pages profusely illustrated. The work is devoted to a discussion of the relative value of the various operations or the extraction of cataract, to a description of the Major Smith operation and of the Author's modification of the Smith operation. Statistics of operative results are given and a strong plea is made for the adoption of the method as practiced by the writer. The book should be read by all who practice ophthalmic surgery.

HUGHES' PRACTICE OF MEDICINE. Including a Section on Mental Diseases and One on Diseases of the Skin. Eleventh Edition Revised and Enlarged. By R. J. E. Scott, M.A., B.C.L., M.D., Fellow of the New York Academy of Medicine; Fellow of the American Medical Association; formerly Attending Physician to the Demilt Dispensary; formerly Attending Physician to the Bellevue Dispensary; Author of "The State Board Examination Series;" Editor of "Witthaus' Essentials of Chemistry and Toxicology," "The Practitioner's Medical Dictionary," Gould and Pyle's "Cyclopedia of Medicine and Surgery;" etc., etc. With 63 illustrations. Price, $3.00 net. Philadelphia: P. Blakiston's Son & Co., 1917.

THAT this book has lived so successfully to reach its eleventh edition shows that its basis of assumption that diagnois and treatment are the main business of the practitioner, is indeed a correct one upon which to thrive and grow.

The editor, while retaining prescriptions and forms of treatment tried and known to be sound, has in some instances rejected the old—but very conservatively—and introduced the new in therapeutics, where it has seemed advisable to do so. The editing of an eleventh edition speaks for the correctness of his judgment. Articles on the lately known diseases, or more lately worked up, such as syphilis, Rocky Mountain spotted fever, acute febrile jaundice, erythremia, and milk sickness have been brought up to the last word in medical research; while important additions have been made to material on color index of the blood, blood pressure, Coleman's high calorie diet in typhoid and other fevers. Brudzinski's sign, the use of vaccines, and the period of quarantine for most of the communicable diseases. Also the vitamine theory of rickets is given, showing the extent of research and practical knowledge offered in a condensed form to both students and physicians.

DISEASES OF THE STOMACH. A TEXTBOOK FOR PRACTITIONERS AND STUDENTS. By MAX EINHORN, M.D., Professor of Medicine at the New York Post-Graduate Medical School and Hospital; Visiting Physician to the German Hospital. Sixth Revised and Enlarged Edition. Price $4.00. New York: William Wood and Company, 1917.

SINCE the first edition of this book, which made its appearance about twenty years ago, great advances have been made in the pathology and treatment of gastric conditions. Running through six editions, this work has naturally been brought exactly up to date in every phase of stomach troubles. A sense of amazement steals over the reader at the amount of space allotted to nervous affections of the stomach. This must mean one of two conditions: either the medical profession is more alive to the presence of neurotic causes in the development of gastric and systemic conditions, or these conditions must be decidedly on the increase as the causes of physical disablement among people who are forced to seek aid from stomach specialists. This last indicates that life, through its stress and strain, is producing these nervous states. Thus a vicious circle is formed. The greater the development of the causes, the greater the amount of treatment necessary to overcome the conditions. Can the stomach specialist, let alone the general practitioner, offer much hope to these individuals so suffering? Is it in his power to so control the life of the individual that peace and harmony may exist between the man, his stomach and his environment? Another circle formed. Can one replace the other? Perhaps the stomach specialist, more than any other barring the neurologist realizes the benefit of common sense psychology when brought into play with this type of cases thus bridging over the two circles, if not completely replacing one by the other, and producing a partial readjustment of conditions in that most distressed spectacle of humanity—the dyspeptic American.

The subject of diet is given about twenty-eight pages of thoughtful consideration in this work. One wishes that the author had devoted more space to so very important a foundation both for pathology and treatment of stomach conditions. The illustrations chiefly illustrate different types of apparatus to be used in this specialty. One feels like offering a sincere expression of sympathy to the individual, who, suffering from enteroptosis, is compelled to wear some of the styles of abdominal bandages thus portrayed.

The book is attractively published covering every requirement demanded from both publisher and printer.

A TEXT-BOOK OF FIRST AID AND EMERGENCY TREATMENT. By A. C. BURNHAM, M.D., Medical Corps, U.S.R.; Instructor in Surgery in the Polyclinic Hospital, New York City; Attending Surgeon, Department of Surgery, Vanderbilt Clinic, College of Physicians and Surgeons, New York City. Illustrated with 160 Engravings and Two Plates. Price, $2.00 net. Philadelphia and New York: Lea & Febiger, 1917.

ANOTHER First Aid to the Injured! The land will soon be full of them! This one, however, merits just consideration because it is beautifully illustrated, although it must be admitted that some of the pictures bid fair to bring chills of fear to the female portion of the first-aid contingent. The text is well written, but in sections seems a bit ambiguous. Thus on page 48 the author, in describing the course of the aorta, leaves it to the imagination of the reader as to whether this artery turns to the front of the chest and passes over the stomach, or whether in true orthodox fashion it follows its usual natural course and wends its way down the spinal direction. The description of the general circulation beginning on page 49 is one of the best the reviewer has ever had the pleasure to read in a first-aid book. Just sufficient is given to convey a correct picture to a struggling first aider, and only those who have taught first aid know the awful struggle the study of the heart and circulation occasion to men and women who sometimes do not even know the locations of their stomachs. On the whole the book is most satisfactory, for it is really a compend on both first aid with a touch of nursing.

CLINICAL STUDIES IN EPILEPSY. By L. PIERCE CLARK, M.D., Consulting Physician, New York City Children's Hospitals and Schools, Randall's Island; Letchworth Village for Mental Defectives, and Craig Colony for Epileptics. Utica, N. Y.: State Hospital Press, 1917.

So much has been written about epilepsy that a new book must inevitably shoulder the burden of proving its right to exist. Various schemes of classification, ingenious etiological theories, bewildering therapeutical displays, verbose characterological estimates, prolix case-reports, all these have been done over and over again in the literature. Dr. Clark has cut this Gordian knot with his psychological sword. He has approached the epileptic and his symptoms in a new way. He has studied the personality problem involved and tried to see why the convulsion occurs and what it means to the individual. In a former thesis he held that there is a definite epileptic constitution, hypersensitive and egotistical, and that the convulsion represents a reaction away from the difficulties such a character inevitably experiences in contact with society; it is a psychobiological phenomenon, doubly motivated. In his present monograph Clark enlarges somewhat upon this thesis, illustrating it by detailed studies of cases. He also describes tentative efforts at therapy based on this conception. Dr. Clark is a pioneer in this field; whether or not it is one which will be fruitful to the extent he anticipates cannot be foretold. Certain of his theorizing is perhaps a bit too fine spun—he has reacted himself too far away from reality. But better a thousand times such an approach to this problem than the eternal stagnation of the "nervous discharge," the bromides, etc.

Society Reports.

AMERICAN PEDIATRIC SOCIETY.

Twenty-ninth Annual Meeting, Held at White Sulphur Springs, W. Va., May 28, 29 and 30, 1917.

THE PRESIDENT, DR. FRANK SPOONER CHURCHILL OF CHICAGO, IN THE CHAIR.

(*Concluded from page* 393.)

A Case of Congenital Heart Disease. — Dr. CHARLES HUNTER DUNN of Boston reported this case. He said that in this child the presence of a palpable systolic thrill, of persistent cyanosis, and of cardiac enlargement, suggested the presence of pulmonary stenosis. The fact that the child survived for fifteen months suggested the existence of some additional compensatory lesions, either defective ventricular septum or patent ductus arteriosus. The diagnosis in the case was pulmonary stenosis, defective interventricular septum, chronic intestinal tuberculosis, chronic tuberculosis of the mesenteric lymph nodes, possible tuberculous peritonitis, rickets and terminal bronchopneumonia. At autopsy the heart showed very marked enlargement. The point of origin of the aorta and pulmonary arteries, respectively, were reversed, the aorta arising in front and to the right, and the pulmonary artery behind and to the left. The foramen ovale was entirely open. The tricuspid and mitral valves were normal except for the widening of the orifices produced by the dilatation of the ventricles. There was some hypertrophy of the wall of the left ventricle, and marked dilatation of the cavity of the right ventricle without notable hypertrophy of the walls. The aortic orifice was situated, not in the left ventricle, but in the right ventricle somewhat further forward than the normal position of the pulmonary orifice. The pulmonary orifice was situated in the left ventricle in the position normally occupied by the aortic orifice. It showed marked stenosis. There was an oval opening in the ventricular septum, 5 cm. in diameter, situated in the usual position of the lesion. Dr. Dunn discussed the two forms of transposition of the great vessels, the one in which the aorta arose in front and to the right, while the pulmonary artery arose behind and to the left, but each vessel arose from its proper ventricle (so-called correct transposition) and the other form in which not only was the position of the great vessels reversed, but the aorta opened from the right ventricle, and the pulmonary artery from the left ventricle. This was called complete transposition and was the form found in the present instance. The most plausible explanation of the lesion was that of Rokitansky.

A Case of Meningococcus Meningitis in the New Born, with Interesting and Unusual Features.—Dr. J. MILTON MILLER of Atlantic City reported this case, in which the following features were of particular interest. The onset began at the age of two weeks with a conjunctivitis, mistakenly regarded as gonorrheal. A bullous eruption appeared in the second week. There followed a prolonged latent period, the symptoms of meningitis not appearing until the fourth week. The spinal fluid was of a peculiar character, gelatinizing at once upon withdrawal. This condition of xanthrochromia and massive coagulation was very uncommon in meningococcus meningitis, according to Kolmer. There were during the course of the disease ten punctures of the fontanel without apparent ill effect beyond vomiting. There were in all 260 c.c. of serum introduced without any sign of serum disease. There was an apparent improvement after the tenth injection of serum, with a subsequent return of the symptoms and death.

Accidents in Foreign Protein Administration. — Dr. CHARLES GILMORE KERLEY reported three instances in which severe reactions followed the administration of a foreign protein. The first case, a boy of 8 years, who was sensitized to rag weed, maple, golden rod, and horse serum, was under treatment with horse serum. He had been given one-half minim doses which was followed by a local reaction but by no constitutional symptoms. The dose was gradually increased at two-week intervals until four minims was given. This was followed by a violent anaphylactic reaction, from which recovery was slow but complete. The second case was that of a girl, 7 years of age, who was sensitized to wheat, oats, and barley. One day after receiving treatment she suffered a violent reaction which presumably was due to the administration of the foreign protein. The third case was that of a baby that responded to the skin scratch for milk. The administration of eight drops of Walker-Gordon milk caused a collapse. Her condition, however, was not as severe as that of the boy sensitized to horse serum. She made a good recovery.

Dr. FRITZ B. TALBOT of Boston said the sensitization to horse serum in the first case was easily explained. If we wanted to sensitize a person we repeated the injection once in two weeks; if we wished to produce immunity the injection should be given every third or fourth day. The second case that was sensitized to wheat, oats, and barley brought up the interesting question of mass reactions. Where there was a tendency to react to one of a group of foreign proteins, particularly in the vegetable world, there was also a tendency to react to the other members of that botanical group. They had found another peculiar thing. If wheat produced a reaction and one stopped giving wheat and gave barley for two weeks, the barley would produce a reaction and the wheat would not. These cases brought out the danger of treatment by serum unless one had studied the fundamental principles of anaphylaxis very carefully. The feeding of foreign proteins was safer than giving them subcutaneously.

Dr. B. RAYMOND HOOBLER of Detroit emphasized the point that after having obtained desensitization to a foreign protein a small amount of that protein must be given every day for a long period. They had been making injections per rectum in that type of cases not able to take cow's milk without developing an erythematous eruption. One might give the milk first by mouth, reducing it to very small quantity and giving it with other foods, then by gradually increasing the amount one might after three or four months produce desensitization. In this type of cases one might introduce an ounce of milk per rectum daily without trouble.

Dr. J. P. CROZER GRIFFITH of Philadelphia asked whether all reactions of this nature could be regarded as protein reactions; whether, for instance, a reaction to strawberries was a protein reaction.

Dr. FRITZ B. TALBOT replied that he thought all these reactions could be explained under the head of protein reactions. There was no proof that there was anything also that caused an anaphylactic reaction. The pure protein could be obtained from all vegetables though it was frequently present in extremely minute amounts.

Dr. GODFREY R. PISEK emphasized the point that it sometimes took a longer time to produce desensitization than had been mentioned. It sometimes took as long as six months.

Dr. DAVID M. COWIE of Ann Arbor called attention to the work of Dr. Novy, who spoke of the ability to overcome anaphylaxis by rendering the urine alkaline by the administration of potassium acetate. Dr. Novy had reported a group of cases cured by this alkaline treatment.

Dr. ALFRED FRIEDLANDER of Cincinnati said they had been following Dr. Novy's work. The cases that had received large doses of alkali showed a greatly diminished incidence of serum sickness following the use of the serum treatment.

Dr. CHARLES GILMORE KERLEY said he had treated altogether some 107 cases and had had only a few accidents. He appreciated what had been said with reference to giving the protein by way of the mouth. This route, however, was not practical when one was trying to produce immunity to horse serum. Dr. Kerley said he had reported these cases in order to demonstrate that in the matter of protein therapy and experiments with proteins our procedures should be very carefully carried out.

A Case of Appendicitis in a Nine Months' Old Baby with Autopsy Record.—Dr. ISAAC ABT of Chicago reported this case, which occurred in a child admitted to the hospital with a history of recurrent bronchitis. All the physical signs pointed to a respiratory infection. There was slight cyanosis, coated tongue, injected throat, breath sounds throughout the chest, and a few small moist râles over the left lower lobe. The heart

examination was negative, also that of the abdomen and extremities. At autopsy there was found a perforating appendicitis.

A Case of Pneumothorax in a Twelve-Year Old Boy.—Dr. ABT also reported this case. He stated that the history of the patient was entirely negative until three weeks before his admission to the hospital. Four days before admission he began to be troubled with dyspnea. Aspiration and later incision of the thoracic cavity was made. The emphysema, however, became general and the child died.

Dr. WILLIAM PALMER LUCAS asked if anyone had seen a pneumothorax in a new-born child.

Dr. J. P. SEDGWICK replied that one month ago they had a case which developed a pneumothorax on the second day after birth, for which they had been unable to assign any cause. They had had a series of *x*-ray pictures taken which showed a marked pneumothorax at first and then a gradual diminution.

Dr. DEWITT H. SHERMAN of Buffalo related the history of a case in which aspiration of the chest in empyema was followed by emphysema, and in which death resulted. The case, he said, had impressed him with the danger of aspirating the lung even when the procedure was most carefully done.

Dr. GERSTENBERGER of Cleveland brought out the point that in aspirating in emphysema it might be advisable to leave the needle in the chest for six or eight hours.

Dr. HENRY F. HELMHOLZ of Evanston, Ill., said that he had had a case somewhat similar to Dr. Abt's first case. They thought they were dealing with a lobar pneumonia on the right side. Later symptoms of peritonitis appeared and they thought this was a pneumococcus peritonitis. The child died and at autopsy they found a focus of infection in the gallbladder and an appendicitis.

Dr. J. P. CROZER GRIFFITH asked the members of the Society if they would trust the *x*-ray appearances in suspected pneumothorax.

Dr. ABT replied that the *x*-ray men said there was no doubt that pneumothorax could be diagnosed by the *x*-ray which would show the regular contour and the decidedly black areas that indicated the air-containing pulmonary cavities.

Hereditary Multiple Exostoses.—Dr. DAVID MURRAY COWIE of Ann Arbor reported this case. He said the boy, ten years of age, came under his observation as a referred case from the University Hospital. The physical examination was negative except for the multiple outgrowths and irregular thickenings of most of the bones of the skeleton. The involvement was quite definitely symmetrical. In the upper extremities the humerus, radius, and metacarpal bones showed thickening and exostoses. The carpal bones showed no deformities, ossification being incomplete and retarded. The femur showed thickening of the neck with blunt outgrowth extending downward and forward. There was thickening of the lower ends with marked spinous outgrowths projecting upward on the inner and outer aspects. The tibia showed many spines projecting downward about the head. Small spines were found projecting downward at the costochondral junction of all the ribs. The clavicles and scapulæ and the large pelvic bones were also involved. The father of the boy showed similar, larger, but not so numerous skeletal changes as those of the son. The forearms were distinctly shorter than normal, and the metacarpal bones irregular in shape and showing slight evidence of exostoses. Multiple exostoses were of two main varities, cartilaginous and fibrous. Nothing was known of the cause of this condition. Heredity seemed to be a definite factor. The disease should not be confused with myositis ossificans not infrequently seen in children.

Dr. ALFRED F. HESS of New York said he had recently seen cases very much like that of Dr. Cowie's. There were three children in one family—ten, six, and a little over two years of age—that showed this condition. The boy of ten had very decided enlargements. In the child of six the process was less well developed, and in the two-year old it was just beginning. In this instance the father had exostoses of the knees. Dr. Hess asked whether the literature showed that this condition was hereditary in the male line and whether he thought the disease had anything to do with calcium.

Dr. WILLIAM W. BUTTERWORTH of New Orleans said he had seen two cases of this kind in the same family in which the spinous processes of the long bones were affected. It was probable that the condition was not rare. French writers mentioned it and seemed to be familiar with it.

Dr. DAVID M. COWIE, in closing, said that among 220 recorded cases he had found none going back further than the father. There was no treatment that had been systematically employed. Dr. Cowie said he had made calcium estimations of the blood, but they had shown nothing in particular. As to heredity, the literature seemed to show that the disease was sometimes from the father and sometimes from the mother.

Sarcoma of the Brain Simulating Hydrocephalus.—Dr. L. EMMETT HOLT of New York reported this case. He stated that the child was admitted to the hospital at seven weeks of age with a history of having been perfectly normal at birth. The parents were healthy. They stated that they had noticed the enlargement of the head when the child was two weeks old. At seven weeks the head measured 20½ inches, while the circumference of the chest was 15 inches. The only symptom the child presented was the enlargement of the head. There was asymmetry and enlargement over the left frontal bone. At autopsy the right hemisphere of the brain was quite normal, but the left was found to be the seat of a large sarcomatous growth. The unusual feature of the case was the absence of symptoms other than those of hydrocephalus. Dr. Holt said he had never seen a similar growth in a child so early in life or one that grew with such extraordinary rapidity.

Dr. CHARLES GILMORE KERLEY related the history of a somewhat similar case in which the diagnosis of hydrocephalus was made. The child was examined by an oculist and a neurologist who could find nothing. An operation was then performed for hydrocephalus and a large sarcoma was found. This child was eight or nine months of age. It was operated on a second time and died within twenty-four hours.

Dr. GODFREY R. PISEK of New York reported this case, which occurred in an Italian baby two months and one week old. The previous history was negative, aside from a convulsion ten days before. There were no symptoms except rapid and difficult breathing and a distinct area of flatness over the right chest posteriorly with a corresponding diminution of breath sounds and a slight displacement of the heart. Pleural effusion was suspected. At aspiration six ounces of milky fluid were withdrawn. The laboratory reported that the milky fluid was sterile, composed of fat and seroglobulins. After a second aspiration the baby made a good recovery and was discharged in good condition and gaining in weight twenty-two days after its admission. This was probably the youngest case of true chylothorax on record. The etiological factor here could be assumed only and attributed to the convulsive seizure, which might have changed the pressure of the duct and caused rupture.

Dr. DEWITT H. SHERMAN of Buffalo recalled that he had reported a similar case and had exhibited the specimen of chylous effusion. In his case three aspirations were made at which 840, 260 and 1,200 c.c. respectively were withdrawn, after which the child made a good recovery.

The Treatment of Secondary Anemia in Infants by Blood Transfusion.—Dr. CHARLES GILMORE KERLEY of New York read this paper. He stated that the cases were cases of secondary anemia or of anemia and malnutrition, in all of which various food combinations and medical treatment of the anemia had been unsuccessful. The transfusions were made in the Babies' Hospital. The blood of the donor was proved fit by the absence of agglutination and hemolysis. There were eight cases in the series, and the blood examinations before and after transfusion showed the effect of the transfusion in each instance. The result in all but one of these cases was satisfactory. One case was transfused twice, and in each instance the blood examination showed an improvement, but it failed to hold longer than a few weeks. In the other cases there was no return of the anemia, and the subsequent growth was satisfactory. These children were all under two years of age.

Dr. B. RAYMOND HOOBLER of Detroit asked what method of transfusion was used, and whether more than two transfusions were given.

Dr. KERLEY said all were cases of simple secondary anemia, some were apparently anemic from birth. All showed malnutrition. The technic consisted in cleansing and cocainizing the skin over the median basilic vein of the child's arm and exposing about two inches by dissecting it free from the surrounding tissues. A small opening was made into one side of the vein with a pair of scissors and a Lindeman needle inserted. The vein below the needle was then tied off and another suture was placed over the vein and needle to hold the latter in place. A small amount of sterile salt solution was introduced to make sure that there was no leakage. A rubber tourniquet was placed on the arm of the donor, the skin cleansed over the most prominent vein and the blood withdrawn with a Record syringe until the syringe was full. This syringe was then handed to the operator working on the child and who inserted the blood into the child's vein. At the same time a fresh syringe full of the donor's blood was obtained. Each syringe was washed out with sterile salt solution before being used again to collect blood. This procedure was continued until the proper amount was transfused. One transfusion was used in each case, except the child that did not do well, and that child was transfused a second time after a thirty-day interval.

The Value of the von Pirquet Test as Controlled by Autopsy Findings.—Dr. J. H. MASON KNOX of Baltimore read this paper, which consisted in a report of the results of a study of the von Pirquet test for tuberculosis in a series of 324 infants and children, from birth to twelve years of age, in which autopsies were performed. Sixty-eight cases were found to have tuberculous lesions on postmortem examination, that was about 20 per cent. of the fatal cases examined after death. Two hundred and fifty-six, or 80 per cent., were found at postmortem examination to be free from tuberculosis. This incidence of tuberculosis in infancy and childhood agreed with Veeder's investigations, and was much smaller than that reported in European centers. It should be emphasized that no doubtful case should be called positive, but the test repeated; only those should be called positive in which there was a marked contrast between the tuberculous areas and the control site. This study seemed to furnish most reliable confirmatory evidence that among American children a properly performed negative von Pirquet test, except in extremely ill children, precluded the possibility of tuberculous infection. Of sixty-eight cases in which tuberculous lesions were found at autopsy, the von Pirquet test was made in sixty-one. In forty-five of these it resulted positively, while it was negative in sixteen. In twelve of the latter the patients were suffering from rapidly advancing widespread miliary tuberculosis, in two instances from tuberculous meningitis, and in two cases from pulmonary tuberculosis of advanced stage. It might be concluded that the tuberculin test, as described by von Pirquet, was a most reliable aid in the detection of tuberculosis in children and that a positive reaction invariably indicated a tuberculous focus, while a negative reaction established the fact that there was no tuberculous lesion except in extremely ill patients in whom the diagnosis could easily be made by physical examination.

Dr. CHARLES HUNTER DUNN of Boston said that they had made autopsies on some two or three hundred babies upon whom the von Pirquet test had been performed. Their figures were somewhat different from those just given, but this might be explained by the fact that their children were all under two years of age. The incidence in their babies had been over 90 per cent. The percentage of persistently negative reactions had been 30 per cent. Not more than one or two cases in the entire series showed a positive reaction with negative findings at autopsy. Dr. Dunn believed that the great differences in the statistical studies of different investigators could only be explained by the fact that the disease varied much in incidence and manifestations from time to time. There were periods in which one saw certain typical manifestations and a certain incidence of the von Pirquet, then a period would follow with another peculiarity in manifestation of the disease and a different incidence of the von Pirquet reactions. To get statistics of value they would have to study a million cases and cover a period of 100 years.

Dr. L. EMMETT HOLT of New York said that it had been their experience that it was very exceptional to find a positive reaction and not to find tuberculosis at autopsy. It had been said that in tuberculous meningitis it was exceptional to find a positive von Pirquet; they had found a positive von Pirquet in all cases except those that were practically moribund.

Dr. ISAAC ABT of Chicago urged the necessity of standardizing their technic and fluids and of demanding that every man should use the same fluid and technic in making his observations and that then they would have a better basis for the comparison of their results.

Dr. SAMUEL MCC. HAMILL of Philadelphia emphasized what Dr. Abt had said, and stated that it had been his experience that one got the same reaction each time if he used the same tuberculin. His experience in tuberculous meningitis was like that of Dr. Holt; he had obtained positive reactions in cases of tuberculous meningitis twenty-four hours before death.

Dr. ALFRED F. HESS related their experience with the von Pirquet tests at the Infants' Asylum. He said they gave three von Pirquet tests and three intracutaneous tests within twelve days. With these short intervals there was no danger of bringing on susceptibility. At times they got no reaction after one test, more of a reaction after the second test, and still more of a reaction after the third test. Quite a number of children that gave a negative von Pirquet reaction gave a positive intracutaneous reaction. He did not believe that one negative von Pirquet reaction meant that no anatomical tuberculosis was present.

Dr. HENRY HEIMAN called attention to an error in technique made by some. He said he had seen an arm scratched until a blood vessel was opened. That was not the von Pirquet test. The borer was the only instrument that should be used, and care should be taken not to draw blood.

Dr. J. P. SEDGWICK of Minneapolis said they had been making tests on the new born. They had been working with known antigens devised by Dr. Larson, making one von Pirquet test, then a second von Pirquet, then an intradermal test and also a complement deviation test. They had been getting about the same number of reactions with the complement deviation test as with the intradermal. This work would be reported later.

Dr. J. H. MASON KNOX, in closing, said they had used the intradermal test also and in a large series of cases the results were confirmatory of the von Pirquet tests.

The Effect on Human Milk Production of Diets Containing Various Forms and Quantities of Protein.—Dr. B. RAYMOND HOOBLER of Detroit presented this communication which he said attempted to answer the following questions: What was the minimal amount of protein that should be fed to protect maternal tissues, that was what nutritive ratio should exist between the protein on the one hand and the carbohydrate and fat on the other. Was there any difference between animal and vegetable protein in their effect on milk production? Was one kind of protein better than another to protect maternal tissues? Some twelve different diets were tested. They had found that a nutritive ratio of one to six or narrower seemed best adapted to the needs of the nursing mother. This ratio referred to the proportion of digestible protein to digestible fat and carbohydrate. They had found that animal protein was more suitable than vegetable protein in supplying nitrogen for milk and the maintenance of the nitrogen balance. The protein derived from nuts when fed with other vegetable protein was suitable for supplying milk protein and for maintaining the nitrogen balance. A diet composed exclusively of cereals, fruits, and vegetables did not supply sufficient protein for maintaining the nitrogen balance and caused a severe drain on the tissues of the mother. Of the various forms of animal protein, that derived from cow's milk seemed particularly suitable for the production of human milk protein as well as for the protection of the maternal tissues. It was found that a diet that would just maintain the nitrogen equilibrium was in many respects preferable to one which tended to add weight.

Dr. HENRY J. GERSTENBERGER of Cleveland asked how many mothers were on these diets, and whether the ages and weights of the mothers were somewhat similar He also asked how the amount of milk produced by these mothers was determined.

Dr. Isaac Abt of Chicago said he was not in a position to criticise the figures, but the matter was not as simple as it might appear. He asked what the weights, ages, and races of the mothers were, and spoke of the emotional and psychological factors that influenced the milk supply. The problem was not simply one of feeding a certain amount and kind of food and getting a definite production of milk.

Dr. David M. Cowie said it was a well-known fact that increasing the amount of meat in the dietary stimulated the milk production.

Dr. Alfred F. Hess said the fact must be taken into consideration that although animal protein produced more milk, yet the animals that produced the most protein in their milk got no animal protein in their food.

Dr. Thomas S. Southworth of New York emphasized the importance of furnishing the mother with a sufficient amount of protein to protect her body tissues. He said they had been told that the diet affected very little the production of milk. This had not been his view. It had been his experience that if the mother received a diet made up of carbohydrates with a sufficient amount of milk she would not run down during lactation, but on the other hand would have a tendency to put on flesh.

Dr. L. E. La Fetra asked Dr. Hoobler whether he had tried these mothers on other diets. Cows differed in the amount of milk they produced and it was only logical to believe that women varied in the same way.

Dr. Hoobler said that there were in all eight mothers under observation for a period of three months. A few of these mothers were on the nut diets and also on the other ten diets, so that there was had a variation of diets for these mothers. The weights of the mothers varied and the diets were not based on the per kilo body weight. The mothers all received the same amount of food. He fed them according to the calories, using about 3000. The milk was obtained by hand milking under the supervision of a nurse. The ages of the mothers were about 30 years and these were their first babies.

Luetic Nephritis in Infancy and Childhood.—Dr. William W. Butterworth of New Orleans read this paper. He stated that a search of the literature showed that apparently little recognition was given to luetic nephritis by English and American writers. German and French writers had made extensive contributions to the literature of this subject. While there was a lack of agreement in regard to the severity of the syphilitic infection and its effect upon the kidneys, upon two points there was a more complete understanding. First the clinical symptoms of nephritis in hereditary syphilis might be wanting, or so insignificant as to pass unnoticed. Second, if the child survived the early period of life, then the clinical manifestations were those commonly associated with a chronic interstitial nephritis. Cases conformed more or less to certain classifications as follows: (1) Acute parenchymatous nephritis which might be hemorrhagic. (2) Acute interstitial nephritis. (3) Chronic interstitial nephritis. (4) Myeloid degeneration. (5) Gummata of the kidney. Fetal syphilis might result in various kidney changes, such as congenital malformations, cystic kidney, and nephritis. Several observers had recently demonstrated active well-formed *Treponema pallidum* in the vascular, interstitial, and parenchymatous renal tissues. The cells when attacked by the Treponema presented a progressive phase of cell degeneration. These observations support the toxic theory, and formed a reasonable hypothesis for the complex clinical manifestations and diverse urinary findings in the kidney changes of hereditary lues. Living active *Treponema pallidum* had been found in the urine of a four months' old baby dead of congenital syphilis. The urine of congenitally syphilitic children contained a specific poison, probably an alkaloid, which when injected into animals caused death. Castaigne in 1913 called attention to a familial albuminuria dependent on hereditary syphilis. He reported twelve personal cases of albuminuria in children, occurring in four families, all having positive Wassermanns. Two of the children died of nephritis, while the other ten were apparently cured by specific medication. Judicious specific medication was curative in most of the cases. Congenital luetic nephritis was not generally recognized as having a distinct etiological basis.

Wednesday, May 30—Third Day.

The Effect of Codliver Oil in Intestinal Infantilism.—Dr. L. Emmett Holt of New York presented this paper. He stated that the subject of these observations was a girl, 8½ years of age, who was suffering from infantilism, apparently due to chronic intestinal indigestion. Metabolism observations were made at the beginning and at the end of a period during which codliver oil was administered. The metabolism at the beginning of the period showed negative balances in calcium, magnesium, phosphorus, and total ash. At the age of 8½ years the child's net weight was 27½ pounds and her height 39 inches. In nine months she gained under the administration of codliver oil 2½ inches in height and 13½ pounds in weight. At the end of the period metabolism observations showed a marked positive balance in calcium, magnesium, and total ash.

Dr. Fritz B. Talbot of Boston said that there were two points of interest in this case. One was that the negative balance could not have been present all the time, though it was probably present more than it was absent. The second point was that even with the codliver oil the absorption of available nutrition was only 66 2/3 per cent., whereas under normal conditions it was 90 per cent.

Dr. Charles Herrman of New York said this case well illustrated the point that gain in weight and increase in height did not necessarily go hand in hand.

Dr. B. Raymond Hoobler of Detroit said that the child was also fed malt, and that might possibly have something to do with the gain.

Dr. Holt said it was quite possible that the malt might have had something to do with the gain. This point was considered in the paper. Dr. Holt stated that they had confirmed the finding that in rachitic cases with the administration of calcium salts there was an increase of from 25 to 40 per cent. in the amount of calcium retained. They had thus demonstrated the value of calcium in rachitis. In regard to the negative balance, the child could not have had a negative balance all the time. There had been, however, no gain in weight for four years previous to the administration of the codliver oil. Just how much of the gain was due to the codliver oil it was hard to tell, because simply an increase in the intake of salts would cause a retention. They had concluded, however, that the oil was a large factor in the gain.

Indicanuria in Children.—Dr. H. M. McClanahan of Omaha read this paper, in which he first called attention to the paucity of the literature on this subject. The natural conclusion was that the subject was not of any importance. Indican of intestinal origin was found in the urine of children in the following conditions: constipation, chronic intestinal indigestion, duodenal and peptic ulcer, malignant growths and in all forms of acute obstruction of the bowels. Indican was produced in suppurating cavities within the body, as in empyema, pulmonary abscess, bronchiectasis, pulmonary gangrene, chronic tonsilitis, appendicitis, and in general pyemic conditions. The writer had studied the urine of 536 children, varying in age from four to twelve years, none of whom had any organic disease. Of this number 20 were hospital cases, 6 of which were suffering from empyema. All were subjected to operation. Indican was found in excess in all cases. There was one case of pulmonary abscess in which indican was constantly present. There were three cases of acute appendicitis in which indican was present, but disappeared after recovery. Indican was present in one case each of duodenal ulcer, acute ileus, and one case of pyonephrosis, in two cases of bronchopneumonia, and two cases of typhoid fever. In the 516 ambulatory cases there was a trace of indican in 97, indican was present in excess in 367, and the urine was loaded in 52. Nearly all of the group had some form of indigestion. Of the 516 cases, 337 on a reexamination showed either decrease or absence of indican and in the remaining 179 cases, indican persisted. Of the 52 cases showing excessive indican all were cases of constipation. In three cases in which indican persisted after careful dietetic and hygienic treatment

the *x*-ray showed some abnormal condition of the bowel. Many of the children were bolting their food or were permitted to eat between meals. In 11 cases in which the complete cooperation of the mothers was secured a diet was prescribed eliminating entirely meat, eggs, and milk for a period of ten days. These children received a diet solely of fruits, cereals, green vegetables, toast, bread, and butter, and were permitted to drink water freely. After this treatment and a free bowel movement daily, the urine of each child without exception showed absence of indican. Indican was present in the urine of the majority of children. A trace was probably normal. Excessive indican was evidence of either intestinal putrefaction or of some mechanical injury to the mucosa, or of some suppurative process within the body. It was frequently the result of constipation and might have an important diagnostic value.

Dr. B. Raymond Hoobler of Detroit said he thought there was some fallacy in this work. He advised using the method of decolorization with potassium chlorate, which he had found more satisfactory than taking the color of the chloroform as an index.

Dr. J. P. Sedgwick of Minneapolis asked if anyone had found as had Dr. Fleischner that the meat intake was an important factor influencing the amount of indican in the urine in older children.

Dr. McClanahan said there was no question but that the amount of meat taken influenced the amount of indican in the urine.

Clinical Observations on Poliomyelitis during the 1916 Epidemic; Prophylaxis; Description of a Characteristic Sign.—Dr. Henry Heiman of New York presented this communication, in which he said that the last epidemic had demonstrated conclusively that the poliomyelitis virus might attack any site in the entire cerebrospinal tract. In the midst of the epidemic it was comparatively easy to demonstrate certain distinct clinical types of cases, occurring about the same time, in certain localities, and presenting practically the same symptoms and signs. This seemed to indicate that there were probably a number of strains of the poliomyelitis organism, varying in virulence, and having a predilection for certain regions of the cerebrospinal tract. It was usually conceded that Flugge's droplet infection was in most cases responsible for the spread of the infection. Therefore, in order to control the spread of poliomyelitis, attention must be devoted to prophylactic measures. These were preeminently the gown, the cap, the hand brush and the disinfectants. Certain important measures had not been sufficiently emphasized. These were the wearing of a gauze mouthpiece and nose mask, or gargling of the throat and spraying of the nose, the latter to be employed before and after visiting the patient. In reference to the diagnosis certain points required emphasis. The most transient paralysis, the slightest paresis of the extremities, the faintest suspicion of rigidity of the neck, inability to flex the head (Draper's sign), the mildest muscle pain or cramps, occurring during an epidemic, should be sufficient to regard the case at least as one of potential poliomyelitis. A sign especially observed in cases of the meningeal type was a distinct tremor of the hands and fingers, a fine tremor of both hands, elicited best by having the hands outstretched and the fingers spread apart. It was present practically always in the early stage of the disease, and might persist as long as eight or ten weeks. To demonstrate this sign more clearly, it was advisable for the physician to stretch out his own fingers near those of the patient and to compare them, or to intensify them by placing a sheet of paper on the dorsal surface of the outstretched hand. The disadvantage of the sign was that it could not be used in young infants or in patients who were comatose.

A Pathogenesis of Infantile Scurvy.—Dr. Henry John Gerstenberger of Cleveland, Ohio, read this paper, in which he offered a hypothesis regarding the pathogenesis of infantile scurvy. This hypothesis was divided into four parts, of which only the first was considered to be sufficiently based upon experimental and clinical data as to permit its exit out of the domain of pure hypothesis. The writer reports a case of infantile scurvy which showed a marked reduction of the water output of the body through the kidneys without the presence of the usual and known causes for water loss via other channels, and which further showed a marked change toward a return to normal conditions after the administration of orange juice. This indicated a protective salt retention or hindered salt excretion as the cause of the transfer of a good portion of the water exeretion from the kidneys to the lungs. The same condition was present seemingly in two additional cases of infantile scurvy, as well as in scorbutic guinea pigs on an oat and water diet. It was suggested that the phenomenon observed was part of the regular picture of infantile scurvy and represented an addition to the clinical symptomatology of scurvy. A case was reported as being the counterpart to Braddon's and Cooper's polyneuritic pigeons, but had developed its symptoms on a diet of raw milk, modified by dilution with water to one-half, and by the addition of enormous amounts of carbohydrates, in the form of an infant food. The writer had confirmed the experience of other authors regarding the inefficiency of codliver oil and calcium therapy in scurvy by absolutely negative therapeutic results obtained in a case of infantile scurvy under the administration of tricalcium phosphate and codliver oil. This indicated that a deficiency of calcium in the diet or in the body played no primary rôle in the development of scurvy. There was a distinct improvement in the clinical picture of two cases of infantile scurvy upon the administration of large doses of sodium citrate. This observation suggested the possibility of the existence in the development of the clinical picture of infantile scurvy of a modus operandi similar to such as had been shown to exist in cell permeability and irritability by the researches of Jacques Loeb.

Contribution on Poliomyelitis.—Dr. Walter Lester Carr of New York presented this report on 63 cases admitted to the City Hospital during the summer of 1916, with the diagnosis of poliomyelitis. In five instances the final diagnoses were rickets, septic meningitis, enterocolitis, normal child, and staphylococcus meningitis. Of the 58 cases, seven died within eighteen hours without treatment. Of 54 cases treated intraspinously three died, a mortality of 5.5. The most frequent symptoms were irritability, hypersensitiveness, loss of appetite, and constipation. The tongue was almost always coated, sometimes tremulous. The superficial lymph nodes were enlarged in 90 per cent. of the cases, this being an early symptom. In the cerebral cases the pupils were less responsive to light than in the lower cord cases. The pulse was frequently recorded as rapid and thready; this finding was not definitely associated with temperature changes. In general there were no typical urinary findings. The highest leucocyte count was 40,000 and the lowest 9,000, with an average of 18,000. The average polymorphonuclear count was 55 per cent. There were in all 350 spinal punctures made. With few exceptions the spinal fluid was clear, with slightly or markedly increased pressure. The cell counts ranged from six to 300, with an average of 36. After intraspinous treatment the cell count invariably rose, usually above 100. Different methods of intraspinous treatment were employed, bichloride of mercury, diarsenol, adrenalin chloride, and freshly prepared immune serum. The results recorded after the use of adrenalin intraspinously were deeper and less labored respiration, improvement in the quality of pulse, increased blood pressure, usually 10 to 15 points, and the pressure of the spinal fluid on later punctures became normal. The conclusions reached after using adrenalin chloride that while not a specific, its value was unquestioned in all severe and toxic cases and those of fulminating type. The author believed that 1-1000 solution of adrenalin could be administered in doses of 1 to 3 c.c. every six to ten hours, without danger, and with better results than any other treatment that we had at present. Of this series of cases six showed marked paralysis with very little improvement; 33 showed very slight weakness of one or more groups of muscles, with daily improvement, and 12 cases showed no paralysis. The good results obtained in the City Hospital were in the opinion of the writer due to the quiet and good nursing that the patients received and to the use of immune serum and adrenalin. It was not now possible to judge conclusively of any plan of treatment.

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DIGITALIS IN THE TREATMENT OF AURICULAR FIBRILLATION; AND A REPORT OF THREE CASES OF ARRHYTHMIA.*

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TROY, N. Y.

THE object of this communication is to discuss the value of digitalis in the treatment of auricular fibrillation and to record three interesting cases of arrhythmia occurring during the course of acute infectious fevers. The diagnosis of auricular fibrillation is, for the most part, comparatively simple, the gross irregularity of the ventricular action being indicated at the wrist in a decided difference between each beat as regards tension, volume, spacing, and timing, while at the heart the tumultuous irregularity of ventricular action is easily discerned with the ear or stethoscope applied to the impulse. This irregularity of the arterial pulse taken in conjunction with the presence of a definite deficit or incongruity between the rate of the clinical apex and that of the radial artery, the radial rate being much slower than that of the apex, makes the diagnosis almost positive. In cases of fibrillation coming on rather abruptly in individuals suffering with mitral stenosis, the disappearance of the characteristic crescendo type of presystolic murmur and the equally characteristic thrill, and their replacement by a murmur softer in quality and generally long drawn out occupying the entire diastole, or middiastolic in time, and unaccompanied by a thrill, are also highly suggestive, if not absolutely diagnostic, of this condition. As before mentioned, in cases of fibrillation with mitral stenosis, where the fibrillation is of short duration, as it disappears and normal auricular activity is reestablished, one is able to note by auscultation the reappearance of the previously lost presystolic murmur, and to palpate the returning strictly localized presystolic thrill. These signs are ordinarily quite sufficient to establish the diagnosis of auricular fibrillation. They may be corroborated, however, by taking short stretches of polygraphic or electro cardiographic curves, when the disappearance of auricular activity and the presence of fibrillation will be indicated by the absence of the "A" wave in the phlebo- and cardiogram and the "P" variation in the electrocardiograms, and the appearance of a true systolic venous pulse in the jugulars, and in tracings obtained from the pulsating liver, together with the presence of multiple wavelets of small amplitude in the diastolic period of tracings taken from the jugulars and apex and in the electrocardiograms. Clinical alternation is sometimes mistaken for fibrillation, inasmuch as in some cases of alternation the rhythmical irregularity in volume, so characteristic of the arterial pulse, creates waves so small in amplitude that the palpating finger fails to appreciate the difference in volume, and hence they are confused with the pulse irregularity of cases of fibrillation. Careful blood pressure observations or short strips of radial curves will dispel all doubt as to their true nature, as the radiograms in alternation show well-formed waves of large and small amplitude following each other in regular succession, the spacing between them being about equidistant, or the long time interval existing between waves of long and small amplitude rather than as in ventricular extrasystoles between the small and large waves. Blood pressure studies show in alternation a halving of the radial rate on the side of the compressed arm at the height of the systolic pressure, whereas when the pressure of the cuff is released both large and small waves pass through when the radial rate becomes the same in each wrist.

From the standpoint of prognosis and treatment the recognition of the inception of this abnormal rhythm is of great importance, for it is nearly always associated with grave changes of the myocardium, and its presence adds greatly to the load of an already overburdened heart, whose reserve is thereby made more or less limited, both by increasing its irritability and conductivity, and by impairing its contractility, and thus diminishing its tonicity. While a few subjects of auricular fibrillation whose ventricular rates are moderately slow, and whose cardiac reserve is not greatly impaired, may live fairly comfortable for months or years, the great majority in whom this rhythm is perpetual are shortlived. Ventricular rates which are maintained above 120, unless responsive to proper therapy, go on to gradual or speedy cardiac exhaustion, with great dilatation and all the concomitant symptoms of an unrelieved decompensation and death. It is probable that the immediate cause of death in many of these cases is asystole, from the sudden inception of ventricular fibrillation. In determining the prognosis in a given case of auricular fibrillation it is therefore necessary to weigh carefully the subjective and objective symptoms, as well as to have a proper appreciation of the extent of the damage to the heart muscle—as indicated by the deficit between the rate of the apex and that of the radial artery; the amount of cardiac dilatation; the change in the quality and pitch of the heart sounds; and associated valvular

*Read at the eighteenth annual meeting of the American Therapeutic Society, New York, June 1 and 2, 1917.

murmurs, as well as to the condition of the arteries and functional capacity of the kidneys, and the ability of the heart muscle to respond to active digitalis therapy.

Recognizing keenly the import of the myocardium in maintaining the circulation, and the rôle its exhausted fibers play in the production of heart failure, I would state that no form of cardiac disorder is more amenable to proper digitalis medication than the one before us for discussion. If we will pause for a moment to review the salient features of this disordered cardiac mechanism, we shall find ample justification for the above statement, for with the inception of this abnormal rhythm the coordinate auricular activity is lost and the whole ventricular myocardium is rendered more irritable from over-excitability, the result of innumerable stimuli constantly flowing from the auricles to the ventricles over His's bundle, the result of their delirious activity. This constant increased conductivity rapidly exhausts the two most important functions of the heart muscle—contractility and tonicity—resulting in a most bizarre ventricular irregularity with dilatation of their chambers and myocardial exhaustion. We have been taught by both animal experiments and clinical studies that digitalis reduces cardiac rate by vagus stimulation through its effects on the cardio-inhibitory centers in the oblongata, as this action may be prohibited by blocking the vagus impulses to the heart through the administration of atropine. It has also been known for long that this drug has a selective action directly on the muscle fibers of the heart independent of their nerve supply, improving in marked degree the functions of contractility and tonicity. In addition we know from polygraphic and electrocardiographic studies that one of the earliest effects of digitalis is to delay conductivity through the bundle of His by increasing the auriculo-ventricular interval, causing, if the action is pushed, definite heart block, which effect is especially pronounced in cases where the bundle of His and the conducting system of fibers are diseased. This action of the drug is valuable in fibrillation by reducing the number of impulses flowing from the auricles to the ventricles, thus relieving their irregularity, slowing their rate and increasing their period of diastolic rest, thereby permitting a proper filling of the ventricular chambers. It also strengthens their systolic contractions, thus relieving them of their residual blood by increasing the volume output of the ventricles, with in most instances complete relief of the general venous stasis and edema.

In laboratory animals and healthy men digitalis increases blood pressure by constricting the small arteries through vasoconstrictor influences. On diseased hearts, however, great discrepancy of opinion exists as to whether such pressure effects ever occur. Mackenzie's observations seem to show that medicinal doses of digitalis in auricular fibrillation have no effect on the musculature of the arterial walls. It seems, however, reasonable to believe, especially where fibrillation with edema and low blood pressure exists, that such results occur chiefly through its effect on improving the contractile force and tone of the heart muscle, and especially of the ventricles, thus increasing the systolic output, reducing thereby the size of the dilated chambers by relieving them of their residual blood, augmenting the aortic pressure, and permitting a better coronary arterial flow, hence improving the nutrition of the heart muscle. Its diuretic effect is not primarily renal but is doubtless due to its selective action in increasing the force and strength of the heart muscle, thus delivering to the kidneys a greater volume of arterial blood under higher pressure, relieving their venous stasis and the general edema by exciting active diuresis. Rarely do we observe marked diuresis in cases of fibrillation without edema. Clinical experience teaches that when an active standardized preparation of digitalis fails to influence for good the strength of the myocardium, no increased urinary output occurs. Because of these well-known pharmacologic actions of the drug, we have in digitalis a most valued weapon

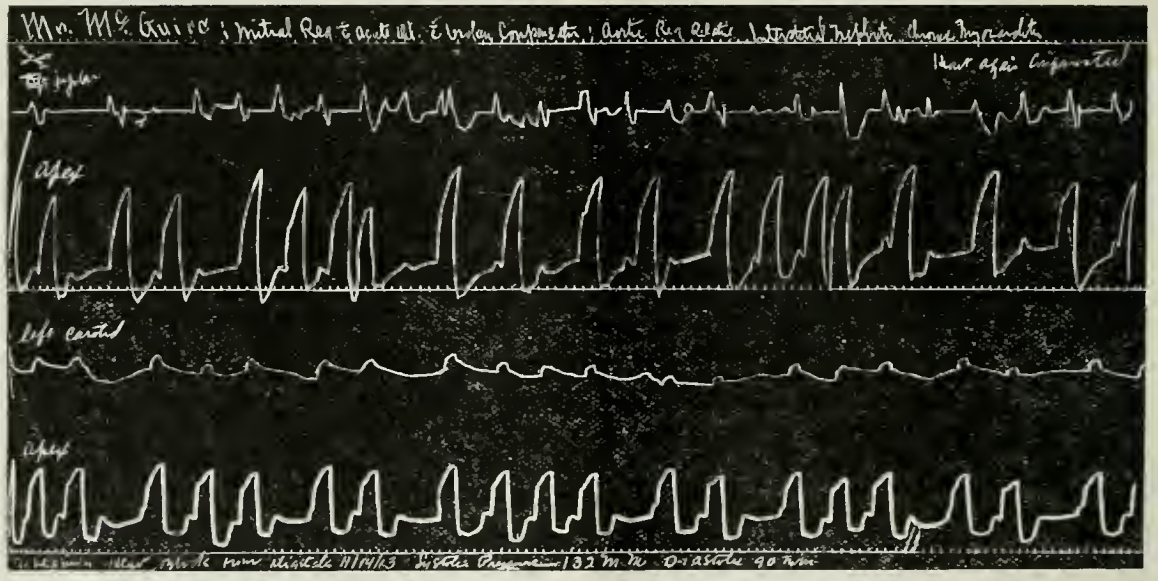

FIG. 1.—Auricular fibrillation, delayed conductivity, and occasional dropped beat due to digitalis. Note the widened A-C interval in the phlebogram and A-V interval in the cardiogram.

whereby we may relieve and prolong the lives of these unfortunate patients, so that they may live months or years with comparative comfort, often being able to work at their usual vocations. The effects from the use of digitalis or allied drugs in fibrillation are oftentimes no less than marvelous, patients in immediate peril of death being relieved as if by magic; the deficit between the rate of the cardiac impulse and radial artery gradually ceasing, the cyanosis dyspnea, and edema fast disappearing, the irregularity of rhythm and rapid rate quickly improving; and in cases of fibrillation associated with mitral stenosis the presystolic murmur long since absent, often reappearing with the improvement of the functioning of the auricles. The drug to be effectual must be used at first in doses sufficiently large to produce its definite physiological effects—*i. e.* distinct lessening of the irregularity and slowing of the pulse rate, the rate of the apex and the radial pulse gradually becoming the same. When their rates reach seventy or under per minute it is wise to discontinue the drug for a few days, carefully watching the heart rate in the interval, and if it again becomes rapid, reaching ninety or more, then to give enough digitalis to keep it at

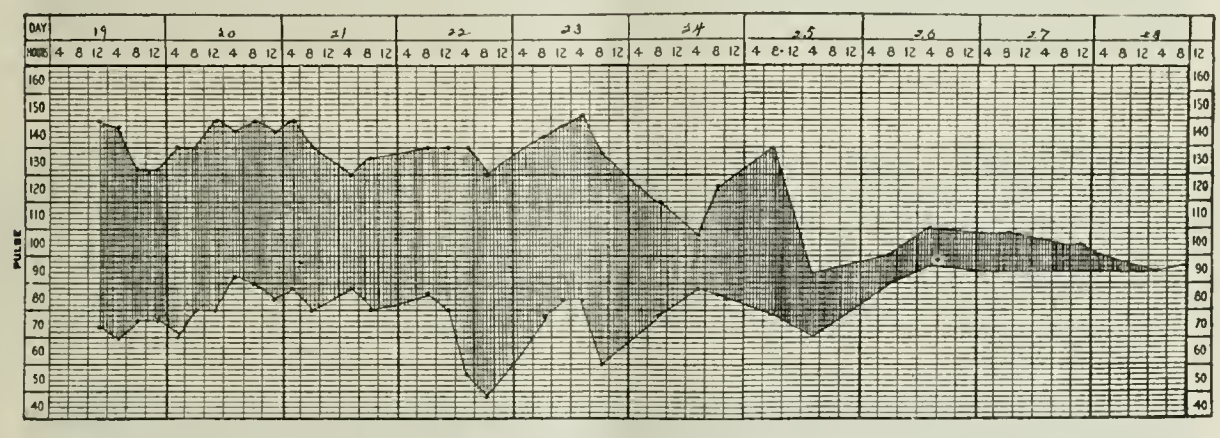

FIG. 2.—Pulse deficit chart. Record of auricular fibrillation showing marked myocardial exhaustion greatly improved by digitalis. The upper line is that of the apex rate, the lower of the radial rate; note the wide deficit at the onset and the gradual coalescence of the apex and radial rates under digitalis therapy.

about the normal rate, thus continuing the small tonic doses over long periods of time, only ceasing when the rate keeps normal and no deficit occurs between the apex beat and radial pulse, or the drug produces some toxic effect, such as nausea, vomiting, diarrhea, severe headache, marked sinus irregularity, delayed conductivity, bigemina alternation or actual heart block. No drug of this series can, in my judgment, approach at all the good effects of an active preparation of digitalis if boldly pushed until its specific cardiac action is obtained. I would like to emphasize the importance of stopping digitalis therapy in cases of fibrillation immediately on the onset of bigemina or heart block. I am satisfied that the death of the patient of one of my colleagues with aortic disease was due to the lack of such warning. It is interesting here to note that the recent observations of Dr. Canby Robinson with lethal doses of digitalis on lower animals show that the first toxic change observed was a definite bigemina, soon to be followed by ventricular fibrillation and death. It is true that occasionally certain individuals seem to possess an idiosyncrasy for the drug and can take it neither by the mouth nor subcutaneously. In such patients the drug may be used intravenously or the substitution of strophanthus, ouabin, squills, convallaria, adonis, or spartein for a time may be tried. My preference is for either a good tincture, a perfectly fresh infusion made from carefully selected leaves, or recently collected dried and compressed leaves. In endeavoring to bring prominently before you the great value of this drug in the treatment of fibrillation, I do not wish in those cases of fibrillation with edema to underrate the great good that comes from absolute rest, restricted fluid intake, Karrel and salt-free liets, and careful elimination, or in combination with digitalis, of such diuretics that act upon healthy renal epithelium as the salines, caffeine, theobromine, or theocinsodium acetate. While these drugs often work admirably in conjunction with digitalis in the renal insufficiency of pure passive congestion, increasing diuresis and sodium chloride elimination, they are ofttimes disappointing and actually harmful in pure renal dropsy, particularly where the phthalein test shows a greatly reduced functional capacity. These latter drugs should not be given in pure renal dropsy. I want also here to emphasize the fact that belladonna or atropine should never be administered in this condition, unless for some very definite reason, such as the onset of a sudden fulminating attack of pulmonary edema, as its action is to paralyze the peripheral terminaations of the vagus nerve, thus accentuating the fibrillation.

CASE I.—*Sudden Inception of Auricular Flutter During an Attack of Acute Rheumatic Fever, Transposed by Digitalis Into Continuous Bigemina and Then Normal Rhythm.*—The patient, Mrs. J. A. W., age 43 years, entered the Samaritan Hospital March 31, 1915, complaining of multiple joint pains aggravated by motion or any jar and severe sour sweats. Family history unimportant. Had measles, diphtheria, and rheumatism at 26 years of age; otherwise had been well until the onset three weeks ago of the present illness. She married at 23 years of age; has had one living child and one born dead at full term. Uses no alcoholic or other stimulants; denies venereal disease.

Present illness began three weeks ago with a severe attack of follicular tonsillitis, which confined her to bed for three weeks. Following this attack she developed pain and stiffness in her knees and wrists, which so disabled her that she sought relief by entering the hospital.

The patient is a well-nourished and developed female in the dorsal decubitus, and appears acutely ill. Both knee and wrist joints are red, swollen, and tender. The

tonsils are enlarged, crypts patulous and they look diseased. The lungs show normal vesicular breathing.

The precordial region is not prominent. No retraction or Broadbent sign is present. No palpable friction rub. Localized to region of apex is a presystolic thrill. The apex is visible and palpable in the fifth interspace from the fifth interspace to the costal border. It is not palpable because of the thick abdominal walls. The cranial nerves functionate normally. The reflexes, both superficial and deep, are normal.

The urine is dark amber, specific gravity 1022; contains small amount of albumin and a few hyaline casts. The blood shows a leucocytosis of 14,000; the blood Wassermann reaction is negative. The *x*-ray examination shows a moderate enlargement of the whole heart.

April 15, 1915.—About two weeks after the patient entered the hospital she was taken with dyspnea, rapid respirations, cyanosis, and orthopnea. The cardiac ex-

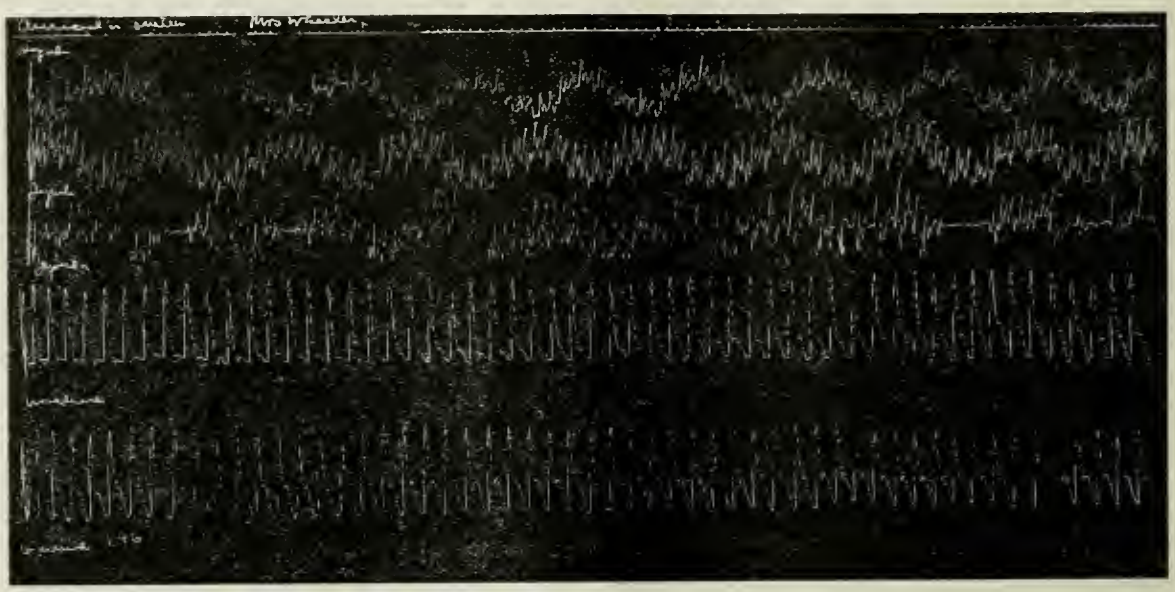

Fig. 3.—Case I. Mitral stenosis suffering with acute articular rheumatism, sudden onset of auricular flutter; radial rate, regular, 100; auricular rate, 300.

excatly intersecting the left midclavicular line. At this point and a little within is a strictly localized presystolic murmur of the crescendo type, ceasing suddenly with a slapping first sound to be followed by a systolic apical murmur, soft in quality and faintly conducted to the left. The pulmonic second sound is accentuated, but not reduplicated. No third sound or evidence of gallop exists. The radial and apex rates are 80 and perfectly regular in rhythm. Blood pressure: systolic 120, diastolic 80.

The spleen is not enlarged. Liver dullness extends amination disclosed a rapid rate, the presystolic murmur and thrill were not discernible, the ventricular and radial rates were 100 and perfectly regular, while the auricular rate was 300. Polygraphic tracings were taken which confirmed the clinical diagnosis of auricular flutter. Digitalis therapy was instituted in doses of 20 minims of the tincture thrice daily. No change was noted in the flutter for 72 hours, when we were surprised to find that the flutter had been transposed into a continuous digitalis bigemina, rather than the usual sequence of fibrillation. This finding led to the

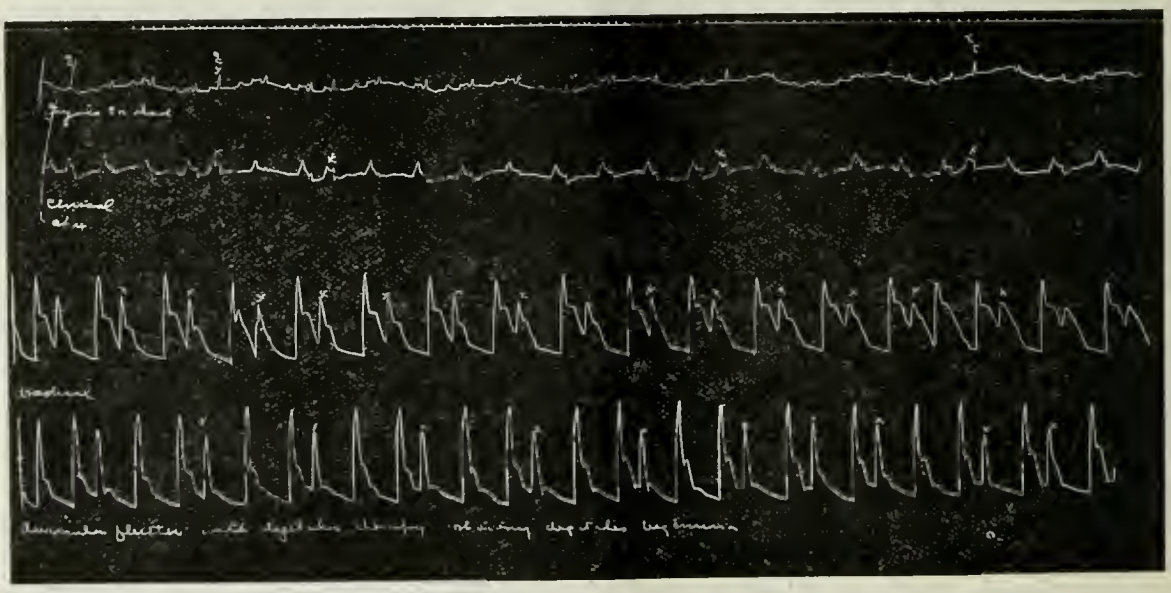

Fig. 4.—Case I. Auricular flutter transformed into digitalis bigemina under digitalis therapy for seventy-two hours.

discontinuance of the digitalis. A few days later the normal rhythm was again restored with a regular pulse both at apex and wrist at 70, with at the same time the return of the presystolic murmur and thrill. The patient remained in the hospital until June 1, 1915, and had no recurrence of the arrhythmia.

Case II.—*Sudden Onset of Auricular Fibrillation During an Attack of Grippe.*—Mrs. D., æt. 37 years, married. Entered the Samaritan Hospital April 2, 1917, complaining of pains all over—headache, distressing unproductive cough, and sore throat. She was nauseated and had recurring chilly sensations.

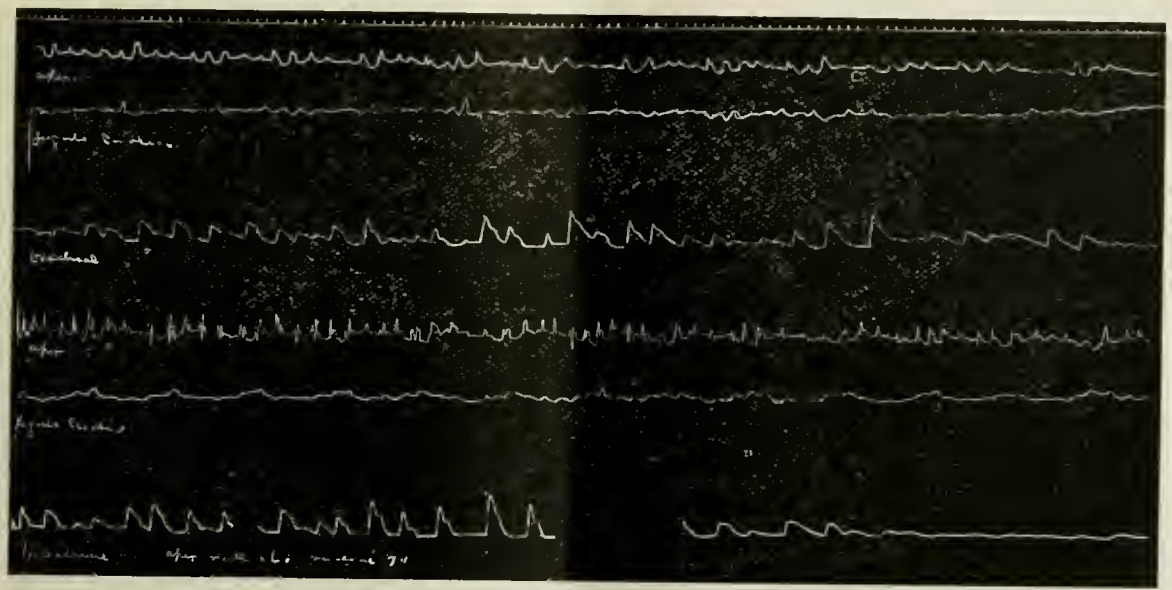

Fig. 5.—Case II. Auricular fibrillation occurring during an attack of grippe. Note the gross pulse irregularity and absent auricular wave in the cardiogram and phlebogram.

Father died at 87 years of age of heart disease; mother died at 72 years of age of apoplexy; otherwise the family history is negative.

The patient had chorea at 12 years of age; pleurisy at 20 years of age. Four years ago she had quinsy. Otherwise she has always been healthy, save dyspnea on exertion. She has had three healthy children and two miscarriages. Denies venereal disease. She uses no alcoholics or drugs. She sleeps well; has a good appetite and the bowels are regular. She menstruates rather profusely. She had no knowledge that her heart was diseased.

Examination shows the patient to be poorly nourished, spare, and under-developed. Her expression is anxious. She is supported by three pillows. The skin and mucous surfaces are very pale. There is no edema or cyanosis. The respirations are quickened. The radial pulse rate is 80, and it is quite regular. A presystolic murmur and thrill are present. No deficit exists. The mucous surface of the throat is injected, tonsil enlarged, no exudate present. Dry and moist rales are heard throughout the lungs; otherwise chest is normal. The liver dullness extends from the fifth rib to costal margin; lower border smooth, not painful and not pulsatile.

Red blood count, 4,800,000; white blood count, 19,000; neutrophiles, 87 per cent.; eosinophiles, 1 per cent.; lymphocytes, 10 per cent.; transitional, 2 per cent.; hemoglobin, 85 per cent. The urine is dark amber, acid, specific gravity 1,024, clear, albumin positive, sugar negative, red blood cells, hyaline and fine granular casts. Blood cultures show no growth on agar or bouillon in 48 hours.

On April 5, three days after admission and while her acute febrile symptoms were present, she suddenly appeared much worse; became distinctly cyanosed, had labored breathing, and complained of palpitation. She slept poorly. Examination disclosed an irregular pulse

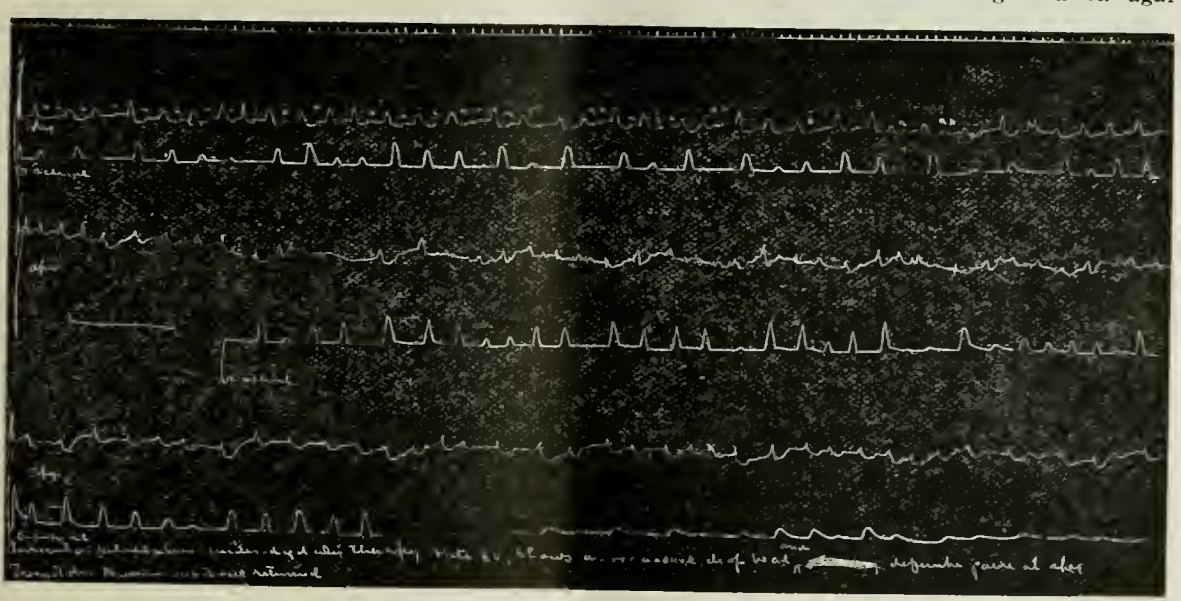

Fig. 6.—Same case as shown in Fig. 5 under digitalis medication. Note the recurrence of the auricular wavelets in the cardiogram, the widening of the A-V interval, the occasional occurrence of dropped beats—"2 to 1 heart block." The presystolic murmur and thrill have returned.

at 86 per minute, of feeble strength and volume, time, and spacing. The impulse was diffuse, apparently strong, irregular in force, and rapid, its rate being 158 per minute. The heart action was tumultuous and irregular; the presystolic murmur and thrill had disappeared. The jugulars stood out in bold relief and presented a large systolic venous movement. There was, as illustrated by the accompanying chart, a distinct pulse deficit. The cardiac dullness as outlined by percussion, showed the right border 4 cm. from the midsternal line and the left 13 cm. The upper border was at the lower border of the third rib. The polygraph showed the gross irregularity of the radial pulse, the large systolic venous movement with absence of the "A" waves both in the phlebo- and cardiogram. In all leads of the electrocardiogram the "P" waves were absent and fibrillating wavelets were present. She was given 20 minims of tr. digitalis every four hours, and after four days marked changes for the better were noted. Subjectively she was relieved of her dyspnea or air hunger, cyanosis, and insomnia; the urinary output was increased. The cardiac rate was slowed, the apex and radial rates fast approaching each other. The pulse was stronger, less irregular, and of greater volume. On the sixth day of digitalis medication the lost presystolic murmur and thrill reappeared, and tracings taken at that time showed in many cycles of the phlebo- and cardiograms returned "A" waves, with at the same time distinct diminution of conductivity with the occasional dropping out of beats; the latter also being appreciated on auscultation over the apex impulse.

She has gone on for a period of four weeks without the slightest discomfort, with practically no deficit between the apex and radial rate, and with a pulse of about 70 per minute, though still irregular. The presystolic murmur and thrill have remained and no edema has developed.

It seems probable that this case of acute fibrillation was induced through toxic changes of the heart muscles occasioned by the grippe infection, resulting in sudden dilatation with acute myocardial exhaustion. The good effect of rest and digitalis is noteworthy.

CASE III.—*Recurring Syncopal Attacks Probably Due to Cerebral Anemia Occurring Toward the Close of the Convalescent Period of a Case of Severe Typhoid Fever, the Result of Auricular Flutter.*—Mr. John Y., æt. 35 years, entered the Samaritan Hospital Jan. 28, 1917, in a delirious state, complaining at lucid intervals of severe headache, pain in the abdomen, and great weakness.

He was well nourished, without edema, his skin was hot and dry, pulse quickened but regular, tongue fissured, dry, and brown and sordes had collected on his gums, lips, and teeth. He talked incoherently, was disorientated and very stupid.

At the base of the right lung the physical signs of consolidation existed; elsewhere harsh but fair vesicular breathing was elicited.

The cardiac dullness was normal, sounds clear but distant, rhythm normal, rate 90. Blood pressure, systolic 120, diastolic 90.

Liver dullness extended from the fifth interspace to two centimeters below the costal border in the right mamillary line; the lower border was smooth and not tender.

The spleen was palpable 2 cm. below the costal margin; it was definitely tender to the touch. The abdomen was universally tympanitic and distended; it was tender in the right lower quadrant. Rose spots were abundant on the abdomen and chest.

The pupils were mid-wide, equal, responsive to light and accommodation, the discs are normal. The patella and tendo-Achillis jerks were lively. The umbilical reflex was absent. The bladder and rectum were not controlled.

The urine was cloudy; specific gravity 1022; albumin in definite amount present; no sugar, leucocytes, erythrocytes, or bladder epithelium present; numerous motile organisms were seen. The Widal agglutination test was positive; the Wassermann reaction negative. The red cell count was 3,250,000; the white cell count 5,200; hemoglobin 60 per cent.

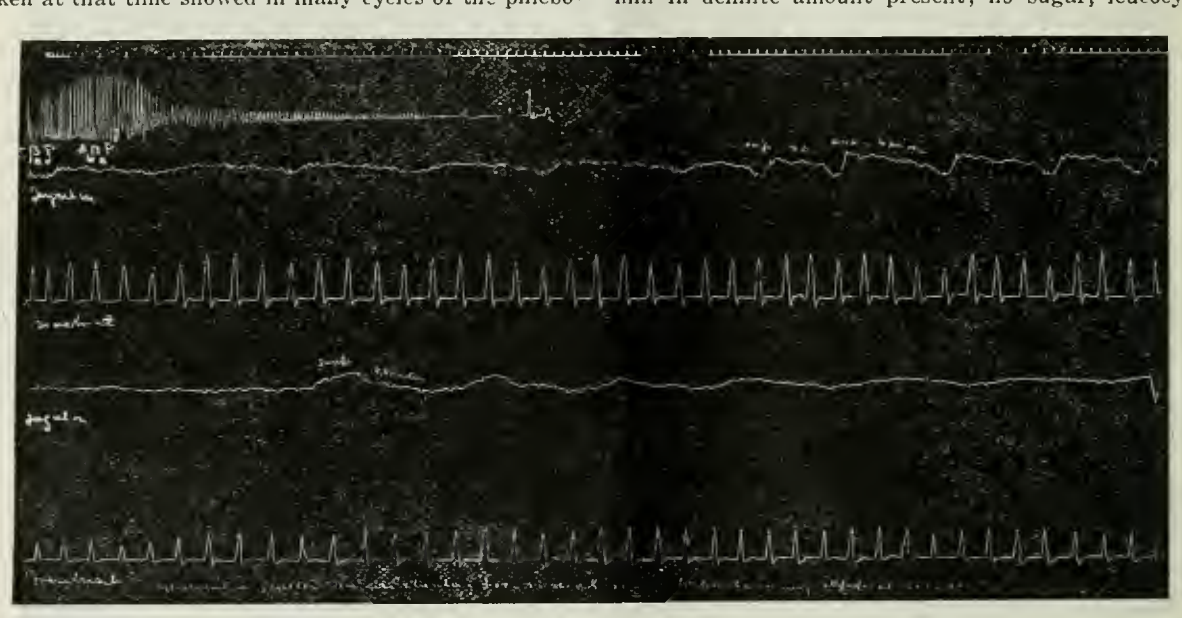

FIG. 7.—Case III. Auricular flutter occurring suddenly during convalescence from a very severe attack of typhoid fever. Auricular rate 300, radial rate 100. Normal rhythm was restored in five days with digitalis.

The patient's temperature ranged for a period of about six weeks from 102° to 104°. During the third week of the disease he had three large intestinal hemorrhages which nearly cost him his life, but they were controlled, and though his condition was desperate for days he gradually improved. At the beginning of the seventh week he developed a sharp attack of facial erysipelas which was easily controlled with ichthyol. A few days later his temperature and pulse fell to the normal, his mind became clear, he appreciated his surroundings, and his appetite became ravenous. He was much emaciated, having lost thirty pounds in weight.

Suddenly while in recumbency he was taken with a faint attack, became very pale, the pupils were widely dilated, and his eyes were turned upward and outward under the cover of the upper lid. He was absolutely unconscious, but had neither muscular twitchings nor convulsions. The attack lasted about five minutes. When he returned to consciousness he was bewildered and disoriented, his pulse was rapid but regular, respirations quickened, and he was quite cyanosed. He

had five attacks of a similar character during one week. I saw him in his last attack which was exactly similar to the one above described. His pulse was regular, feeble in volume, easily compressed, with the rate of 100; his jugulars were pulsating very rapidly, a series of fluttering wavelets which with a stop watch were counted at about 300 per minute. Polygraphic tracings were immediately taken which showed an auricular rate of 300, with regular rhythmic ventricular responses of 100 per minute, "3 to 1 heart block." His systolic blood pressure was 100 mm.Hg.; the diastolic 60. He was given 20 minims of tr. digitalis thrice daily for 6 days, when the normal rhythm was reestablished.

Three weeks later he was discharged, having had in the interim no return of the flutter.

89 Fourth Street.

COMPROMISING WITH CONSUMPTIVES.*

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I have written this paper because I feel that what has always been a difficult problem to me may be a source of difficulty to others, and that its frank discussion may lead to its solution. The question in brief is this: What is consumption? What does this word mean, both in diagnosis and treatment? Have we any definite, set, minimum standards or requirements that must be met before we can say that this or that patient is a consumptive and must be treated as such?

When I was in the medical school some fifteen or sixteen years ago the diagnosis of pulmonary tuberculosis rested largely on the finding of bacilli in the sputum; in their absence the signs in the lungs had to be very plain and distinct, including dullness, bronchial breathing, rales, etc., before a positive diagnosis was considered. At present we seem to be requiring less and less on which to base a diagnosis. In Massachusetts, with the establishment of local tuberculosis dispensaries in every town or city of 10,000 inhabitants or over, this problem is becoming acute. Physicians are in charge of these clinics whose business it is to discover cases of consumption. The result is that many cases are diagnosed as such on what I personally believe to be insufficient evidence.

Some physicians still demand the presence of bacilli in the sputum before making a positive diagnosis. Others demand definite signs in the lungs before so doing; while still others attach more value to the history and constitutional signs and symptoms than to signs in the chest. The result is chaos, as far as any definite fixed standards are concerned.

With the possible exception of syphilis, I know of no other subject of equal importance concerning the diagnosis and treatment of which there seems to be so much confusion and disagreement. In Massachusetts, for instance, one of our very best men, a strong believer in the value of percussion, has said that "interscapular dullness plus some constitutional signs," justifies a tentative diagnois of tuberculosis in childhood. Another physician of equally high standing justified his diagnosis of tuberculosis in a certain child on the ground of exposure from a grandmother and because the child lived in a notoriously crowded and unhealthy neighborhood. The two largest clinics in Boston, one devoted entirely to tuberculosis and the other, the Massachusetts General Hospital where I do my own work, are at great variance as to what constitutes tuberculosis.

Again, what do we mean by the words "treated as such" that I used above? To one group of physicians, prominent among whom I might name Dr. Joseph H. Pratt of Boston, adequate and proper treatment means home treatment. To others, and I place myself in this group, home treatment alone is not adequate and proper treatment. We believe that sanatorium treatment, for a while at least, is essential for the average patient's welfare. Dr. Pratt and others apparently are of the opinion that our sanatoria are but a waste of money, while I, having been intimately connected with their management in Massachusetts during the past ten years, naturally have a different opinion. And so I might go on indefinitely.

I do not believe that any one point of view either in diagnosis or treatment will prove to be entirely correct. Each one of us must be willing to give way and if necessary to compromise with what he believes to be the ideal course, or else little progress will be made. I do not like to compromise, nor do I like halfway measures of any kind. On the other hand, half a loaf is better than none, and it is better for a patient to do something that is right, even if it falls far short of the ideal, than to do nothing at all. It is all very well for the physician to demand complete evidence before making his diagnosis, and having made it, demand that every consumptive do something radical, give up his work, break up his family, and go to a sanatorium or elsewhere, but in many cases the physician must be content with less than this or else he will accomplish little.

So far as individuals are concerned, the "no compromise" attitude, in my own case at least, would mean that as soon as I had made a definite diagnosis I should advise every patient to give up everything and to go away to a sanatorium at once. This would be quite regardless of necessary sacrifices, such as breaking up the family, giving up work, and providing funds. Perhaps if we all assumed this attitude we might cure or arrest a few more consumptives than we are now doing. I doubt very much if the good we would accomplish, however, in this way, would offset the harm we would do in other ways. The following are a few striking cases in point:

Case 1.—A. Z., a Lithuanian of 29, married, with one small child, came to see me with a history of a sudden and fairly profuse hemorrhage. Family and previous history were absolutely negative. He was a strong finely built man looking the picture of health. Physical examination showed what appeared to be a typical tuberculous process at the right apex with dullness, slight alteration of breath and voice sounds, and rales. Aside from this I could find nothing abnormal. The blood, urine, temperature, and pulse were normal, while the sputum showed no tubercle bacilli, but many organisms inside and outside the cells resembling those of influenza. Here was enough evidence to justify a diagnosis of incipient pulmonary tuberculosis and to treat the patient as such which would have meant making him give up his work and as soon as possible go to a sanatorium. Nevertheless, I felt that this case would bear watching. I saw this man again two

*Read at the annual meeting of the American Climatological and Clinical Association, May 29, 1917.

weeks later and found the process at the right apex apparently clearing up. At a still later visit it had practically disappeared nor had there been any more blood. As before, the patient felt perfectly well and under my observation has continued so.

Here a compromise seemed justified as to both diagnosis and treatment. It would have been very easy to have stamped this man as a consumptive and to have entirely upset his life, for the time being at least. While I do not feel that this is altogether a safe course to advise general practitioners and students to pursue in that a hemorrhage with signs at one apex is usually enough on which to make a positive diagnosis, I am glad that in this instance I acted as I did.

Case 2.—I. L. This patient was a Hebrew of 33, married, who had just started out in business for himself. He had a very early tuberculous process first called to notice by a hemorrhage. His physical condition was excellent, but he was much depressed and worried. I doubt if I could have persuaded him to go to a sanatorium at first even had I advised it. Instead of doing this, however, I did my best to encourage him and cheer him up. I allowed him to keep general supervision over his store, but made him shorten his hours and report to me at frequent intervals. He finally of his own accord decided to quit work for a while and go away for a rest. He is steadily improving and has recently gone back to work.

Here the diagnosis of tuberculosis was never in doubt. So far, however, events have justified me in not making this man give up everything in order to go to a sanatorium. Time alone will show whether or not I have advised him wisely. Were he of a lower grade of intelligence or were there any constitutional signs or symptoms, I should undoubtedly have acted differently.

Case 3.—N. B. D. This patient, an intelligent man of 35, married, with two children and in comfortable circumstances, consulted me in June, 1916. My diagnosis at that time was incipient phthisis, although the sputum was repeatedly negative. There were a slightly elevated pulse and temperature and a few definite and persistent rales at the right apex. He lived outside the city with every facility for outdoor sleeping and proper hygiene. His work was not hard. I told him that I should place him on trial for a month and if at the end of that time he were not better he must take more radical measures. I have seen him every month up to the present, during which time he has steadily improved, and has gained in weight from 148 to over 160 lbs. In January, 1917, he caught cold and his sputum became positive for the first time, while the moisture at the right apex increased. I have talked with absolute frankness to this man and know that he understands the situation perfectly and fully realizes the chances he is taking. He has recently and entirely of his own accord gone to Saranac to stay as long as necessary.

An older physician, and one of the most eminent in the State, has seen this patient in consultation and fully approves of the course I have pursued. Indeed, he told me that he would consider it a calamity if he were made to break up his home and go away. On the other hand, I should consider it a greater calamity if he were to break down and in addition infect his children while under my care. This is a border-line case, and one concerning which I am frankly in doubt. Were he single and unattached, I should certainly have advised him to go to Saranac or elsewhere at once, but I am sure that he would not have gone; as things have turned out, this is very satisfactorily settled.

Case 4.—M. L. This patient, an unmarried woman of 45, had taught in a large public school for many years. She had had many burdens to bear outside of her school work and had carried a heavy load of financial worry and responsibility. Despite this she felt very well and consulted her physician more on account of her friends' wishes than for her own sake. Examination showed what was probably a chronic tuberculous process at both apices, dullness, altered voice and breath sounds, and, occasionally, a few dry squeaks. The scanty amount of sputum she was able to raise was negative. She had no cough. Temperature and pulse taken over a considerable period of time at home were normal. The patient herself except for being rather tired felt perfectly well. I found this a difficult problem. The local physician who had sent her to me did not like to take the responsibility of allowing her to continue her work. I took the matter up with the local health board. It was finally decided first, that the case was not to be officially reported, as this would at once make it necessary for her to give up her work, and second, that she was to report regularly every month to me and that the minute any active signs developed such as cough, sputum, etc., or as soon as I considered her in any way a danger to the children, she must give up teaching. This was made clear to the patient and to all concerned. So far she has done very well. Recently she has obtained leave of absence for a month and is going away, somewhat against her will, for a vacation which she has not had for five years. My last examination recently made shows the same signs in the lungs, a negative sputum, and excellent general condition. She plans to resume her work in the fall, providing I allow her to do so.

I do not doubt but that there are many physicians who consider the course I have followed in this instance to be radically wrong. Indeed, ten years ago I frankly admit I should have thought so myself. At present, however, I believe it to be a justifiable one, both from the point of view of the patient, who has sufficient intelligence to understand the situation thoroughly and to cooperate in every way, as well as in regard to the children, whom I do not consider to be running any risk.

Case 5.—G. H. This patient, a married woman of 42, consulted me in September, 1915. There was a history of profuse hemmorrhage of two or three cups of blood the previous May, following which she took a fairly strict outdoor rest treatment for a few months. Sputum had been repeatedly negative. Over the upper two-thirds of the left lung there was some dullness, with numerous rales and dry squeaks. Temperature and pulse were normal. My provisional diagnosis was tuberculosis, but I was unwilling to send this patient away or to do anything more radical than to make her lead a sensible quiet life at home. There were no children. I have seen her at regular intervals up to the present time. Always the sputum has been negative while the process in the lungs is steadily clearing up. The general condition has been excellent during this entire period. I have finally come to the conclusion that this is not a case of tuberculosis but rather one of apical bronchiectasis.

As things have turned out, I feel very glad now that I did not send this patient away to a sanatorium. Physically, such a course would have done no harm and possibly some good. From the social and mental standpoint, however, I am sure that it would have done harm if she had been definitely stamped as a consumptive.

Case 6.—Peter P., a wealthy young Italian, was referred to me in September, 1916, with a positive diagnosis of pulmonary tuberculosis and a positive sputum, both of which facts he himself knew. The signs in the lungs were slight, and the general physical condition was very good. He was extremely depressed and worried, however, so much so that were it not for an older brother of whom he was very fond he would have

preferred to do nothing at all for his health, and would have rather welcomed an early death. Three or four years previous, he had been excessively alcoholic; in addition, a neglected luetic infection had affected the central nervous system, causing various distressing symptoms. Although this man certainly knows that he has tuberculosis, and except for going to a sanatorium is living a sensible proper life in every way, I have never in his presence used the words "tuberculosis" or "consumption" at any time and do not intend to do so. It has seemed to me that he has enough to combat as it is without adding to his burdens. At present he is in California, where he went ostensibly on a business trip. As a matter of fact, it is more for health than business that he has gone, and of this he is perfectly aware. Dr. George Evans of San Francisco in a recent letter states that this patient came to him for a moderate hemorrhage. When he returns I shall be interested in finding out what course will be best to pursue under these circumstances.

CASE 7.—J. D. This patient is a married man of 45 and a clerk for many years in an office where the hours are favorable and where he works under the best hygienic conditions. He was referred to me because he had been refused life insurance on the ground that he was below normal weight, and because of certain suspicious signs in the lungs. He felt practically the same at the time of my examination as he had been feeling for many years. I found a chronic and very inactive process in the lungs with a positive sputum. I explained the situation in detail and told him that I would put him on trial and that providing he would see me once a month and would abide by my decision he need not give up his work or take any radical steps at present. I examined his wife whom I found to be strong and healthy. There were no children. The man for whom he worked willingly allowed him to come to the office an hour later and to leave an hour earlier than usual. So far he has done very well, and is gaining in weight and strength.

Here, again, there are doubtless many who would differ radically from me in the course I have advised in this instance. If the disease had shown any signs of activity in the way of temperature and pulse, and, indeed, if he had been younger, I should certainly have made him give up his work and devote his entire attention to his health. Again, were he financially differently situated I should likewise have advised his giving up everything. I believe that the course I have advised, however, is the best one in this individual case, but I am quite ready at any time to change my ideas should events prove that I am wrong.

Recently I was asked to prepare some definitions and minimum diagnostic standards for cases of tuberculosis with negative sputum for the purpose of the Framingham experiment. I found this a most difficult task. The final draft as accepted by the committee is as follows:

DEFINITIONS.

1. "Loss of weight." By loss of weight should be understood an explained loss of at least 5 per cent. below normal limits for that particular individual within four months' time.

2. "Loss of strength." By loss of strength in its pathological sense is meant an ease of tire which is unusual for that individual patient and which cannot be satisfactorily explained.

3. "Fever." An occasional temperature of 99° should not be considered fever. A temperature which persistently runs over 99° when taken at least four times a day over a period of one week should be considered of significance and to constitute fever.

4. "Elevation of pulse." Where the average normal pulse of the patient is already known, an elevation of 15 beats per minute when the pulse is taken quietly at home during various periods of the day should be considered abnormal. In cases where the average pulse is not known, and, of course this constitutes the majority of cases, we should consider an average pulse of 85 or over in men and 90 or over in women to be abnormal. The combination of a subnormal temperature and an elevated pulse as defined here should be considered of great importance.

5. "Hemorrhage." Any amount of blood, with or without sputum, requires medical investigation as to its course. Blood streaks, blood spots, etc., may or may not mean tuberculosis. On the other hand, a hemorrhage of one or two teaspoonfuls is presumptive evidence of the disease.

6. "Family History." An occasional case of tuberculosis in the patient's uncles, aunts, cousins, etc., should not be considered of importance. It is an important fact when the patient's immediate relatives, such as father, mother, or grandparents have been tuberculous.

7. "Exposure." Childhood exposure, no matter how slight, is of the greatest importance. Moderate exposure among normal, healthy adults of cleanly habits is of less importance. Of course, prolonged contact with unhygienic habits or surroundings may be a dangerous factor at any age.

8. "Cough." No cough is characteristic of tuberculosis. A persistent cough for six weeks requires investigation. Tuberculosis can exist without any cough whatsoever.

9. "Sputum." The presence of sputum is not necessary for a positive diagnosis. Constant sputum, with or without cough, requires investigation. A positive sputum following one or several laboratory examinations is not to be required for positive diagnosis.

10. "Hoarseness." Any hoarseness or a persistent "huskiness" requires investigation.

On a basis of these definitions the following minimum standards in the diagnosis of active tuberculosis have been formulated:

11. When the constitutional signs and symptoms and definite past history are absent or nearly so, there should be demanded definite signs in the lungs, including persistent rales at one or both apices. By "persistent" it is meant that the rales must be present after cough at two or more examinations, and that the patient must be under observation at least a month.

12. In the presence of constitutional signs and symptoms such as loss of weight and strength, etc., as defined above, there should be demanded some abnormality in the lungs, but not necessarily rales.

13. A process at the apices should be considered tuberculous, and a process at the base to be non-tuberculous until the contrary is proved.

14. A hemorrhage as defined above is evidence of active pulmonary tuberculosis until the contrary is proved.

15. One should consider a typical pleurisy with effusion as presumptive evidence of tuberculosis. One should not consider a dry pleurisy as conclusive evidence of active tuberculosis without other signs and symptoms.

16. Pain in the chest and shoulders, night sweats, digestive disorders, etc., may be present, and should be investigated.

17. In every doubtful case one should demand that the patient should be kept under observation for at least one month with repeated sputum examinations before making a definite diagnosis.

It remains to be seen whether or not these diagnostic standards will prove satisfactory for the Framingham experiment and for general purposes. At all events it is undoubtedly true that there must be many cases similar to the ones I have cited above, that are exceptions to these rules and in which compromises are necessary and justifiable.

29 Gloucester Street.

THE PATHOLOGICAL PHYSIOLOGY OF THE HEART AS REVEALED BY THE POLYGRAPH AND THE ELECTROCARDIOGRAPH.*

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We all bow in admiration to the master minds of medicine who by ordinary signs and records have interpreted many diseases and processes and built up a very complete system of diagnosis. Accurate observation, both in the laboratory and the ward must be intensively cultivated.

But it happens that many events in the circulation in well and sick people cannot be detected by the unaided senses. Consequently, the introduction of instrumental methods has contributed a vast sum of knowledge in a most important field of practice. Hence, a meeting of the Section on Pathology and Physiology would be incomplete indeed at the present time if it did not at least illustrate and enumerate the achievements of this new science, which was opened for the first time to the profession at large, but not to laboratory workers, by the publication of Mackenzie's great work on the heart in 1908.

I remember very distinctly the satisfaction of understanding, in a measure, for the first time, after reading Mackenzie on the nature of the condition then known as "nodal rhythm," and now known as auricular fibrillation; then the gradual elucidation of one irregularity after another through the past decade, as the Mackenzie polygraph, and later the electrocardiograph, furnished the definite records on which to classify cases.

In this science of abnormal myocardial function, the physicist, physiologist, and the pathologist, meet in close cooperation. The physicist supplies us with the instruments and teaches us the laws that govern the mechanical activities; the physiologist points out the healthful action of the organ, and the pathologist its disorders.

There is no more remarkable example of the application of physics to medicine than the electrocardiograph. This instrument is a string galvanometer, and a good brief description is found in Lewis' "Clinical Electrocardiography." He describes it nearly as follows: The instrument which is described is known as a "string galvanometer," the invention of Einthoven, a Dutch physiologist. It consists essentially of a powerful electromagnet, the poles of which are closely approximated; and of an extremely delicate conducting fiber of silvered quartz or glass which is stretched in the narrow gap between the two magnetic poles. If minute currents are led through this fiber as it lies in the magnetic field, the fiber moves in response to the tested current in a plain at right angles to the lines of magnetic force across the gap. The magnified shadow of the fiber is vertical, and is projected by means of an optical system and powerful light onto the horizontal slit of a camera; the shadow moves at right angles to and across the slit, and the movements are photographed on a sensitive film which travels behind the slit. The galvanometer is now made in New York City, and is a very serviceable instrument.

In practice, an electrode is attached to the right arm, the left arm, and the left leg of the patient, and a record is made of the three combinations that are possible in such an arrangement, namely: from the right arm to the left arm; from the right arm to the left leg; and from the left arm to the left leg. These are known respectively as Leads I, II and III.

The other instrument, which I am able to bring with me and show you, has contributed perhaps more to the knowledge of irregularities even than the electrocardiograph because of its wider distribution in use, and is known as the Mackenzie ink polygraph. To illustrate its universal applicability I show you over 2,500 tracings taken in actual clinical work. The movements due to the circulation are conveyed by means of a tube containing air, and registered by a tambour on which the lever rests.

The excursions of the lever are recorded on a moving strip of paper by pens moistened in ink. Of course, the instrument contains a clockwork arrangement for moving the paper, a time marker which marks dots at intervals of one-fifth of a second, and a special arrangement for getting the radial pulse. The instrument when once adjusted to the wrist and to the neck gives a simultaneous record of the wave motions in radial artery and jugular vein, and the observations can be continued as long as desired, which is very valuable when the heart only misbehaves once in a while and we want to know what the nature of the disorder is.

The pathological physiology of the heart, as revealed by the polygraph and electrocardiograph, has been classified into seven particular types of disorder. These types, as is true of all diseases, often merge one into the other, and two may be present at the same time. They are: (1) Sinus arrhythmia, (2) heart block, (3) premature contractions, (4) simple paroxysmal tachycardia, (5) auricular flutter, (6) auricular fibrillation, (7) alternation of the pulse.

Had this been a clinical meeting, it would have been a simple matter in this great city to have had examples of all these disorders before you.

Sinus arrhythmia is chiefly important because it is not of serious importance, and occurs as a

*Read before the Section of Pathology and Physiology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

physiological phenomenon in young children. It can be reproduced at any time in comparatively young people by taking a long breath. It consists of a difference in the length of the interval between the beats. When exaggerated in children it has sometimes led to the suspicion of myocarditis, and the children have been treated as invalids when they should have been playing out of doors. That can no longer happen under the advice of those who understand the use and interpretation of the polygraph.

The impulse of the heart ordinarily begins in the auricle and is transmitted later to the ventricle, so we have the auricle and ventricle contracting in rhythmic succession. If disease destroys the muscular contiguity or conductivity, we have the auricle and ventricle out of relation to each other. This has received the name of heart block, and is beautifully shown by the instrument described above, and it is due to this instrument that our knowledge of this condition exists.

In many people suffering from disturbed metabolism we find the heart apparently missing an occasional beat. The fact is, however, that the heart is not, as a rule, missing a beat, but the beat is occurring prematurely, and may pass unnoticed, while the succeeding beat is very large, and emphasizes the length of the quiet interval. This is called premature contraction.

When for any reason the heart abruptly becomes very rapid for a period and suddenly ceases to be rapid, we say that the person is suffering from paroxysmal tachycardia. This has been a most difficult field of investigation, and is still the ground of many disputed points. However, our instruments have disproved many previously held beliefs and pointed out not a few new facts.

One of the most recently recognized conditions is the extremely rapid though regular auricle, usually 250 to 300 per minute. It is always revealed by the electrocardiograph and occasionally by the polygraph.

The knowledge of auricular fibrillation is one of the most important contributions of clinical medicine that has come from the student of pathological physiology. In this condition there is a trembling palsy of the auricle, which transmits a vast number of impulses to the ventricle, and the ventricle becomes very rapid and irregular. It is the disease that yields most strikingly to the use of digitalis.

Alternation of the heart can be detected in many instances only by the polygraph. It is of extreme importance because it is a striking evidence of failure of the heart muscle. It consists of an alternation in the size of the beats.

These seven varieties of disorders of the heart beat have been worked out by the use of these instruments and found the groundwork of our analysis of living pathological hearts. It is indeed a most beautiful and interesting study, and I should be most happy to have any of the members of the association visit my cardiac laboratory at any time during the meeting and take part in the use of these instruments and examine the records.

109 East Sixty-first Street.

Treatment of Erysipelas.—Chlumsky gets the best results from a mixture of phenol, camphor, and alcohol with quinine inwardly.—*El Siglo Médico.*

PRACTICAL POINTS IN THE USE OF STROPHANTHUS.*

By EDWARD E. CORNWALL, M.D., F.A.C.P.,

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The rise of strophanthus in the general esteem of the medical profession was slow until recent years, when the introduction of strophanthin made it easy to demonstrate its extraordinary power as a heart stimulant. Boos says of strophanthin: "It is the one active principle of the digitalis group which approximates most closely in its action to the effects of the combined digitalis bodies as they occur in the leaves."

The preparations of strophanthus which need be considered are the tincture and strophanthin. The tincture was once said to be unreliable, and most writers on strophanthus have repeated the assertion; and more recently it has been stated as a partial explanation of this alleged unreliability, that the active principles are changed in the alimentary tract so that they lose part of their efficacy. This assertion has not received confirmation in the author's clinical experience of many years with this preparation. If unsatisfactory results have been obtained with the tincture, a possible explanation may lie in the fact that it is generally given in too large doses. There seems to be no reason for believing that the tincture of strophanthus is less reliable than the tincture of digitalis, or other vegetable tinctures.

Strophanthin is defined in the Pharmacopeia as a mixture of glucosides derived from *Strophanthus kombé.* As offered by reliable drug houses it is derived from that and other varieties of strophanthus. The strophanthin derived from *Strophanthus gratus* is said to be identical with the exceedingly toxic ouabain, and has a different dosage from that of the *Kombé;* and these facts, as Satterthwaite has pointed out, make caution advisable in its use.

The dosage of the tincture which has been found most effective by the author is much smaller than that recommended by most of the textbooks and drug catalogues, which give the average dose at about 8 minims, (range 3 to 15 minims). The author's regular dosage is from one and a half to 3 minims, given every four hours. The regular dosage of strophanthin, as the author uses it, ranges from 1 1000 grain to 1/250 grain, given every four hours or less often. These doses of the strophanthin made by a well-known manufacturing drug firm, whose product is the one most used by the author at the present time correspond to doses of the tincture of ¾ minim and 3 minims respectively, according to the statement of the manufacturers. Under certain conditions strophanthin may be given in larger doses, even as large as 1/100 grain, but such large doses should not be repeated oftener than once in twenty-four hours; and doses of 1/250 grain should not be continued for long at the four hours interval, except in extreme cases.

The dose of strophanthin as given in the Pharmacopeia is 1 200 grain. The dose of Merck's strophanthin is stated to be from 1/320 grain to 1/60 grain. The dose of the Thomas-Merck strophanthin, which is made from *Strophanthus gratus,*

*Read at the eighteenth annual meeting of the American Therapeutic Society, New York City, June 2, 1917.

is stated to be from 1/20 grain to 2/5 grain. The dose of the strophanthin of Burroughs, Welcome & Company is stated to be from 1/500 grain to 1/100 grain, the average dose being 1/200 grain. These doses are given for comparison with those mentioned in the preceding paragraph, which are the ones found most effective, as well as safe, by the author.

The tincture of strophanthus should be administered by mouth, well diluted with water. Stropahanthin is best given hypodermically, sublingually or intravenously. The intravenous method is theoretically the best for quick effect, but is not always convenient, and requires strict precautions in its employment, for it possesses a certain amount of danger. The hypodermic method is generally to be recommended, because it combines effectiveness with convenience and safety, and is within the capacity of the nurse to carry out. The objection of Boos, that hypodermic administration of strophanthin "causes most intense pain and disturbance," is not borne out by the author's experience; at least, he has received few complaints from patients of pain, although not infrequently local irritation was complained of which, however, was usually slight. One patient, who received not less than three hypodermic injections of strophanthin daily during the past eleven months, has not shown any local disturbance or felt more than a tingling sensation from some of the injections. By injecting deeply the local irritation can be minimized. The sublingual method, in which a hypodermic tablet is placed under the tongue, dissolved, and absorbed, is a convenient one which does away with the hypodermic technique.

An idiosyncrasy in regard to the effects of strophanthus is sometimes observed when the drug is taken by mouth, and this manifests itself by nausea, anorexia, or, most frequently, by diarrhea. This idiosyncrasy is not observed often enough to make it necessary to consider these gastrointestinal symptoms as regular effects of the drug. In a case where the tincture given by mouth produced them, and where strophanthin given sublingually also produced them in slight degree, these symptoms were not observed by the author when strophanthin was given hypodermically.

The general indications for the use of strophanthus are those of a direct heart stimulant. In any cases where the systolic output requires to be increased, this drug may be used. In this field it competes with digitalis, and, in the author's experience, has been found to have a wider range of applicability than digitalis. While in some cases of cardiac insufficiency, particularly those occurring in young adults with a comparatively healthy myocardium, digitalis may prove the more effective, the author has found strophanthus the more effective in all types of heart disease in children requiring a direct stimulant; also in mitral stenosis, in aortic incompetence, and in all cases where myocardial degeneration, acute or chronic, are present in notable degree. He has on many occasions given the two drugs for alternating periods of several days, and questioned the patient or nurse regarding the comparative results, and almost invariably the testimony has been in favor of strophanthus. Even in lost compensation from mitral incompetence in chronic valvular disease of inflammatory origin, which is considered the ideal field for the exhibition of the power of digitalis, the author has found strophanthus so effective and so free from unpleasant effects, administered in his preferred doses, that he has come to use it in that condition more or less regularly.

The contraindications to the use of strophanthus are not numerous. It is contraindicated in those cases where rest alone is sufficient to restore compensation. The gastrointestinal idiosyncrasy is a contraindication to its use by mouth, but not to the hypodermic administration of strophanthin. And it should not be given immediately after a strong course of digitalis.

Compare with these contraindications those of digitalis, viz.: ability of the heart to recover compensation by rest alone; childhood and old age; the existence of much myocardial degeneration, acute or chronic; acute endocarditis; mitral stenosis and usually aortic incompetence; atheromatous arteries; most conditions with high blood pressure; gastrointestinal irritation produced by its ingestion; its tendency to produce cumulative toxic effects; and its tendency to produce heart block.

On the other hand, strophanthus compares favorably with digitalis in the fact that it has few contraindications, and in the extent of its therapeutic range, and in that it has a special advantage in its freedom from cumulation.

Following are some accounts of the use of strophanthus in particular conditions, as the author has learned to use it.

In acute endocarditis and other acute inflammations of the heart with decompensation extensive enough to call for heart stimulation, tincture of strophanthus is given, usually in doses of two minims every four hours. In a child of three or four years, the usual dose is one-half minim and in older children, a minim or a minim and a half. In some forms of acute myocardial inflammation, notably diphtheretic myocarditis, the myocardium responds sluggishly to any heart stimulant, and the doses given may be a little larger than those mentioned above. It is considered undesirable to give direct heart stimulants in cases of acute inflammation of the heart, but when there is definite and progressive cardiac insufficiency, they are required just as in other cases of cardiac insufficiency.

In typhoid fever with notable signs of myocardial degeneration, tincture of strophanthus is given in doses of two and a half minims every four hours. In cases of acute cardiac failure strophanthin is given in good-sized doses. The author has seen remarkable improvement follow the hypodermic injection of 1/500 grain of strophanthin in a suddenly developed dilatation of the heart in a typhoid patient, who had walked around with his disease for two weeks. This dose was continued every four hours for a few days, and then tincture of strophanthus was substituted in the doses above mentioned. The patient remained in bed for three months and made a good recovery.

In the author's plan of heart stimulation in pneumonia, strophanthus occupies the chief place. Ordinarily it is given in small or moderate doses, one and a half, two, two and a half, or, exceptionally, three minims of the tincture every four hours; and

usually combined with strychnine sulphate in doses of one-sixtieth to one-thirtieth of a grain, every four hours. In extreme cases of myocardial failure, or in suddenly developed ones, strophanthin is given hypodermically, in doses of 1/500 grain, every four hours, or in a single dose of 1/100 grain or less. In an extreme case of cardiac failure, with a rapid and almost imperceptible pulse and extensive pulmonary edema, occurring in the fifth day of pneumonia, and apparently brought on by the fact that the patient got out of bed in delirium, the author has seen the hypodermic injection of 1 100 grain of strophanthin followed promptly by recovery of the heart to such an extent that the urgent symptoms cleared up, and the patient was able to go on to defervescence, which took place two days later. A physician of forty, who had shown symptoms of chronic myocardial degeneration for six months previous, developed pneumonia which extended over both left lobes, and in which the invading pneumococcus was identified as of type I (Cole's classification). The heart stimulation given throughout the active period of the disease consisted of strophanthin, 1/1000 grain, given hypodermically every four hours, with strychnine sulphate, 1/60 grain. On the eleventh day the patient defervesced by lysis.

In chronic valvular disease with decompensation of considerable degree, requiring direct heart stimulation, strophanthus tincture is given in doses of two or three minims every four hours, or strophanthin, 1/1000 grain, hypodermically, every four hours. In extreme decompensation in mitral stenosis, with auricular fibrillation, strophanthin is given hypodermically, every four hours, in doses of 1/500 grain, or even 1/250 grain, and usually morphine sulphate in combination with it in doses sufficient to alleviate the dyspnea and restlessness. This combination of strophanthin and morphine has given the author the best results which he has been able to obtain in this class of cases. After securing compensation, which is often fragile, it may be necessary to keep up the administration of strophanthus in reduced doses, and sometimes of the morphine also.

In conditions of chronic myocardial degeneration with loss of compensation, strophanthus is employed when strychnine is not sufficient. Ambulant cases are given one or two minims of the tincture every four hours, and cases confined to bed, one to three minims every four hours. In the severe cases strophanthin is given alone or with morphine, in the manner before described. The superiority of strophanthus over digitalis nowhere appears more clearly than in the treatment of advanced chronic myocardial degeneration.

In conclusion, the author desires to emphasize this point in the use of strophanthus: that it should be used in the right doses, which, except when used for emergencies, or after establishment of tolerance, seem to be much smaller than those which have been generally recommended; for it is only by using it in the right doses that the best results can be obtained. There is reason to suspect that when given in excessive doses, especially if long continued, it can injure the heart, perhaps more than digitalis does.

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SOME SUGGESTIONS REGARDING THE URETHRITIS PATIENT.

By WALTER S. REYNOLDS, M.D.,
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In the treatment of urethritis I have been impressed with the fact that while great attention is paid to the application of medicinal measures other matters of scarcely less importance are not infrequently apt to be neglected. Little details which to the physician may seem trivial, or so simple as to require no detailed explanation, are not infrequently matters with which the patient has had no experience. He may endeavor to use his best judgment in the matter, but, lacking experience or knowledge, he is liable to error or mistake which may more or less seriously retard recovery or interfere with treatment. To bring these matters to attention and to offer some suggestions regarding diagnosis is the object of this paper.

One of the most striking illustrations of the necessity of fully instructing patients came under my observation several years ago. It made a lasting impression on me, and taught me the necessity of going fully into details with patients on any matter regarding treatment which it may be necessary for them to carry out. A young woman came to my office in great haste and anxiety. She had been ordered by her physician to use as a douche a mild solution of carbolic acid. No directions had been given as to the manner in which the solution was to be prepared, and, without giving the matter any consideration, she had poured the required amount of strong carbolic acid into the douche bag, and then, adding the water, proceeded to use the douche. The result may be imagined.

Preliminary to a consideration of the necessary instructions to the patient with urethritis, a few words regarding diagnosis may not be out of place, for on a correct diagnosis depends much of our successful management of the case.

The importance of a complete history should not be underestimated. This is much more important in chronic urethritis cases than I believe is generally supposed, for the history thus obtained not only frequently aids in the diagnosis but may also be of much assistance in formulating a suitable line of treatment. It may also aid in determining the cause of the urethritis. In acute urethritis a profuse purulent discharge does not necessarily imply a gonococcic infection, and in the less acute or chronic stages, stricture, with or without alcoholic or sexual excesses, prostatitis, stone, and papilloma are only a few of the causes which may be suspected by careful history taking.

Microscopical examination of the discharge seems hardly necessary to mention, and yet how often is it neglected. Routine examination affords much valuable information, especially in the acute stages of the disease. These, together with the urinary examinations and the symptoms of the patient, give us much information as to the progress of the disease and the effect of treatment. It must be remembered, when noting the appearance of the urine, that the interval of time since the previous urination must be taken into account in making comparison with a previous specimen, or erroneous conclusions may be drawn.

In chronic cases, urethroscopic examinations are of the utmost importance. A correct understanding of the cause of the trouble can seldom be appreciated without it, and treatment which does not take into consideration this fact is likely to prove disappointing and to lead many to the conclusion that chronic urethritis is an incurable disease.

One other point in connection with the diagnosis deserves mention: that is the inspection of the parts. A patient's word is poor evidence as to the condition. He is well meaning, but untrustworthy, in this respect. As many things may be seen by the trained observer that escape the patient's attention, the only reliable evidence is that which we see ourselves. The physician should never be satisfied with being told that there is a discharge; he should know the character, amount, and length of time it has been allowed to accumulate before observation. To illustrate the necessity of careful inspection, I shall refer to an experience which I recently had in visiting a clinic in this city. A patient presented himself with a profuse purulent discharge. The assistant whose duty it was to examine the patient, a young man not without some considerable experience in the work, noted the presence of the discharge but failed to see that it was coming from beneath a somewhat phimotic prepuce and not from the urethra. In such conditions a cleansing of the preputial opening and an examination of the meatus and the urine will serve to reveal the source of the pus.

One of the first considerations in the treatment of urethritis is cleanliness. This includes not only such measures as washing and cleansing the parts, but also those of proper dressings to keep the parts as free as possible from discharge. This applies more particularly to the acute cases, where the discharge is more profuse than in the chronic cases. It is not at all infrequent to see men who are careful regarding the regularity of their bath negligent regarding the condition of the preputial cavity. Under such circumstances it requires only slight causes to set up a balanitis or balanoposthitis, a complication not infrequent in urethritis where cleanliness is neglected. When the preputial opening is small, the difficulty of keeping the parts clean is greater than when the prepuce can be freely retracted. In such cases a syringe can be used to wash out the preputial cavity and lessen the chances of infection. This is far better than to be obliged to incise the foreskin and incur the possibility of infecting the wound.

I have seen all sorts of dressings which patients have used for the purpose of cleanliness, even to no dressing at all, which, aside from the filthiness, certainly fulfills one of the objects of any dressing, which is the removal of the discharge. The best form of dressing, which in my opinion fulfills all the requirements, is that of the square of gauze with a hole in the center large enough to slip easily over the glans penis. This allows free drainage, is easily applied, and when replaced sufficiently often keeps the parts fairly clean, and is certainly much better than any bag and cotton arrangement or wad of cotton stuck in the preputial opening, both of which tend to dam the discharge back in the urethra rather than allow its escape. If the square of gauze is used, the patient should be warned, as he should be in any case, against allowing the prepuce to remain retracted back of the glans with the liability to the production of an irreducible paraphymosis.

Whatever form of dressing is used, it is important that directions be given for its destruction and the care of the hands after removing the dressing. It would hardly seem necessary to refer to this, but the negligence and carelessness of some patients, no matter how intelligent, is sometimes astonishing.

Regulation of diet may not be considered of very great importance or deserving serious attention, and directions are often given in only a perfunctory way. But when we consider that the composition of the urinary secretion depends to a large extent upon the diet, and that the urine must be passed over a mucous membrane already inflamed by the invasion of some pathogenic organism, it can be readily seen that the question of diet must play an important role in the treatment of the disease. Indeed, errors of diet may in some instances be directly responsible for an attack of urethritis, or for the lighting up of an old trouble. Such cases have not infrequently come under my observation. Specific instructions should be clearly given as to what articles of diet may be allowed. Directions to eat plain and simple food may be sufficiently understood by the person giving the directions, but may be interpreted in various ways by different people. In this, as in every other disease, each individual's taste and constitutional peculiarities have to be considered in the matter of diet, for "what's one man's meat may be another man's poison." For instance, milk, ordinarily a simple and easily digested food, may for some be a highly indigestible food.

Regulation of the diet should also have regard to the proper regulation of the bowels. Too great restriction may interfere with regularity of bowel movement, a matter of greatest importance. It may be necessary to resort to cathartics, but if this can be avoided by judicious regulation of the diet it is, in my opinion, far better. In some instances, injudicious catharsis has resulted in epididymitis. While considering the subject of diet we must direct attention to the necessity of maintaining an abundant urinary secretion. This is to be accomplished, of course, by the use of water in sufficient amount to secure the desired result. Individuals differ greatly in the activity of the kidney function, and the amount of water required to keep the urine in the desired condition must differ in each case. The administration of water serves two purposes: it insures frequent washing out of the urethra in the best possible way, and also serves to render the urine bland and non-irritating. As it is impossible to say how much water may be necessary, I have found it best to direct that sufficient be drunk to keep the color of the urine a pale straw color. A point of some practical importance is the time at which the water is to be drunk. If it is used freely in the late afternoon or evening it may interfere with sleep by the frequent calls to empty the bladder. I have sometimes seen this mistaken for a sign of involvement of the posterior urethra, and it is best, therefore, to order that water be freely taken in the morning, and in smaller amounts

later in the day. Patients seldom fail to take medicines regularly as directed, but the directions regarding the use of water often require frequent repetition, and constant observation of the urine. Plain water may be distasteful to some patients, in which case a lithia tablet added to the water, or the use of very weak tea, may overcome the difficulty.

What restrictions with regard to exercise are we to place on the patient with urethritis? In the acute stage, of course, it is a more important consideration than in the chronic stage of the disease, though even then a certain amount of restriction is necessary. I am firmly of the opinion that if patients in the acute stage were confined to bed better results could often be obtained. This is, however, seldom possible, so we are generally obliged to content ourselves with such restrictions as may be possible under the circumstances, and to prohibit those activities which would be manifestly harmful, and yet allow the individual to pursue his usual avocation. The manual laborer can, of course, seldom observe the injunctions which might be placed on a man in some other line of work, but all can be impressed with the necessity of care and the importance of avoiding any extra or unnecessary activity.

In the treatment of urethritis, injections are usually employed at some time during the course of the disease. All sorts of syringes, good, bad, and indifferent, are sold, usually on the recommendation of the druggist, who knows nothing of the requirements of the particular individual to whom they are sold. A cheap syringe is seldom to be advised. A make of syringe which I have found in every way satisfactory is not obtainable at the present time on account of the war. This particular syringe came in several different styles, so that a proper tip could be selected for the needs of the patient. The piston worked freely and smoothly, and did not allow the fluid to leak backward as it does so frequently in the cheaper kinds. It is to be hoped that our American manufacturers will supply us with a similar model, though I know of none on the market at present.

The selection of a syringe is a matter of no little importance, and must be decided according to the necessities and requirements of the individual patient. The kind of syringe best adapted for the man whose meatus is small may be entirely unfit for one of the opposite sort. Whether a syringe with a soft rubber tip meets the indications better than one of a different kind can be decided only by the observation of the physician. One of the objections to the soft rubber tip is the difficulty of cleansing it.

When it has been decided what sort of syringe is best adapted for the patient's use he should be given definite instructions as to its proper employment. It seems a very simple thing to inject a solution into the urethra, and yet I have found that few patients know how to use a syringe properly.

Cleanliness, gentleness, and thoroughness are essentials to the proper use of hand injections. The syringe is to be kept clean by washing; the solution, by pouring a sufficient quantity to fill the syringe into a small glass, and then filling the syringe. To insure urethral cleansing the patient should urinate before using the injection.

Too much emphasis cannot be laid on gentleness in urethral medication. Not only is the selection of a proper syringe most essential to this, but the manner in which the injection is used is important. My method is to direct that the solution be used at about body temperature. The syringe is filled, and held in the right hand, while the penis is held by the other hand at such an angle to the body that the penoscrotal curve of the urethra is straightened, the penis being at the same time drawn somewhat out so as to obliterate as far as possible the folds of the urethral mucous membrane. The tip of the syringe is now firmly held at the meatus and the solution slowly and gently injected, only a sufficient quantity being used to distend the urethra comfortably. If it is desired to hold the solution in the urethra, the fingers grasp the meatal opening as the syringe is removed and compress it the required length of time.

A suspensory or jockstrap is often advisable, and at times a necessity, for the man with urethritis. Men with varicocele, which perhaps ordinarily may give no trouble, are particularly liable to epididymitis during an attack of urethritis, and in such cases a support is always advisable. The suspensory is, I believe, generally preferable to the jockstrap. A suspensory, to be serviceable, should be properly fitted, otherwise it may do more harm than good. I have seen cases where an ill-fitting suspensory was responsible for the development of epididymitis. The physician should be prepared to advise some particular make which can be depended on to meet the requirements. He should also see that it is properly adjusted so that the scrotum is well supported, but without undue constriction of any part.

The wearing of a suspensory after definite indications for its use have ceased to exist is not to be commended. There are some men who after having a support for a short time feel that it is impossible to do without it, and continue to wear it as a matter of habit. It is always well to tell a man, when advising the use of a suspensory, that it is a temporary expedient, which is to be discontinued as soon as possible. Where it is necessary to continue the use of a support for any length of time those made of silk are much more comfortable, especially in the summer, than the heavier cotton ones.

In this paper I have endeavored to bring forward some of the things which, after a considerable experience in the treatment of this disease, I believe are worthy of more consideration and attention than they sometimes receive, and to suggest rather than to advise particular ways or methods regarding them, realizing that individuals and not methods must be considered in dealing with them.

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Addison's Disease in a Child of Thirteen Years.—Comby relates a typical case of this affection ending in sudden death. Autopsy revealed old pleural adhesions with lungs free and no mediastinal adenopathy. The left capsule was the seat of caseous nodules while the right one was replaced by a pocket of pus.—*La Presse Médicale.*

THE TIME ELEMENT IN SOME PHYSICAL PROCESSES.

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WHATEVER qualifying definition of the vocable "time" one may adopt in other associations, the term, when relevant to the physician's province, signifies the relative sequence of events in the history of some abnormal physical state. It is familiar that an apparently protracted series of experiences may occur in a dream that chronologically is but momentary. Sometimes persons who have been under only brief minor anesthesia relate that they endured apparently long protracted distress, quite at variance with their transitory stupefaction. Drug habitues will in fancy tread the columned corridors of their nebular palaces for days, nor feel the pangs of hunger or thirst. In reality it is but a "dope-dream" of brief duration. To them time may fly as with the wings of Mercury or trudge with leaden heels. Some people, when ill, even in the absence of delirium, have defective conception of the passing of days. Patients will insist that they "never slept a wink last night," whereas a trustworthy nurse will report that many hours were spent in slumber. So time is a more or less relative term from an invalid's viewpoint.

Merely casual observation would probably leave one under the impression that chemical reactions are but variations of an expeditious process, of which the quickly effervescing Seidlitz powder is an exponent example. In reality there are chemical processes whose completion demands long periods of time; sometimes months, even years. To the physician the chronology of spontaneous biochemical processes must ever prove of singular interest, for by the designed promotion or retardation of the same he may hope to effect therapeutic results which nature in the present status of its routine attains only inadequately. When an individual contracts diphtheria, a variable period of incubation intervenes before the noxious toxins begin to be produced and intromitted into the blood and lymph currents. If the victim of such invasion be possessed within himself of sufficient antitoxin to counteract the baneful effects of the toxins, or if, within his economy, the antitoxin be produced in proper amplitude for maintenance of equilibration, the prospect is propitious. In a large percentage of cases, however, this happy equipoise does not prevail. The toxins are usually generated so rapidly that the patient is likely to succumb before the thwarting antitoxin can be autogenetically produced in adequate copiousness. In this extremity an antitoxin borrowed from a previously and designedly inoculated animal is introduced, and forthwith the neutralization of the toxins begins and goes on apace. Granted an adequate period of time, the individual himself would probably propagate the requisite units of antitoxin. Redoubled acceleration of this often tardy function would then effect the same result as the prevalent use of equine antidiphtheria serum.

Early in the last century Berzelius directed attention to the circumstance that in a great number of cases the mere presence of a third substance induces an inordinate acceleration of a chemical reaction, although apparently not itself participating reactively therein. This third substance can be recovered unchanged upon completion of the reaction. He called this process catalysis. Platinum is the most familiar catalyser, and the manner in which it expedites certain chemical processes borders on the marvelous. It was soon discovered that catalysts are present in living cells, in which alliance they are referred to as enzymes or ferments, but their intrinsic character is still obscure. It is, however, known that such catalytic agents, while exercising their functions, in the human economy, take great precedence in time over any confirmatory experiments performed in the laboratory, even under the most propitious circumstances. Manifestly, then, an elusive third element participates in physiological processes that evince variable degrees of celerity, and consequently is a dominant hastening or temporizing factor.

Arrhenius formulated the theory that electrolytes are substances which, in solution, are separated into electrically charged ions. It turns out that with all electrolytes disassociation increases progressively with a rise in temperature. In general physiology this law of Arrhenius applies to vital processes in animals and plans just as it does in test tubes. The slow rate of the heart beat in cold blooded animals and the feverish celerity of the same in warm blooded ones suffering from some pathological condition are equally subject to this law.

It is conceivable that accelerating the production of antigens, and thereby retarding the multiplication of the invading hosts, regardless of so-called antisepsis, by increasing the activity of languid, yet endowed defensive entities, would be a judicious procedure. Or, if this prove unavailing, the institution of measures to militate against the fecundity of the infective organism. The latter method is pursued advantageously when ice is applied over an infected area. In order to "gain time" for the production of an army of phagocytes, we chill the invaders, which are notably more vulnerable to the benumbing influence of a low temperature than are the body's inherent defenders. Similarly, an acceleration of the healing process of fractured bones would be a desideratum. That a method of "speeding up" the union of fractures may be developed is probably not chimerical.

The impression formerly prevailed that latent life, such as exists in vegetable seeds and the multifarious bacteria and germs, could survive, even under the most favorable conditions, for but a limited term; but it is now known that temperatures low enough to impede, yet not destroy the germinating principle, will conserve the same for an unlimited period. Svante Arrhenius, the Swedish physicist, has propounded a hypothesis wherein he sets forth that intense cold retards, in certain ratio, such chemical reactions as would cause loss of budding power of seeds. He hazards the proposition that the germinal power of spores would not deteriorate any more during 3,000,000 years if kept at 220 degrees below zero than it would during one single day if kept at 10 degrees above zero.

P. Becquerel is authority for the statement that various seeds of some fifty species had retained

their vitality after having lain in a museum during 25 to 85 years.

Giglioli (see *Nature*, 1895, p. 54) kept seeds in hermetically sealed tubes containing certain dry gases, including such poisons as chlorine, arseniureted and sulphureted hydrogen, and carbon monoxide. He declared that seeds could survive in these poisonous surroundings during the entire period covered by his experiments, namely 15 to 16 years.

Professor Jacques Loeb, H. Charlton Bastian and others have devoted much study to the problem of spontaneous generation. When one reads their conclusions the impression remains that the element of time entering into such a procedure must ever be a bar to the satisfactory elucidation of so abstruse a problem, and that one cannot reasonably hope to reproduce in the laboratory an evolution in which a very long period of time was in all probability of essence.

Pondering the feature which time plays in all physical functions, and considering its appositeness to certain processes in the human economy, should facilitate comprehension of some sporadic pathological recurrences or recrudescences which the physician encounters. Many factors entering into the perplexing periodicity or obscure desultoriness of successive epidemics remain vague. The time element is undoubtedly one determinative agent. Many bacteria are probably aoristically torpid, but what determines the variable periods of rest and activity is beyond our ken. At one time it was generally believed that the severance of tissue from an individual implied prompt necrosis of such structure. Yet Dr. Carrel has accomplished the seemingly impossible by preserving, in a latent state, certain tissues which he had taken from animals. Safeguarding such tissues in sterilized vaseline against vitiation by the air, he was able, after forty days, to implant the same successfully upon or into the bodies of members of the same species. What stayed the ruthless hand of time? What was the animative element dominating the severed structures so that they again functionated when they became integrant parts of a new economy? It is a moot question what elements, at the dawn of evolutionary development, entered into the establishment of the familiar periodicity governing ovulation and gestation. As the time periods approximately correspond with lunar variations, it was popularly believed that the moon had something to do with the monthly (mensis) discharge. Darwin attributed this regularity to the influence of the tides, believing that the food supply underwent changes from week to week, and that the vital functions of individuals existing under such conditions for innumerable generations would probably run their courses in regular weekly periods or multiples thereof. Just why some species should not be governed by the same conditions that led to the establishment of such definite periodicity in others must remain problematical.

It is interesting to note how septenary periods prevail in the generative pendencies of some animals. The period of gestation in dogs is 63 days, in hogs 112 days, in mares 210 days. The pigeon hatches her eggs in 14 days, the chicken in 21 days, the duck in 28 days, the ostrich in 49 days.

It is a familiar circumstance that cerebration takes place at various rates of speed in different individuals and at a variable rate in the same individual under dissimilar conditions. There is a wide range between the time required for mental processes by the child afflicted with aprosexia and the inexplicable rapidity of brain functioning evinced by so-called mathematical prodigies; and between these extremes one notes varying degrees of rapidity or protraction of intellection, almost prompting the use of distinguishing terms, such as reverie and intuition.

Taking one thing with another, time is a regnant element in all physical functions. If the ratio of respective reaction velocities in biochemical concatenations were determinable, a new therapeutic era would be dawning, for procedures might be evolved to stabilize the several counteractive processes, so as to be isochronous or heterochronous *pro re nata*.

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Medicolegal Notes.

Qualification of Expert—"Surgery."—In an action on an accident policy objection was made that a medical witness was not shown to be an expert in the matter about which he was allowed to testify (the beneficiary having claimed that the deceased died from wounds and the insurance company that he died from typhoid fever). It was held that the objection was not well taken. The witness said he was a surgeon; he did not say he was a physician. In a narrow technical sense surgery may consist in the treatment of injuries, deformities, or diseases by mechanical operations only; but a surgeon must know—the law requires him to know—the progress, manifestations, and results of the diseases and injuries which he treats, and hence it was held that the witness said enough of himself to show that he was qualified to speak as an expert of those matters about which he testified.—Maryland Casualty Co. vs. McCallow, Alabama Supreme Court, 75 So. 902.

Illegal Practice of Medicine.—It is held that under the Pennsylvania acts of 1911 and 1914 a person may be convicted of practising medicine and surgery who holds himself out as a "doctor" under the name of a "chiropractic" and professes to treat nervous diseases, nerve displacement, and nerve impingements by thrust handling and manual treatment, and by pressure and heat. The court said, in part: "The literature of the profession, as well as the speech of the common people, understand the practice of medicine and surgery to include the investigation of causes of disease, and by the use of medicines and drugs, instruments, and appliances, to cure, mitigate, and alleviate bodily disease and physical derangements. There never has been and cannot be a complete separation between the practice of medicine and surgery as they have been practised and understood by the most learned in the profession. The principles of both are the same throughout, and no one is fully qualified to practise either who does not understand the fundamental principles of both. The statutory requirements of recent years have been deemed necessary to protect the public from imposition and fraudulent practices, and have resulted in subdivisions into departments, by pretentious specialists, so as to evade the statutory requirements of general professional qualifications. New and coined words are used to represent a particular branch of medicine or surgery, or a departure from recognized methods and practices. In most instances they are deceptive and artful devices to impose on the public and increase the necessity for statutory regulation. . . . This question has been fully considered by the courts of other States, under similar statutes, and all support the conclusion reached by the court below."—Commonwealth vs. Byrd, 64 Pa. Superior Court 108.

Military Medicine.

LETTERS FROM AN M. M. R. C.

THERE is a definite undercurrent of feeling among the men of the Officers of the Medical Reserve that the Government should without delay frame up laws for adequate insurance protection for them. They feel that if they are maimed by any accident received in line of duty they should receive the same pension that is now accorded the doctor of the regular army. They rightly contend that they take the same chances as the latter and should meet the same consideration. There is also considerable feeling that a majority is the highest rung of the ladder so far as they are concerned. It leads to a sentiment that finds expression on the lips of many: "Well, when I get to be a major that will be about all I want to see!" Of course, in the first batch of appointments some men received their commission as major who really could not measure up to a high standard of efficiency. That such mistakes were bound to occur at first is quite excusable and of trivial importance. The training the men are put to and the more or less continuous observance of their characteristics and bearing quickly eliminate the undesirable major from filling a post of responsibility. He will remain major and draw the pay of his rank, but his responsibilities will always be subordinate. It will not be surprising if before long the pipings of discontent now heard in subdued murmurs from many small tongues will find vent in organization and a single authoritative voice will represent the feelings of the Medical Reserve Corps as a whole. The number of men now in this body must be very near twenty thousand at the moment of writing. They already far outnumber the regular army doctors. Each member of the Medical Reserves has more or less political influence in his own home town. Their forces are drawn from every county of the United States. Would it be surprising that a request sent to every senator or representative would have a favorable hearing? I doubt if the regular army can withstand the pressure of what this organization may consider its fair due when the time comes.

There is a great universal feeling of disorganization among the old men of the Medical Officers Training Camp as soon as the time of their probation and training is completed and assignments to active duty at different posts are started. They do not all go out at the same time and the disorganization I speak of affects to a marked degree those left behind and awaiting orders. An extreme irritability and nervousness is noted among this group. They watch every messenger boy coming up to headquarters with telegrams in their hands. Their eyes follow them hungrily, inwardly praying that the message is for them. Their morale, which has slumped since their companions in training have passed on, makes them poor companions for the new officers just arriving in camp for training. It would be much better for the latter if the barrack was swept almost clean of old men before the new ones were taken in. The subject of assignment to duty is one of considerable interest to the medical officer. About the middle of the training course all men are asked to write down their specialty if they have one, their experience in this line, and the position they would like to fill in the army. These questions are only put to the men who are not already assigned to a hospital unit or awaiting results of examination for the regular army. Most of the men set themselves down as being surgeons and ask for field hospital service. What they ask for and what they get are two entirely different things. The probabilities are that they will be assigned to regimental attachment. They may remain in this position for the balance of their time in service or after a month or two will be assigned to some other branch of the service. The most likely situation for a man to do actual operative work would be to be assigned as assistant to a division surgeon. These appointments are few and far between and depend a great deal on how your company commander feels toward you personally and that the same company commander himself is going to be promoted to the rank of division surgeon which is colonel. A regimental attachment, which is the most common assignment, carries the following work with it: sooner or later the surgeon will be assigned to a regular regiment which is either in the field or what is more likely already in barracks in one of the many army posts. The regiment may be infantry, cavalry, or artillery. Besides looking after the men who are ill at this post, he has charge of the officers' wives and children who may need his attention. He also has to supervise the carrying out of the proper sanitation rules prescribed. Before he reaches this final detail he will probably be given service in one of the new cantonments examining recruits and doing sanitation duty. Of course all the army posts of the country will be kept going and in full operation, no matter how many troops are sent over to Europe. This means that many men will not see service on the other side. Their work will be done at home, or in the Philippines, or Honolulu, for, of course, these posts will be kept filled. In connection with the Philippines it will be of interest to some that baldheaded men are undesirable to fill these tropical positions. Every man assigned to regimental work will find himself a part of the following complement: One major, one or two captains, and the same number of first lieutenants. This staff will have direct charge of the hospital corps, which may consist of thirty men and the regimental band.

The man who limits his specialty to one branch is more apt to receive his active assignment to a desirable post than the man who has several specialties. For instance, the man who specializes on the eye will probably be sent to the aviation camp at Mineola, while the man who says that he specializes in eyes, nose, and throat will get an assignment to Fort Sill, Oklahoma, or some other place. The man who says he is a specialist in bacteriology will probably be sent on to the Rockefeller Institute for further instruction. Many wonder that obstetrics should be put down in the list of qualifications you are asked about. The answer is simple. If some colonel or other officer in a fort out West is about to have his wife confined and for some reason does not think very much of the doctor at his post to take charge during this delicate operation, he will send in a request for the latter's transfer and that a doctor capable in midwifery be sent to his post. It is easier for him to do this now

with a new bunch of Medical Reserves to call on than it was before. As in ordinary life, women have their preferences, and if for any reason the post surgeon does not make a hit with them it will not be long before they bring their feelings to the attention of their better half. This will account for the specialist in children's diseases and others that seem unintelligible as pertaining to army life at first. As new situations arise, the men in training camp toward the end of their service are given chances to go on various detachments. In the first class in instruction there was an occasional call for volunteers to go to France. This call is no longer heard.

The Administration of Anesthetics at the Front.—Geoffrey Marshall, from the point of view of the anesthetist, divides wounded men into three main classes: (1) The lightly wounded. (2) Those suffering from serious wounds with more or less shock and hemorrhage, the two factors being commonly associated. (3) Those suffering from a severe degree of sepsis, especially anaerobic infection. The choice of anesthetic depends on which of these classes the patient belongs to, as well as the region of the body injured.

The patients lightly wounded are good subjects for anesthesia, so that the chief desiderata are safety, speed, and convenience. The ideal anesthetic is one by which induction is rapid and recovery complete a few minutes after operation, so that the patient is fit for early removal by ambulance train. Gas and oxygen meet these requirements best. When this method is not available, ether administered as a warm vapor by "Shipway's apparatus," should be used, as both induction and recovery are more rapid than with the open method. Local anesthesia can be employed in only a few cases.

In the more seriously wounded safety is the one consideration, and an anesthetic must be employed which will minimize shock. Spinal anesthesia has not, so far, met the requirements, as shown by an analysis of fifty consecutive cases operated on at a clearing station for wounds of the lower extremities under stovaine anesthesia. This is particularly true in the man who has lost blood and whose wounds are less than forty hours old. A man suffering from the shock of a recently shattered limb and who has to undergo the further shock of an amputation is an extremely unfavorable subject for anesthesia. The mortality can be greatly reduced by the correct procedure. The patient must be put to bed and surrounded by hot water bottles or a hot air bath. No matter how urgent the operation it is useless until the patient has been thoroughly warmed up. Morphine should be withheld before operation or given only in small doses. Gas and oxygen should be the anesthetic used for operation, as results are so much better with this mixture that no other anesthetic is justifiable. If chloroform be used, the patient's condition will deteriorate during the administration, and he will not rally afterwards. With inhalation ether the condition may improve and the blood pressure rise during operation, but there will be a collapse during the next two hours. With intravenous ether the temporary improvement is more striking and the after-collapse more profound and more fatal.

Shock is a condition which still evades precise definition, although seen so commonly in wounded men. The injuries which cause it are almost always severe in themselves. Shock by the various known methods should always be treated before operation. The administration of chloroform, ether, and morphine increases shock.

Operations on the head may be performed under local anesthesia. A solution of novocaine and adrenalin is hypodermically injected into the scalp surrounding the site of injury. When forcible cutting of bone is to be done, hyoscine and morphine should be given an hour before operation. General anesthesia by Shipway's apparatus may be given. A warmed mixture of ether and oxygen is administered through a catheter passed down the more patent of the two nostrils.

In wounds of the chest ether should not be administered to a patient with perforating wound, as it usually provokes fresh intrathoracic hemorrhage. For small operations, such as the resection of a rib, local anesthesia should be used. For more extensive operations, a preliminary injection of morphine, grain 1/6, hyoscine, grain 1/100, and atropine, grain 1/100 is given, followed by a minimal amount of warm chloroform vapor with oxygen.

For wounds of the abdomen the most satisfactory anesthetic is a warmed mixture of ether vapor and oxygen. Easier breathing, diminished heat loss, less vomiting afterwards, as well as rapid and quiet induction at the beginning are obtained. This method also tends to diminish the sequela of bronchitis. By the open method of ether administration, 54 per cent. of these cases developed bronchitis, whereas by the warm vapor method, the percentage of bronchitis was reduced to 14.7.

The patient whose condition is rendered grave by sepsis will stand an amputation far better than the man who is suffering from shock. In the septic case, gas and oxygen again give excellent results, but spinal anesthesia, warm ether vapor, and intravenous ether are also comparatively safe. Chloroform, however, is to be avoided, as it is often followed by a slow fall of blood pressure which ends in death during the twelve hours succeeding operation. —*British Medical Journal*, June 2, 1917.

Application of the Carrel Method to Wounded Evacuated to the Rear.—The Carrel method is known chiefly in connection with the treatment of recent wounds but to-day, according to Guillot and Woimant (*Revue de Chirurgie*, August, 1917), a new question is being asked—"Can the same procedures be applied to the treatment of wounded who have been evacuated to the interior?" The authors outline the technique which they have tested in connection with the new problem, as follows: The only problem is to bring the antiseptic in contact with all the parts of the wound. This has been realized heretofore in connection with recent wounds, *i.e.* those treated in the first 24 hours. If now we have to treat wounds some days old the first requisite under any plan of treatment is free access to all disease foci. This is of course the indication of necessity when failure to do so would be followed by death. One acts thus in the presence of hematomas, foci of gas gangrene, infected fractures, etc., when facilities for drainage are incomplete even though one temporizes when drainage seems to be satis-

factory. The operations necessary as preliminary to the sterilization of these wounds are often severe, necessarily so in comminuted fractures. Recently a surgeon performed five successive operations for the early removal of spiculæ of bone in fracture of the thigh. These were all secondary interventions after fresh infection had occurred. All the patients died. In interventions of this type the authors have always used bacteriological control and the degree of infection in these foci is very high. Let us suppose that at the outset, before operation, each bacterioscopic field contains on an average 10 bacteria. After the intervention the so-called bacteriological curve rises hourly until within a few hours it passes into infinity. Hence an ill considered intervention must be looked on as favoring in the highest degree a proliferation of microbes, as a consequence of the septic field and weakened resistance. In one curve plotted the patient, who had necrotic bone in his fracture, had had his bacterial index reduced to 6 per field by treatment. It was now thought necessary to perform sequestrotomy, after which the count, as shown by the curve, was soon equal to infinity. In such cases sterilization could reach only a certain degree because of the necrosis, and speaking generally there should be no secondary operation until disinfection has reduced the risk to a minimum.

In the great majority of cases the method of Carrel may be trusted in these old infected wounds. One must first disinfect, as in recent injuries, laying bare all recesses. Every other day irrigation is discontinued until a representative smear can be obtained. This should be taken at the proximity of any necrotic focus or denuded bone, should such exist. An everage should be obtained from three microscopic fields and the curve started. Should the average number per field decrease persistently smears should be taken daily. If a point is reached when only one bacterium is formed in 3 or 4 fields, it is considered safe to close the wound.

But while thus caring for a wound we sometimes note that the descent of the curve is interrupted; it rises and forms a plateau. This means invariably that there is a source of infection in the wound depths—a bit of cloth, a gangrenous focus in the soft parts, an osteitis, a sequestrum. Such foci should be suppressed. Irrigation and disinfection have done what they can. No time must be lost, for the focus is bound to increase. The operation once performed, irrigation is resumed until the wound can be closed. In fracture cases proper treatment must be maintained. All immobilizing dressings are abandoned in favor of the American plan of extension plus suspension. Not less important than bacteriological control is the correct preparation of Dakin's solution. First the content of hypochloride must be kept at from 0.45 to 0.50 per cent. Second, the solution must contain no caustic soda.

Additional Red Cross Gifts.—The Council of the American Red Cross announces an appropriation of $500,000 for the establishment of a Hospital Supply Service in France, to be under the direction of the Red Cross Commission in France of which Major Grayson M. P. Murphy is head. This step marked the further centralization of relief activities in France under the Red Cross through which it is hoped to make a more expeditious distribution of medicines and hospital supplies to the various war hospitals. Another appropriation announced by the Council of the American Red Cross is one of $300,000 for relief work in the Near East through the American Committee for Armenian and Syrian relief. Estimates state that there are more than 2,000,000 people in western Asia in need of direct and continued help from America.

Red Cross Mission in Rome.—The American Red Cross mission to Italy has arrived in Rome, where it was received with great cordiality. Arrangements have been completed for the mission to go to the front to inspect the sanitary organization there. The members of the commission will be received by General Count Cadorna, the Italian Commander-in-Chief, and will have an audience with the King.

Germans Bombard American Hospitals.—On the night of September 3, German airmen made an atrocious attack on two British-American hospitals on the French coast, killing four Americans and wounding a dozen others. The Harvard and the St. Louis hospital units were in charge of these hospitals. First Lieutenant William T. Fitzsimmons, adjutant to the colonel commanding one of the Harvard units, was instantly killed. The other victims were privates. In addition to those killed, three first lieutenants and one nurse were wounded. One of the bombs struck a tent filled with wounded men, and the legs of one of the wounded men were blown off. The officers and nurses showed signal bravery, ignoring all personal danger and continuing in the performance of their duties heedless of the explosions around them. Ten of the sixteen persons injured were hospital patients.

War Hospital Opens Second Ward.—The War Demonstration Hospital of the Rockefeller Institute for Medical Research has opened a second ward. Patients are to be admitted to this ward who have obstinate infections that have resisted treatment by ordinary methods, and those who have compound fractures, chronic osteomyelitis, or varicose leg ulcers. It is proposed to demonstrate the efficacy of the Carrel-Dakin method of treatment in these conditions.

Ambulances for Italy.—The Committee of American Poets, of which Robert Underwood Johnson is chairman, is endeavoring to raise $100,000 for the American Ambulance for Italy. The committee already has sufficient funds for the purchase and maintenance of several ambulances, and has cabled to have them put in the field at once.

Gives House to Red Cross.—Mrs. Nicholas F. Brady has presented the Colony Clubhouse, at Madison Avenue and Thirtieth Street, New York, which she recently purchased for $400,000, to the American Red Cross, to be used as headquarters for the New York district for the period of the war.

Ambulances for Russia.—The Red Cross announces an immediate shipment of one hundred and twenty-three ambulances to Russia as a part of its program to give effective assistance to that country. It is reported that in the Eastern front there are only 6,000 vehicles to transport the wounded, while on the French front, which is only one-third of its length, there are 75,000 ambulances.

APPLICATION FOR APPOINTMENT IN THE MEDICAL RESERVE CORPS, UNITED STATES ARMY

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....., 191

To the Surgeon General, U. S. Army,
Washington, D. C.

Sir:

I hereby make application to be examined for appointment in the Medical Reserve Corps, U. S. Army, and inclose testimonials as to my character and habits.

I certify that to the best of my knowledge and belief I am laboring under no mental or physical infirmity or disability which can interfere with the efficient discharge of any duty which may be required of me if appointed in the Medical Reserve Corps, U. S. Army, and that the answers given to the interrogatories below are true and correct in every respect.

I furthermore state my willingness to proceed to such point for examination as may be designated by the Surgeon General, with the understanding that the journey entailed thereby must be made at my own expense.

INTERROGATORIES

Where were you born? (Give State and city or county; if foreign born, give country.).....

.....

What is your name *in full* (including your full middle name):.....

What was the date of your birth?.....

When and where were you naturalized? (For applicants of alien birth only).....

Are you married or single?.....Have you any minor children; if so, how many?.....

What is your height in inches?.....Your weight, in pounds?.....

Give the nature and dates of all serious sicknesses and injuries which you have suffered:.....

.....

If either parent, or brother, or sister has died, state cause and age in each case:.....

Do you use intoxicating liquors or narcotics? If so, to what extent?.....

Have you found your health or habits to interfere with your success in civil life?.....

What academy, high school, college, or university have you attended? State periods of attendance from year to year, and whether you were graduated, giving date or dates of graduation:.....

.....

Name and other educational advantage you have had, such as private tuition, foreign travel, etc.:.....

.....

Give all literary or scientific degrees you have taken, if any, names of institutions granting them, and dates:.....

With what ancient or modern languages or branches of science are you acquainted?.....

How many courses of lectures have you attended? Names of colleges and dates:.....

.....

When and where you graduated in medicine?.....

(Fill this out and send it to the Surgeon General, U. S. Army, Washington, D. C.)

Have you been before a State Examining Board? If so, state when, where, and with what result:*.....

.....

Are you a member of any State medical society? If so, give its name.....

Have you had service in a hospital? If so, state where and in what capacity, giving inclusive dates of each kind of service:.....

What clinical experience have you had in dispensary or private practice?.....

.....

Have you paid particular attention to any specialty in medicine; if so, what branch?.....

What opportunities for instruction or practice in operative surgery have you had?.....

.....

Have you previously been an applicant for entry into the United States service? If so, state when, where, and with what result (if rejected, state why).....

Are you a member of the organized militia? If so, state with what organization and in what capacity:

.....

Have you been in the military or naval service of the United States as cadet or otherwise? If so, give inclusive dates of service with each organization, designating it.....

What occupation, if any, have you followed other than that of student or practitioner?.....

What is your present post-office address?.....

What is your permanent residence?.....

Signature.....

The correctness of all the statements made above was subscribed and sworn to by the applicant before me this.....day of.....A.D. 191

[SEAL] .....

*This application must be accompanied by a certificate from the proper official that the applicant is duly registered to practise medicine in the State in which he resides.

Form 149
W. D. S. G. O.
(Revised May 3, 1917)

.....*M.D.*

OF

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.....*191*

APPLICATION FOR APPOINTMENT

IN THE

MEDICAL RESERVE CORPS,
U. S. ARMY

.....*Inclosures*

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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New York, September 15, 1917.

THE DUTY OF THE MEDICAL PROFESSION IN TIME OF WAR.

IT is a difficult problem that confronts many physicians at the present time, pulled as some are by duty in three directions. In the first place is the loud and insistent call of patriotism, which seems to be—the country needs you! Then there is the call of the community—your patients need you! And finally there is the domestic call—your wife, your children, or may be your aged parents need you! Is it to be wondered at that many patriotic and conscientious men are still hesitating as to which is the true duty call, or can we be surprised that some may have chosen wrongly in responding to the summons to war? The country calls with loud voice and imperatively; the army needs medical officers and it must and will have them. But it does not need every man; unless the war is prolonged far beyond the conservative estimate of those best qualified to guess, the number of physicians to be taken from civil life will not exceed 25,000 or about 17 per cent. of the registered physicians of the country—say one in six of the total. This number could easily be secured if only those, but *all* those, whose circumstances are such that they can be spared temporarily should offer themselves for service; they might not all be wanted now, but it would simplify matters greatly if the Surgeon General knew that there was still a body of available physicians subject to call in case of further need.

But the problem of choice remains, and it is here that what has been called the New York idea offers a solution. This is the plan recommended by the Medical Section of the New York State Committee of National Defense in its suggestion of a selective draft of physicians, referred to in the statement from its secretary published in another column (see p. 468). As the petition there mentioned has been printed only in the *Journal of the American Medical Association*, and has probably, therefore, been read by but a limited number of physicians in this State, we publish the same in connection with the statement referred to. We do not quite like the term selective draft; mass volunteering is better and more truly expresses the plan that would secure the needed quota of available medical men. As we have said before, we do not believe conscription will be necessary, but what is necessary—absolutely necessary to prevent suffering and injustice, is to determine who among the 140,000 or more physicians of the country should go and who should stay. This selection can best be made by a medical census such as that of New York State, the profession as a whole offering itself to the service of its country, some of its members to go to the war, some to remain in civil practice, some to retain their teaching positions, and others to stay at home perforce because of age or physical incapacity. The eligible list prepared as a result of this census in every State would be drawn from by lot in the office of the Surgeon General, and we have faith enough in the patriotism and self-sacrifice of the medical profession of this country to believe that few so chosen would close their ears to the call of duty. If they did, if the test should shame us all by exposing our younger men as slackers and cowards, then the draft would have to come. We are at war and every citizen must serve the Nation in some capacity or other—if not willingly then unwillingly, but serve he must.

At the annual meeting of the American Medical Editors' Association in June, it was suggested that every journal publish once in each of the succeeding three months the application blank for appointment in the Medical Reserve Corps. We have published this in three previous issues and do so once more, urging every one of our readers who knows himself to be eligible to fill out the blank at once and t fulfill the obligations under which he rests to the Nation for its protection and for the benefits which his citizenship has conferred upon him.

WHY THEY LAUGH AT ALIENISTS.

To the newspaper humorists and—by a natural sequence—to the man in the street, the alienist has long been a legitimate object of ridicule. It has been the fashion to call him a "mad doctor" in a manner suggestive that the adjective belongs to the doctor rather than his patients; newspaper accounts of expert medical testimony are wont to reek with humor, and when the insanity defense is put forward in a murder trial the Fourth Estate surpasses itself in facetiousness. Now where a thing exists as consistently as this, there must be some strong reason for it. Of course, it is easy to take the attitude of ridiculing the laughers themselves, we can dismiss them with angry contempt as ignoramuses, but such reactions are after all evasive. Mankind does not employ such a tremendous weapon as laughter—the only effective weapon, according to Langhorne Clemens, which it possesses to combat the evils of things as they are—without some object, even if that object be not immediately perceptible to the scoffers themselves.

It behooves the profession as a whole, then, and

the neurologists and psychiatrists in particular, to cast about for the reason of this mirth, and, should it be found to have its springs in a real fault, to bestir ourselves to discover an adequate remedy.

We are all familiar with the sorry spectacle of the usual insanity defense, where Professor So-and-So followed by others of his kind with a formidable array of whiskers and titles takes the stand and gives his polysyllabic opinion that the prisoner is insane; he is then quizzed by the opposing lawyer and, by a series of innuendoes, omissions, and cleverly worded questions, made to appear ridiculous so that he finally departs in confusion. Then the experts on the other side, equally hirsute and erudite, take the stand and swear that the prisoner is of sound mind; they are cross-examined, made to appear ridiculous, and sit down in their turn in confusion. As the lawyer for each side addresses the jury, he is careful to hold the experts of the other side up in an unflattering light, the judge in his instructions is likely to have a mild fling at expert testimony in general, the jury calmly disregards both sets of experts and forms its opinion on "good, sound, common-sense" which, as every alienist knows, is worth about as much in an estimate of mental status as the opinion of a man who had never seen a diamond would be in Kimberley.

Now the reason for this unfortunate state of affairs is simple and is merely this: the present system of expert testimony is all wrong. We all know how careful a judge is, when trying a case, to avoid anything which might even appear like bias toward one side or the other. It is not uncommon, indeed, to see a judge leave the bench and turn the case over to some other jurist simply because he has discovered that he had recently held a conversation with the attorney on one side, during which a feature of the case was mentioned casually. A judge does this because he recognizes the frailties of human nature and because he knows how easily a man may be prejudiced, unconsciously though it be. Let us consider then the alienist who is called to the stand by a certain side to whom he looks for his money —to whom he stands in fact in the relation of employed to the employer. He knows that the lawyer who has employed him expects him to testify in a certain way and asks his questions, not to bring out all aspects of the truth, but to develop so much of the truth as will serve his purpose. It is asking too much of human nature, then, to expect the expert to steer his skiff safely between the Scylla of favoring his own side and the Charybdis of bearing a little to the other side in an effort to appear impartial. Either course is wrong, indeed.

It is this fallacy, then, that the humorists are unconsciously attacking, the fallacy that human beings can be absolutely impartial in an issue where their interests are strongly engaged. So long then as this sophistry continues to masquerade in our law courts as a verity so long will the "mad doctor" be an object of ridicule. It is hard, perhaps, on the individual alienist, but it is the best thing which could happen to the institution. In the course of time this weapon of laughter will pry loose the whole pernicious system and send it crashing down into the abyss where lie trial by ordeal, witchcraft, and other outgrown garments of civilization.

A NEW BLOOD SYMPTOM IN MALARIA.

SINCE the plasmodium often occurs in the blood without the development of malaria, and since the research for the parasite is often attended with negative results at the hands of the inexperienced (at least this was the case not so many years ago) any new and simple blood test such as can be made by the nonexpert, must be of value. The old "pigmented leucocyte" test rendered good service many years ago in the diagnosis of past malaria and Dr. Hirschfeld, in the *Correspondenz-Blatt für Schweizer Aerzte,* August 4, has just made a preliminary announcement of the following new resource as based on these facts.

A thin smear made from the blood of an anemic malarial subject will not spread evenly over the glass, apparently because of a tendency of the erythrocytes to clump and adhere. If one makes a thicker smear and studies it with the lens there is absence of homogeneity, the blood having granulated irregularly on the glass. This phenomenon suggests at first rapid coagulation, but is shown to depend on some hitherto unknown property of the blood. The more severe the infection and cachexia the more pronounced the clumping and adhesion. It is not yet claimed that this behavior does not occur in other infections, for it stands in close relationship with the anemia associated with chronic disease.

If an anticoagulant such as sodium oxalate is added to blood obtained from a vein the erythrocytes drop quickly to the bottom of the container and it is also evident that the same tendency is present in non-oxalated blood, for when coagulation is permitted the coagulum shows certain peculiarities due to the relatively small number of erythrocytes in proportion to plasma.

The author has timed the precipitation of the erythrocytes in oxalated blood and finds that the greater the anemia the shorter the interval. Moreover, this rapid precipitation brings about a granulation of the erythrocytes, which is in turn responsible for the peculiar behavior of malarial blood in smears. Hirschfeld satisfied himself that this behavior does not represent autoagglutination because the clumping which occurs is not a true agglutination, *i.e.* the erythrocytes do not really cohere. If the precipitate is shaken up the cells separate and promptly sink again. The author is making an intensive study of the subject which, we may hope, will not only add to our diagnostic resources but will very probably augment our general knowledge of the pathology of the blood.

Physical and Intellectual Energy After Prostatectomy.

It is the view of some urologists that after ablation of the prostate there is some enfeeblement of the physical and intellectual vigor. It would be well if this claim could be demonstrated to be true or false, for the operation is rapidly becoming popularized. The operation in reality consists of the enucleation of an intraprostatic adenoma, the ejaculatory ducts being left intact. However, the perineal operation is a true prostatectomy. In an article by Legueu, abstracted in the *Journal de médecine et de chirurgie pratiques* for June 25, this author relates that his record has reached 450 cases. A partial aspect of the problem is the effect of perineal prostatectomy on the reproductive apparatus. In this form of intervention the nerves are divided, the verumontanum is destroyed, and the ejaculatory ducts are divided. Sexual frigidity after the perineal operation is but natural. It is entirely otherwise with a simple enucleation, when all the above structures remain unmolested. The patients have been freed from burdensome disabilities, and feel younger and more sprightly. In addition, the organism has been disembarrassed of the toxic product secreted by the adenoma, the existence of such a substance having been proved by Gaillardot. It is, for example, hypotensive, and further causes eosinophilia. Suppress the adenoma, and behold the extraordinary regeneration of the patient! How, then, can there be visible, asks Legueu, for a time at least, any evidences of a weakened body and mind? In but one of the author's 450 cases did the operation fail; *i.e.* retention persisted. It is especially in the mind, in the morale of the individual, that prompt improvement is most apparent. Before intervention, patients are often torpid, interested in nothing, and do not even react when intervention is decided on. Legueu has never seen a case of postoperative insanity in prostatectomy cases. He would be inclined to believe that in such a case there had been a preoperative psychosis. The author nowhere mentions any late or remote failure of the forces as a result of adenoma suppression.

A New Mode of Treating Leucoplakia Buccalis.

For the average practitioner, smoker's patches on the tongue and buccal mucosa do not represent a disease process but the sequel of one, corresponding to a superficial but unmistakable cicatrization which is irremediable. That intensive treatment of syphilis may cause occasionally the disappearance of similar lesions has, however, been noted. There are, perhaps, some lesions in which the sclerosis is amenable to specific measures associated with the most careful mouth hygiene and appropriate topical treatment. But attempts to cure these lesions as a class in the interest of cancer prevention usually fail. There is, moreover, a belief in some quarters that the refractoriness of leucoplakia to treatment is not uncommonly due to the fact that a condition of so-called precancer is already present. The very slow evolution of cancer on a leucoplasic basis is well known. During the present year, Averon, a French graduate in medicine, took as the subject of his thesis a new plan of treatment of leucoplakia. This work is reviewed by Bernard in *Le Progrès Médical* for August 4. With proof of likelihood of syphilis, the first measures to take refer to constitutional treatment of the latter. Only when this fails should we proceed to local measures. If we are dealing with the supposed sequelæ of mucous patches, the treatment by caustics and alteratives, so useful at times in the latter, might be employed; but since the author assumes that the lesions cannot be regarded as necessarily syphilitic, he holds that it is best to employ no irritant which could perhaps hasten the appearance of cancer. Measures sanctioned in suitable cases are destruction with the cautery, curettage, plication, extirpation, and decortication. The latter alone is applicable in the diffuse type, and has been used by Morestin. A new resource advocated and practised by the author and Tzanck is interstitial injection. The substances used appear to be mercurials, but the reviewer fails to enumerate them. An integral part of the procedure is local anesthesia with cocaine or stovaine and adrenalin. It is said that the injections cause an exfoliation of the leucoplasic patch, with resulting healing without scar of the newly-formed raw surface. It is not claimed that this plan of treatment will do away with all others. It is meant to be adapted chiefly to military requirements of the present time, and may undergo modifications for civil practice. Thus conceived, it is claimed to be a simple, harmless resource, suitable for the treatment of a large number of patients at one time.

Syphilis and Cancer.

Many writers and clinical observers have suggested a relationship between syphilis and cancer. The indirect consequences of syphilis, doubtless, predispose to numerous specific diseases. Now that in Europe syphilis is extremely prevalent, attention has been drawn especially to the point. Mr. W. Stuart-Low in the *Lancet* of September 20, 1902, in a paper entitled "Mucin and Malignancy," showed that in fifteen fatal cases of cancer of the throat a history of syphilis had been established, while during the past fifteen years he has investigated many more cases, in which an equally unequivocal history had been proved. The same author, writing in *The Practitioner* of August, 1917, states that at the present time he has twelve instances of cancer of the throat under observation, and in every one syphilis has been shown to have been contracted in earlier years. Moreover, he further states that since the introduction of the Wassermann test he has made a point of applying it, and has invariably found the reaction positive. The predisposition to cancer of the throat brought about by the occurrence of syphilis is mainly due to local injury inflicted on the tissues of the throat by the usually severe incidence of the secondary stages in that area. As a matter of fact, the disease leaves the mucous membrane in such a condition that it is less resilient, less yielding, and more likely to be abraded. Also, not being sufficiently lubricated, owing to the diminution of mucus, it is readily irritated by acid saliva, too hot food, and tobacco smoke. It is not improbable that, as Stuart-Low and others think, syphilis may prepare the field for cancer.

News of the Week.

A Diploma Mill in New York.—The New York City Health Department, through the excellent detective work of one of the inspectors of the Bureau of Foods and Drugs, has unearthed a very cleverly executed swindle. The investigation which began last June in connection with the discovery that large quantities of spurious neosalvarsan were on the market have finally reached a climax. It has been found that the traffic in fake neosalvarsan and narcotic drugs has been carried on to a great extent by one group of individuals, and the leader of the gang has now been indicted. In the course of the investigation it was discovered that the man's pernicious activities were by no means confined to the sale of a worthless preparation of table salt and a little yellow coloring matter as neosalvarsan, but that he was also operating a "diploma mill." The first of the unlicensed doctors to be apprehended affirmed that he paid $1,500 for a diploma which upon examination proved to be fake. He was, however, assured that he would have no trouble in practising without a license as the proprietor of the diploma factory was an inspector of the New York State Medical Society, in proof of which he showed a written appointment from the counsel of the society. The diploma purported to be from the Southern Medical College of Atlanta, Ga. The man had also a license claimed to have been issued and signed by the Eclectic Medical Examining Board of the State of Georgia. The victim paid $1,500 for his diploma, and there is evidence to show that another one sold for $1,600. A number of "diplomas" signed and ready for delivery with the exception of the purchaser's name were confiscated by the Department of Health. A number of others are believed to have been sold and at least three other "doctors" in the city are under suspicion of practising under their authority.

Street Fatalities in August.—There were during the month of August 75 deaths from street accidents in New York City, 14 of which, however, resulted from July accidents. This is more than double the number for the corresponding month of 1916. As usual the heaviest death toll was of children, there being 34 boys and girls killed. Of the 75 deaths 19 were caused by automobiles; motor trucks caused 13, horse-drawn vehicles 9, street cars 7, and the remainder were the result of collisions and miscellaneous accidents. The report of the National Highways Protective Society fixes the fatalities for the State, including New York City, at 140 persons, 59 of whom were children under 16 years of age. About one-third of these fatalities were due to automobile accidents.

Report on Drug Cases.—The Chief Statistician of New York City, Charles W. Strong, has submitted a report showing that in the first six months of 1917 1,242 drug cases were disposed of in the City Magistrates' Court. Of these 1,104 were men and the rest women. Of 175 drug users over whom the city magistrates have summary jurisdiction, 138 were males and 37 females. All of these were sent to hospitals for treatment. Of 471 drug distributors arraigned for violation of the public health law 424 were men and 47 women. Of 392 felony charges against dealers in narcotics, 339 defendants were men and 53 women. Six men were held for the Grand Jury, the remainder being ultimately charged with misdemeanors.

Japanese Will Fight Typhus in Roumania.—A Japanese medical corps of one hundred men has gone from Yokohama to assist in the effort to control the epidemic of typhus fever in Roumania. Dr. Kuranosuke Mogi is chief of the corps, which is in three divisions, each having a head. These divisions are: internal diseases, surgery, and epidemics. The headquarters of the detachment will be at Jassi. The corps has planned to remain in Roumania eight months.

Tuberculosis in Berlin.—The recently published vital statistics for the city of Berlin for the months of March, April, and May show a 56 per cent. increase in the number of deaths from tuberculosis as compared with the same months of 1916. The statistics for the winter months likewise showed a marked increase in pulmonary tuberculosis and other diseases of the respiratory tract.

Poliomyelitis in New York State.—During the month of July this year there were but 41 cases of poliomyelitis reported in the entire State of New York, 24 in New York City and 17 up-State, while preliminary returns for August show but 14 additional cases in New York City, and 30 in the rest of the State. This is in striking contrast to the 4,000 cases reported during July of 1916 and 6,000 during August, 1916. The cases have been scattered over the State with no apparent center of infection.

Epidemics in Germany.—A dispatch from Geneva states that dysentery, typhus, and scarlatina have been prevalent in the Rhine towns. The frontier at Basle is practically closed. All travelers coming from Germany are required to undergo medical examination and neutrals crossing the frontier into Germany are warned to take precautions.

Typhoid Fever on Staten Island.—An outbreak of typhoid fever is in progress in the West Brighton district of Staten Island. There are at the present time over thirty-five cases being treated in the hospitals and about forty additional cases are under observation as suspects. The Health Department has sent out a warning to about 4,000 residents not to eat raw food and to be careful of their milk supply. Officials of the State Department of Health have offered their assistance in controlling the epidemic.

The United States Food Administration announces the creation of an advisory committee on alimentation, the purpose of which is to gain the active cooperation of experts in the determination of policies of food control from the standpoint of the science of nutrition. The committee consists of C. L. Alsberg, Russell H. Chittenden, C. F. Langworthy, Graham Lusk, LaFayette B. Mendel, and E. V. McCollum. Dr. Alonzo E. Taylor, Dr. Ray Lyman Wilbur, and Dr. Vernon Kellogg, members of the Food Administration, are ex-officio members of this committee. It is believed that through the advice and cooperation of this committee, representing specialized workers in the various correlated departments of medicine, the administration of food control will be enabled always to work for the best interests of the health of the different classes in different sections of our country.

Further Investigation of Germs in Court Plaster.—The Government's Hygienic Laboratory at Washington announces that the germs of tetanus have been found in two of thirteen samples of court plaster purchased in Washington and in one sample from the Ohio State Department of Health. The Public Health Service announces that there is no ground for believing that the contamination was intentional and expresses the belief that it may have occurred during the process of manufacture or subsequently by careless handling. In the course of this investigation it has been shown that court plaster is not clean in the surgical sense. Thirty-seven white mice died of inoculation from cultures from the specimens submitted by the Ohio State Health Department.

Safety Congress.—The Fourth Annual National Exhibition of Safety and Sanitation was held during the past week in the Grand Central Palace, New York, under the auspices of the American Museum of Safety and the National Safety Council. The exhibit included all possible kinds of appliances for accident prevention, fire prevention, and sanitation. Statistics show that during last year 22,000 workmen were killed in American industrial accidents and that more than 1,500,000 were injured so that they had to lose time from their work during the year. Of this number 600,000 were incapacitated for more than four weeks. It is estimated that the cost of these accidents is $600,000,000 a year and that 70 per cent. of them are preventable.

The Bronx County Medical Society will hold a special meeting on Wednesday evening, Sept. 19, at 8.30. The paper of the evening will be on "The Public Duties of Physicians," by Dr. S. Dana Hubbard, and will be discussed by Drs. Haven Emerson, H. B. Waters, A. J. O'Leary, and Lewis Chargin.

New Health Administration for Brooklyn.—Beginning with September 7, Brooklyn entered upon a separate supervision of all health affairs within its borders. For some time past this borough has insisted that there should be an expanded departmental unit of health administration established in Kings County and this wish has finally been acquiesced in. Dr. B. Frank Knause has been named deputy commissioner and sanitary superintendent of the Department of Health, at a salary of $6,000 a year, and will be clothed with the full power of the New York Health Department. Dr. Herman Tapley Peck has been appointed assistant sanitary superintendent, holding a position similar to the other borough superintendents, at a salary of $4,080 a year.

Dr. Lewis R. Harris has been appointed director of the Bureau of Preventable Diseases of the New York City Health Department to succeed Dr. Bertram Waters, who has resigned from the Department of Health to resume his private practice.

Dr. Elliot Washburn has resigned his position as superintendent of the State Sanatorium at Rutland, Vt., to accept the superintendency of a general hospital having 600 beds at Kansas City.

The Montefiore Home, New York, has been the recipient of a bequest of $1,000 under the will of Julian A. Hellman. The residuary estate of the testator is to go to Mount Sinai Hospital. This will probably amount to about $40,000.

United States Civil Service Examinations.—The United States Civil Service Commission announces the following open competitive examinations: An examination for men only to be held on October 3, 1917, to fill the vacancy of pathologist in Freedman's Hospital, Washington, D. C., at $2,000 a year. Future vacancies requiring similar qualifications will be filled from this examination. Applicants must be graduates of a medical college of recognized standing and have had at least one year's experience in a pathological laboratory.

An examination is also to be held to fill vacancies in the positions of physician in the Indian and Panama Canal Services, acting assistant surgeon in the Public Health Service, surgeon in the Coast and Geodetic Survey, and in positions requiring similar qualifications in other branches of the service. The salaries of these positions range from $1,000 or $1,200 a year to $1,800 a year with certain additional allowances. On account of the urgent needs of the service, applications will be received at any time.

An open competitive examination will also be held for scientific assistant in public health work for men only. In the Grade 1 positions the salaries range from $1,500 to $2,000 a year and in Grade 2 positions from $900 to $1,500 a year. The duties of appointees in the first grade will be to assist in making epidemiological and sanitary surveys to determine the prevalence and causation of disease; the duties of the second grade are similar but under supervision. The duties in either grade require knowledge of local conditions and the ability to meet and deal with the people of the locality. Further information with reference to these various examinations and the time and places in which they will be held may be obtained by applying to the Civil Service Commission, Washington, D. C. Applicants should apply for Form 1312, stating the title of the examination desired.

Examination for Assistant Surgeons in Navy.—Examinations for assistant surgeons for permanent appointment to fill existing vacancies in the Medical Corps of the Navy will be held throughout the country September 17. The permanent authorized strength of the corps is 828 and 68 vacancies are to be filled. A number of temporary appointments will also be made from those falling outside of the first 68. Further information with reference to these examinations may be obtained through the Naval Medical School at Washington, D. C.

Obituary Notes.—Dr. HENRY NASH READ died at his home in Brooklyn, N. Y., September 2, aged 69 years. He was a graduate of the Long Island College Hospital, in 1870, attending pediatrician to the Long Island College Hospital and the Sheltering Arms Nursery, and consulting physician to the Bay Ridge Hospital.

Dr. JOHN T. COOPER, a graduate of the Grand Rapids Medical College, in 1902, died at his home in Muskegon, after a lingering illness, on August 20, aged 55 years.

Dr. ELIZABETH FOLLANSBEE, the first woman physician to practice medicine in Los Angeles, died in that city, on August 23, aged 78 years. She was a graduate of Jefferson Medical College, Philadelphia, in 1877, and professor emeritus of pediatrics of the University of California.

Dr. WILLIAM HENRY REEDY, a graduate of Rush Medical College, in 1876, died at his home in Bloomington, Ill., August 20, aged 69 years.

Dr. JOHN ADAMS COLLIVER, a well-known practitioner of Los Angeles, a graduate of the University of California Medical Department, in 1899, died from an attack of pneumonia following two major surgical operations, at the age of 45 years.

Dr. JOHN MORGAN SIMS, a graduate of the University of Louisville, in 1892, and a practitioner of Collinsville, Ill., died suddenly on August 16, aged 49.

Dr. DAVID G. ALLEN, past assistant surgeon, U. S. Navy, died on the U. S. S. *Panther* on September 5, 1917. He was born at Savannah, Ga., August 10, 1879, and was appointed assistant surgeon in the navy on June 15, 1908.

Dr. PHILIP WILFRED TRAVIS MOXON, a graduate of Harvard Medical School, in 1901, and a practising physician of Brooklyn, N. Y., died September 3, aged 43 years.

Dr. BENJAMIN STURGIS VAN ZILE, a graduate of Bellevue Hospital Medical College, in 1875, died at his home in Brooklyn, N. Y., on September 3, aged 73 years.

Dr. FERGIS S. HALL, a surgeon during the Civil War, and for many years a practitioner of medicine in Orlando, Fla., died on August 26, aged 83 years.

Dr. WILLIAM F. O'BRIEN, a graduate of Tufts College Medical School, in the class of 1904, died of typhoid fever at his home in Pawtucket, R. I., on August 28.

Dr. WILBUR C. RICE of Zephyrhill, Fla., was accidentally drowned while bathing on August 27. He was 37 years of age and graduate of the University of North Carolina, in 1907.

Dr. DAVID MCINTYRE, a graduate of New York University Medical College, in 1881, died at his home in South Boston, on September 2, aged 60 years.

A POSSIBLE PHYSICAL BASIS FOR INEBRIETY.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—The following incident will interest many persons. It presents positive evidence of the physical character which is back of the habit in a number of persons who suffer from inebriety. A boy ten years of age received a severe blow on the nose, and was treated for a considerable time, ending in recovery. Two or three years afterwards he developed an unusual liking for spirits, particularly wines and beers. All through his school career he was noted as a drinker, never intoxicated, but always using wines and spirits whenever an opportunity occurred. He went into business and was very successful, drank steadily but more guardedly as he became older, using spirits only at night. He made several attempts to recover but failed, and was an object of great solicitude to his family and business associates. His drinking was continuous, and although the effects were not very pronounced he aged rapidly, and was becoming more and more incapacitated. Finally a suspicious discharge from the nose sent him to a surgeon, who removed a depressed turbinated bone, the condition having evidently been of long duration. He recovered, and with this an aversion to spirits came on. He became a total abstainer, and expressed his wonderment that he could not stop before. He is now in good health, and although five years have passed by he is living in the same conditions, becoming more and more emphatic in his opposition to the use of spirits. It seems evident that the injury he received in his youth was an active cause for his use of spirits, and when this was removed the desire for spirits stopped. This suggests an unworked field of study for the physician.

T. D. CROTHERS, M.D.

HARTFORD, CONN.

Correspondence

STATEMENT REGARDING THE SELECTIVE DRAFT OF PHYSICIANS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In its issue of August 25, 1917, page 653, the *Journal of the American Medical Association* on the request of the chairman of the New York State Committee of National Defense, Medical Section, printed the petition for selective draft drawn up by that committee. The *Journal* preceded the copy of the petition by an explanatory introduction which states that "a committee was appointed to draw up a petition to the Congress of the United States to be circulated for signatures and then presented to Congress." Note, please, the last four words. The introduction also states that "Letters have been drafted . . . presenting the petition and urging that it be signed and presented to Congress." Again, note the last four words!

The point is just this: The New York State Committee of National Defense has never urged upon any man or organization or institution, that this petition be presented to Congress, and any statements to the contrary are either mistakes or misrepresentations. Furthermore, it is not and has never been the intention of this committee to present to Congress the petition for a selective draft of physicians. On the contrary, it was and is the intention of this committee to present the petition, after securing all the available signatures of physicians in New York State, to the Medical Section of the Council of National Defense.

Undeniable and (to a careful observer) unmistakable evidence of that intention was expressed in the minutes of the committee meeting on July 2 at which the petition was authorized. A copy of the minutes was sent to the Medical Section of the Council of National Defense on July 10, 1917, and the paragraphs referred to are quoted below exactly as they appear in these minutes:

"The secretary moved that: The New York State Committee of National Defense recommends to the Medical Section of the Council of National Defense the institution of a federal classification of physicians similar to that of New York State and that measures be instituted to secure the necessary federal legislation authorizing a selective draft of physicians based upon such classification, which draft shall provide exemptions of: (1) Those with too many dependents—75 per cent. dependent on their professional income; (2) those disqualified by health or age; (3) those needed for public health continuance; (4) those needed for medical education; (5) those needed for hospitals and clinics, and (6) those needed for isolated communities, provided

that such draft automatically exempt physicians as a class from the provision of the present general draft law.

"There was explanation of the motion as follows: That it had no reference to the necessary 2,200 men from New York State at the present time, but that it was a measure for the eventual fair selection of the men that will ultimately be required.

"In order to get the matter of a selective draft of physicians properly before the Council of National Defense as representing not alone the unanimous opinion of the State committee, but also the overwhelming opinion of the profession at large, it was suggested that the committee draw up a strong petition to the President of the United States and to Congress which petition the members of the committee should sign and which should be circulated, through the county committees, for the signatures of the great body of physicians in the State of New York."

Enough misunderstanding of the object of this petition has arisen to make desirable an authoritative statement that this is in no sense an attempt to have conscription forced upon the medical profession from outside—as some men have apparently believed. On the contrary, its adoption will preclude the possibility of any such undesirable action and will at once afford an orderly system of furnishing those fittest for medical officers to the army and of retaining in their communities those physicians most needed at home.

The New York State Committee of National Defense, Medical Section, requests you to publish this statement in justice to the twelve hundred or more physicians of this State who have already signified their approval by signing this petition. Any further information desired will be gladly furnished by this committee.

F. T. VAN BEUREN, JR., M.D.
Acting Secretary, New York State Committee of National Defense, Medical Section.

The following is the document referred to in the above statement:

WHEREAS, A critical analysis, based upon a classification of physicians by the recent New York State Special Medical Census, when applied to the personnel resident in this State of the Medical Officers' Reserve Corps of the Army, has clearly demonstrated that the volunteer system of recruiting this personnel, now and hitherto in effect, has failed to secure an adequate number of physicians available and desirable for active army medical service; and

WHEREAS, Such analysis has likewise clearly demonstrated that the volunteer system has failed to exclude from this personnel physicians unfit for active military duty, by reason of age, physical disability, family obligations or many dependents; and

WHEREAS, The volunteer system has also failed to exclude from this personnel physicians whose services at home are essential to the public welfare in health departments, hospitals, medical colleges and isolated communities; and

WHEREAS, It has further failed to adjust equitably, in age or geographic or population distribution, the burden of military service upon the medical profession of the United States; and

WHEREAS, It has by these failures caused injury to the individual, to the community, to the medical profession, and to the public; and

WHEREAS, The volunteer system puts an undesirable and embarrassing burden of decision upon those physicians whose services are most needed at home; and

WHEREAS, There exists no provision in the present draft law for drafting physicians as medical officers, but only as private soldiers; and

WHEREAS, The existing general draft law affects only those physicians who are of an age of maximum efficiency as soldiers and fails to affect many of those who are of an age most suitable for medical officers; and

WHEREAS, The justice, wisdom, and effectiveness of the selective draft principle have been recognized by Congress in raising a strong army from our civilian population; and

WHEREAS, We are firmly convinced that a selective draft of physicians for military purposes, based upon a classification similar to that of the New York State Medical Census and designed specifically to exempt those unfit by reason of age, physical disability or many dependents, as well as those necessary for the maintenance of public health, hospital, and community service and medical education, will be alike just to the individual, to the community, and to the Nation, and that it will secure to the medical service of the National defense those best fitted for its uses while it retains at home those most needed in the community; and

WHEREAS, We, the undersigned physicians, graduates of standard medical colleges, and duly licensed to practise medicine in the State of New York, mindful of our duty to our communities and State, as well as to the Nation, are in favor of a selective draft of physicians between the ages of 21 and 45 years, for medical officers, in numbers sufficient for the Nation's military needs, based upon a classification by census, which shall exempt those unfit for military purposes and those necessary for the community at home; and

WHEREAS, We justly claim that such a selective draft of physicians when and if instituted shall and of right ought to exempt graduate physicians, students of medicine, and pre-medical students in the General Draft Law age group from further liability to the provisions of the existing General Draft Law so long as they retain medical status; now therefore

We the undersigned physicians as aforesaid do hereby petition the Congress of the United States for legislation enabling the President to direct the institution of such a classification and to proclaim and order such a selective draft.

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 30, 1917.

1. The Significance of Persistent Pain or Other Symptoms Referred to the Peripheral Nerves. Harold D. Wright.
2. Treatment of the Visceroptotic. Richard F. Chase.
3. Relations of Prenatal and Postnatal Work. Michael M. Davis.

2. Treatment of the Visceroptotic.—Richard F. Chase, some time ago, published observations on 400 women patients with reference to visceral ptosis. Among these he found digestive symptoms in 21 per cent.; backache and abdominal dragging in, respectively, 18 and 24 per cent.; nervous symptoms in 20 per cent.; organic disease outside of the alimentary tract in 19 per cent.; and constipation in 68 per cent. He concluded from this study that treatment of the ptosis itself is indicated in less than 25 per cent. of such cases, because less than that percentage of these patients have symptoms referable to the ptosis. This conclusion, he states, is not in accordance with the popular view. He argues that surgery is rarely required in the treatment of this condition. By far the larger proportion of these cases are benefited or cured by proper dietetic and hygienic treatment. Constipation which occurred in 68 per cent. of this series is curable by dietetic and medicinal treatment. In the care of these cases it is the patient and her entire condition not alone the ptosis that you must treat. In many cases the abdominal support upon which so much dependence is placed by many physicians, does not support. The benefits derived from some supporters are purely mental. The nervous or mental element presented by some of these patients is often the most difficult feature in the entire situation to overcome. Some seem to believe that by overcoming the ptosis, the symptoms will disappear. That such is not the case is proven by the failures of surgery in these cases. The ptosis is quite as often the result as the cause of the general condition of these patients. Hence the treatment must be directed to all of the patient's physical

and mental ills, remembering that the ptosis is often a secondary condition. After treating the patient's physical ills attention must be directed to treatment of her mental ills, her whims, and her phobias.

3. **Relations of Prenatal and Postnatal Work.**—Michael M. Davis makes a comparison of the death rates among infants receiving prenatal care in New York and Boston with the death rate among general cases. During 1914, the death rate of the prenatal cases under one month of age was 17.3 in Boston and 19.5 in New York; in 1915, the death rate of the prenatal cases in Boston was 25.9, in New York 26.0. The death rate for general cases of babies under one month of age in Boston was, in 1914, 45.3; in New York, 36.6. In 1915, the death rate of the general cases was in Boston 38.3; in New York, 35.9. From this it may be seen that the death rate of babies receiving prenatal care is practically the same in New York and Boston. The effect of prenatal care is even more strikingly shown among babies under one year of age, among whom there has been a reduction of 68 per cent. in the mortality in 1914, and of 42 per cent. in 1915. The writer emphasizes the point that prenatal care kills two birds with one stone in that it benefits the mother and the baby also. Logically, prenatal care is the foundation of the campaign against infant mortality, and as the public comes to appreciate its value and far reaching humane significance prenatal work will assume the place that it should. The great difficulty at the present time is that the number of cases reached is far below the number that need to be reached and a selection must also be made of babies needing postnatal care. In making this selection it seems that a nurse who has followed mothers and babies up to two weeks after confinement is in an excellent position to select those babies who need postnatal care. The program for the protection and conservation of infant life must aim to make it possible for every mother to have prenatal nursing service; for every baby who is delicate or who is bottle-fed, or sickly, to be under the skilled supervision of the doctors and nurses of babies' health stations; for every mother who is nursing a baby to have sufficient milk for herself and her child; for every baby who is bottle-fed to have enough and good enough milk at a price which its parents can pay; to enable every mother and father to know how these benefits can be obtained at their expense when they can meet it, or free if they cannot. Such a program is vital for a community in peace time. In war time it is the same, only raised to a higher power.

New York Medical Journal

September 1, 1917.

1. The Internal Secretions as Related to Tuberculosis in Civil and Military Practice. Charles E. de M. Sajous.
2. The Diagnosis of Surgical Lesions of the Kidney and Ureter. A. Raymond Stevens.
3. Deviation of the Septum and Submucous Resection. H. M. Goddard.
4. Intussusception in Children. Gaston Torrance.
5. Tabes Dorsalis. Morris Grossman.
6. Studies in Acute Anterior Poliomyelitis. George D. Heist, Myer Solis-Cohen and John A. Kolmer.
7. Stethoscopic Electrovibratory Percussion. J. P. Hickey.
8. The Nonfacetted Gallstone. Arnold Peskind.

1. **The Internal Secretions as Related to Tuberculosis in Civil and Military Practice.**—Charles E. de M. Sajous, after discussing the relation of the various glands to tuberculosis, says that on the whole the relationship between the ductless glands and tuberculosis is mainly concerned, so far as our present knowledge permits us to believe, with the defense of the body against infection. When through heredity or local disease these organs are weakened functionally the vitality and defensive powers of the body at large are impaired. By identifying as we can with the addition of knowledge concerning the ductless gland abnormalities the presence of vulnerability to infection, we can arm, as it were, all exposed subjects against the disease. There are phases of the present war which tend to weaken greatly the resisting powers of the troops that previous wars have presented to a comparatively limited degree. These are mainly those due to the vast increase of artillery of large calibre, the intense shell fire, the rapid fire guns, etc., so prolific as causes of shock, terror, etc. The writer recalls that fourteen years ago he emphasized that the pituitary, the posterior lobe of which governed, from his point of view, the functions of the adrenals and thyroid glands, was a sensorium commune through which fright, anger, shock, etc., produced their morbid effects. On the whole it is apparent that this intense functional activity of the ductless glands exerts not only a deleterious effect on the nervous system, but as a result of their inordinate secretive activity these glands suffer from exhaustion. This means that such men are vulnerable to infection of any kind, including tuberculosis. A careful search for the stigmata of endocrine gland insufficiency should form part of the examination of recruits. Especially should the following be noted: *Hypopancreatism*, more or less marked adynamia, mental and physical often mistaken for neurasthenia, accompanied occasionally by gastrointestinal discomfort occurring one or two hours after meals, and perhaps alimentary glycosuria. *Hypoadrenia*, also more or less marked adynamia, but with low arterial tension; weak cardian impulse, slight pallor and sensitiveness to cold, particularly of the extremities. Overworked and underfed men often show these symptoms. *Hyperthyroidia* may be present with the thyroid either atrophied or hypertrophied. In true hypothyroidia the subject may be fat, pudgy, prone to sweat easily, but with skin rather pale than florid. They are usually obtuse and merely grown up backward children, who are unusually liable to tuberculous infection. *Hypoparathyroidia* may be associated with the foregoing or not. The symptoms pointing to this condition are often of a nervous order, usually choreic in character. They are prone to eruptions of various kinds and occasionally to asthma. Hypertrophied thymus is a dangerous condition in a soldier exposed to violent exertion, owing to the possibility of sudden thymic death. All these exposed subjects whether in civil or military practice should have intelligent organotherapeutic treatment.

6. **Studies in Acute Anterior Poliomyelitis.**—George D. Heist, Myer Solis-Cohen, and John A. Kolmer describe the successful isolation and cultivation of an organism which corresponds in every particular with the globoid bodies of Flexner and his co-workers. Their methods were those employed at the Rockefeller Institute. They have succeeded in isolating four strains of the organism. Two were strains secured from glycerinated brain and spinal cord taken from human beings who died of poliomyelitis. One strain came from the fresh brain of a monkey that developed clinical and histological poliomyelitis following the intracerebral injection of a human virus from a patient succumbing to poliomyelitis. The fourth strain came from a poliomyelitic monkey. In all about thirty-five tubes were inoculated with poliomyelitic material and successful growths were demonstrated in five tubes. Growth appeared only under anerobic conditions. The utmost difficulty was experienced in staining the minute organisms. It was found, however, that the microorganisms could be stained easily with a number of the more active stains if previously freed from the ascitic fluid by centrifuging and washing in salt solution. In a satisfactory stain the minute organisms show no particular arrangement. Large masses, clusters, chains and single individuals may be found. The organisms usually, but not invariably, stain violet with the Giemsa stain. In the hands of the authors they have uniformly been decolorized by Gram's method. In addition to the globoid bodies, the writers have in several instances isolated from poliomyelitic material rather large streptococci, occurring in short chains. These streptococci seemed to be of different strains. There seems to be no transition between the globoid bodies and the streptococci. The serums of a large percentage of patients with poliomyelitis gave high opsonic indices with these streptococci, but not with streptococci from non-poliomyelitic sources, nor with staphylococci, diphtheroids, and Gram negative bacilli obtained from poliomyelitic material.

Journal of the American Medical Association.

September 1, 1917.

1. Truth About Intraspinal Injections in Treatment of Syphilis of the Nervous System. Bernard Sachs.
2. Intravisceral and Intraabdominal Pressure. R. C. Coffey.

3. Organic Changes in the Central Nervous System Probably Due to Focal Infections. George W. Hall.
4. A Report on a Group of One Hundred and Ten Cases of Poliomyelitis from the Acute Onset to the Present Time. E. D. Elbright.
5. Treatment of Anterior Poliomyelitis at Fordham Hospital. Samuel W. Boorstein.
6. Ovarian Organotherapy. A Preliminary Report. W. R. Graves.
7. Sudden and Profound Deafness: Its Significance. Otto H. Stein.
8. The Foundations of Voice Impairment Resulting from Tonsillectomy. Elmer L. Kenyon.
9. Personal Experience in the Surgical Treatment of Intestinal Stasis. J. Shelton Horsley.
10. The Diagnosis of Acute Pancreatitis, with a Special Study of Thirty-three Cases. William Linder.

1. Truth About Intraspinal Injections in Treatment of Syphilis of the Nervous System. Bernard Sachs. (MEDICAL RECORD, June 23, 1917, p. 1115.)

2. Intravisceral and Intraabdominal Pressure.—R. C. Coffey states that there is always a variable and indefinite amount of pressure in the peritoneal cavity, known as intraabdominal pressure. This pressure may be greater, but is usually less than the atmospheric pressure. The degree of intraabdominal pressure depends on the variable contents of the abdominal cavity. The variable contents are: (a) extraperitoneal and mesenteric fat; (b) the visceral contents. The visceral contents are liquids and gases and may be intermittently expelled at any time, thus acting as an immediate safety valve for the establishment of an equilibrium and a normal intraabdominal pressure. The extraperitoneal and mesenteric fat is included within the inelastic abdominal wall, and lessens the abdominal cavity in exact proportion to the fat thus included. The law of osmosis by which fluids of different densities pass through an animal membrane and establish an equilibrium, has its counterpart in the relation of intraabdominal and intravisceral pressure. Experiments made by the author make it apparent that intraabdominal fat is deposited under much lower pressure than are the cells of a tumor, pregnant uterus, or ascitic fluid. The deposition of fat within the abdominal cavity does not therefore materially stretch the abdominal wall in a normal person. However, it is sufficient to increase the size of an already existing ventral hernia. This makes it difficult or impossible to replace the hernia at times without removing some of the abdominal contents, such as the great omentum. A patient who has been moderately fat for some reason loses fat; the fat in the abdomen is correspondingly absorbed. The intraabdominal pressure is lowered, and there is a tendency to a gradual atonic dilatation of the hollow viscera with consequent disturbances of digestion, and at times that low state of health ordinarily referred to as asthenia. It is in these cases that rest, forced feeding, and massage are ecective (the Weir Mitchell treatment). Thus it may be said that by strengthening and readjusting the abdominal wall, combined with the deposition of fat within the abdomen, the normal intraabdominal pressure may be restored. In considering the relative degree of pressure in the hollow visceræ themselves, the writer in experimenting with methods for the removal of the head of the pancreas in two stages discovered that the duct which had been transplanted directly into the duodenum at the first operation was invariably found dilated at the time of the second operation. This phenomenon being observed universally, left but one rational conclusion to be drawn, namely, the greater pressure within the intestine was too much when applied to the inside of the bile ducts. The same phenomenon of dilatation was found when the ureter of dogs was implanted into the intestine of dogs. To obviate this difficulty the author makes a submucous transplantation of the bile duct or ureter. Operations on human beings in which this method of transplantation has been employed have been unusually successful.

3. Organic Changes in the Central Nervous System Probably Due to Focal Infection.—George W. Hall. (See MEDICAL RECORD, June 23, 1917, p. 117.)

6. Ovarian Organotherapy.—W. R. Graves, from his personal experience covering a number of years and considerable number of patients, concludes that preparations of the corpus luteum alone are less efficacious therapeutically than are those of the whole ovary. Experiments seem to show that an important part of the ovarian internal secretion is elaborated in the interstitial cells. The interstitial cells correspond to the theca lutein cells of the corpus luteum. The interstitial cells of the ovary are analogous to the testicular interstitial cells of Leydig, which are known to elaborate an internal secretion. Ovarian therapy for its best effectiveness should include at least the product of the interstitial cells. Preparations made of the corpora lutea of pregnancy proved too toxic for practical use. Preparations made from the ovaries of pregnant animals, with exclusion of the corpus luteum, proved superior therapeutically to preparations of whole ovaries of non-pregnant animals that included the corpus luteum. The superiority of the follicular products of pregnancy is explained by the fact that during pregnancy, follicle atresia is especially marked, and is accompanied by a corresponding increase in the interstitial cells.

8. The Foundations of Voice Impairment Resulting from Tonsillectomy.—Elmer L. Kenyon has made a study of the physiology of the soft palate and of the mechanicophysiological importance of the tonsil, based on the careful examination of 161 tonsillectomized throats, and on a study of 30 cases of voice or other disturbance resulting from tonsillectomy. He concludes that unless through the exercise of better technique or of greater skill, the deformities from tonsillectomy can be diminished, tonsillectomy is in a situation which if not alarming is at any rate serious. In removing the tonsillar capsule we take out an important supporting structure on which the normality of the physiological action of the soft palate largely depends. Cases in which operation has been performed, as they exist, show a frightful amount and degree of postoperative deformity dependent in large part on the very principle of the operation. Danger to the speaking voice necessarily lurks in the very nature of the operative conditions, and impairment to the speaking voice is inevitable in an as yet unknown percentage of cases. The danger to the singing voice from stiffness and adhesions begins, theoretically, long before that to the speaking voice. The present situation calls for further intelligent efforts applied to technique and delicacy of procedure and possibly to greater care in lessening postoperative scar tissue. Until the situation is further cleared up, for the surgeon to go on performing indiscriminately tonsillectomies on the throats of adults with singing voices of great beauty or of great importance to their possessors is for him to take risks which the artist himself would not consent to take did he know clearly the situation. The weakness of the present professional attitude in favor of the exclusive employment of the extracapsular operation lies in the fact that no evidence exists which proves that an operation aiming at a clean complete intracapsular lymphoidectomy might not prove to be practically as capable of eliminating infective dangers as the present extracapsular operation. Such an operation would not only be free from serious deformity, but would be altogether a less serious operative procedure. The profession in justice to its scientific aims must turn toward the matter of developing a thorough though relatively conservative operation, which preserves undisturbed the tonsillar capsule.

9. Personal Experience in the Surgical Treatment of Intestinal Stasis.—J. Shelton Horsley. (See MEDICAL RECORD, June 16, 1917, p. 1061.)

10. The Diagnosis of Acute Pancreatitis.—William Linder. (See MEDICAL RECORD, June 16, p. 1071.)

The Lancet.

August 11, 1917.

1. Gunshot Wounds of the Knee Joint; Treatment in a Base Hospital. J. Campbell and F. H. Wolfenden.
2. Irrigation and Suction Drainage for Treatment of Certain War Wounds. George C. Sneyd.
3. Thermalgia (Causalgia). John S. B. Stopford.
4. Bayonet Wounds of Buttock; Lung Punctured: Surgical Emphysema. John D. Hayward.
5. A Note on Cervical Laminectomies. With Illustrative Case. R. B. Blair.
6. Cultural Experiments with the Meningococcus. H. Warren Crowe.

1. Gunshot Wounds of the Knee Joint. Treatment in a Base Hospital.—J. Campbell and H. H. Wolfenden give full details of a treatment which they have found

to be of great value. Their work covers a period of about two years in a base hospital in France and their conclusions are based on many hundreds of cases. The aim of the treatment in all but the very mildest cases is to obtain complete obliteration of the joint ending in bony ankylosis. The first essential in the treatment of septic infection of the knee joint is drainage and the usual incisions on either side of the patella are utterly inadequate to prevent accumulations, for the pus would have to ascend against gravity to escape from the joint, even though the lateral incisions have been large. The authors have employed several methods but they find that the most effectual way of draining the joint is to make posterior incisions, thereby confirming the value of the method of Major Novis, described in *The Lancet* of July 7, 1917. The authors are entirely opposed to the use of rubber drainage tubes in the joint, holding that the drainage tubes maintain the sepsis and interfere with the closure of the joint, and they view with equal disfavor washing out the cavity, for this procedure also delays or prevents the obliteration of the synovial cavity. The principles of treatment which they rely upon are: first, complete fixation of the joint, and this is obtained by the use of the Thomas knee splint, with fixed extension. The thigh and calf are supported in the splint by sheets of perforated zinc. When these supports are once applied they are never removed if possible, even when an operation has to be performed, and in order that no further infection of the joint should occur, it is recommended that one surgeon only should deal with the cases and do all the dressings himself. The Carrel treatment is employed, the tubes being carried into the innermost recesses of the joint. The wound is dressed with gauze moistened with the hypochlorous solution, and two or three drachms of the solution are injected down each tube at intervals of two hours a day and night with perfect regularity. When this method of treatment was efficiently carried out the infection was effectually counteracted; even from the deeper parts of the wound the invading organisms and their products were washed outwards and no further infection of the joint from without could occur. From the records of his series of cases it appears that the amount of pus under this technique is very small and adhesions form quickly between the bones leading to the obliteration of the joint cavity, and furthermore it is unnecessary to dress the case more than once in twenty-four hours.

3. **Thermalgia (Causalgia).**—John S. B. Stopford reports a number of cases of this distressing condition, which he believes has not received the attention it should because of the misleading name applied to it. He suggests the substitution of the more obvious name, thermalgia. He points out that the condition occurs much more frequently in gunshot injuries of the nerves than in civil injuries, this being due to the frequency of partial division and the excessive formation of scar tissue in the former. From a study of a large number of cases it is clear that thermalgia as generally described is only an extreme type of many median and sciatic injuries and to determine its etiology it is necessary to investigate all cases in which pain is the predominant and constant symptom. The associated symptoms of median and sciatic injuries may vary considerably. From the appearance at operation and microscopic examinations of excised portions of nerve the two constant conditions are partial division of the nerve and intraneural fibrosis. There is also an increased vascularity as evidenced by the color of the nerve and the aggravating oozing which occurs during neurolysis from the divided capillaries. The intense pain may best be explained as due to some interference of vasomotor control. All the conditions point to vasodilatation, but the mechanism by which it is induced is not so evident. Since severe pain is the urgent symptom the object of treatment must be directed toward its relief. Usually only a few of the nerve fibers are severed and the aim must be not only to relieve the pain but also to conserve the undivided fibers. Only operative measures achieve this satisfactorily, and to obtain the best results they must be adopted at the earliest moment. The indications for early operation are the agonizing pain, which wears the patient mentally and physically and may persist for months and so prevent the paralyzed muscles from being treated, and the permanent disabilities motor, sensory, and vascular, which are frequently the result of the progressive fibrosis. The essential factors in successful operative treatment appear to be: (1) Careful separation of all adhesions around the nerve and absolute clearing of all perineural fibrosis. (2) Complete hemostasis to reduce the resultant scar as much as possible. (3) Protection of the nerve at the site of injury to prevent recurrent adhesions. Fat seems to serve this purpose best, since it minimizes the risk of the formation of a thick fibrous sheath around the nerve. Failing to procure fat, it is best to suture the injured muscles so that the raw surfaces are exposed and only undamaged portions are in contact with the nerve. From the author's personal observation it has been proved that this is preferable to substituting any other material for fat. Suture of a few severed fibers is to be avoided on account of the risk of further irritation and recurrence of symptoms, and further, more good functional results occur without it.

British Medical Journal.

August 11, 1917.

1. The Institutes of Surgery: A Historical Review. Berkeley Moynihan.
2. A Reconsideration of the Principles and Methods of Hugh Owen Thomas. Some Reflections on Thomas's Splints and Practice. J. Lynn Thomas.
3. The Origin of Orthopedic Surgery. A. Rocyn Jones.
4. The Use and Abuse of Bone Grafts.—T. P. McMurray.
5. A Possible Electrocardiographic Sign of Myocardial Change. S. Russell Wells and J. Strickland Goodall.

2. A Reconsideration of the Principles and Methods of Hugh Owen Thomas.—J. Lynn Thomas calls attention to the fact that Hugh Owen Thomas is the author of the treament of delayed union of fractures and diseases of the joints by what is known today as Bier's method, but which was called by its originator "Damming the circulation" (Thomas on "Principles of Treatment of Fractures and Dislocations," p. 29-30, 1866). He reviews Thomas' method of treating fracture of the femur, reducing simple backward dislocations of the ankle joint, setting a Pott's fracture, reducing dislocation of the hip, the aftertreatment of amputations at or above the knee joint, and his diagnostic method for detecting flexion deformities at the hip joint. The writer especially emphasizes the fact which he thinks is not sufficiently realized by the profession, that the amount of force used by Thomas and Robert Jones in the treatment of orthopedic cases is enormous, far greater than that in general use. For example, the force of the pull reducing dislocations of the ankle or of a Pott's deformity after the method described in this paper easily exceeds 300 pound weight. In wrenching a foot a Thomas' wrench 12 inches long and applied in the way that Robert Jones uses it against the hip has enabled the writer without much strain to raise a dead weight of over a quarter of a ton (564 pounds). The strength of the side bars of Thomas' knee splints even for children is at least four times as strong as the aluminum splint used for adults, while Thomas' adult splint will stand more than ten times the force which renders the aluminum rod perfectly useless. By setting a fractured limb Thomas meant that the limb was to be restored to perfect symmetry, that is to say proper alignment and length. In order to do this he used forces running into hundreds of pounds at the time of setting by means of pulleys, levers, and special appliances constructed for the purpose. The writer believes that the vogue of operations for plating fractures and for tenotomy is only a passing fashion, that there will be a return to Thomas' methods, and that the creation by the War Office of military orthopedic centers embodying Thomas' plan of establishing workshops in direct connection with the hospitals is a development full of potentiality for good.

5. A Possible Electrocardiographic Sign of Myocardial Change.—S. Russell Wells and J. Strickland Goodall say that, while modern methods of examination permit surprisingly accurate diagnoses of valvular defects, there has by no means been the same precision in our means of determining the state of the heart muscle. It is not possible as yet to say that we can accurately visualize in any individual case the condition of the myocardium as we can, for instance, that of the aortic valves. The authors have had during the last few years the opportunity of examining several thousand

heart cases and of comparing the clinical findings, and in a large proportion the subsequent histories as well, with the electrocardiograms. As a result of these observations they have become convinced that the height of the second ventricular, or T wave, affords some indication of the efficiency with which the ventricles are functioning. With a view of bringing their opinions in some measure to the proof, it seemed that if they could get cases in which there was clinical evidence of myocardial change, and in which the electrocardiogram showed small or absent second ventricular waves, and if on treatment these waves increased or reappeared in the electrocardiograms concurrently with an improvement in the clinical conditions, it would, to a certain extent, support their contention. Unfortunately myocardial degeneration is not a condition that yields readily to treatment, so that suitable cases for such an observation are by no means common. It seemed, however, that syphilitic myocarditis might afford the required material. They have investigated two cases of syphilitic myocarditis which gave very conclusive proof that absence of the second ventricular wave in the electrocardiogram indicates myocardial change. These curves serve to confirm many others in their possession, and they hope other observers, and above all electrocardiographic observers, will put on record their experiences, not only in syphilitic cases, but also in other forms of myocardial involvement.

La Presse Médicale.

August 2, 1917.

Elimination of Quinine by the Urine.—Jeanselme and Dalimier state that most of the quinine taken for malaria escapes by the kidneys. We do not know how long it remains in the body and the authors sought to determine the point, for after elimination has ceased more of the remedy may be required. A practicable reagent to employ for this purpose is Tanret's iodomercuric solution which throws down all alkaloids in solution. To experiment, the authors exhibited 1 gm. of basic hydrochlorate of quinine by the mouth and by intramuscular and intravenous injection. When injected into a vein the alkaloid appeared at once in the urine, reached its maximum in from 4 to 6 hours, and disappeared at an average time of 27 hours. Given by the two other methods the drug reached the urine in from 15 to 25 minutes. When given by the mouth it disappeared from the urine in 35 hours, but after intramuscular injection whether in solution or oil emulsion it remained in the body for 50 or 60 hours, so that other things being equal this should be the preferred way to give the drug to secure economy of dosage, as far as a single dose is concerned. But when the drug is exhibited in repeated doses all this selection seems to disappear, for if a fixed dose is given daily for 4 days, the drug does not leave the urine for 48 hours, irrespective of the route used. There is, however, this difference, based on the first results, that while by the mouth or the intravenous route a daily dose is necessary, by the intramuscular route a dose every second day will suffice.

Pathogeny and Evolution of Diphtheria.—Danyss sums up our latest acquisitions on these subjects as follows: Diphtheria is a local infectious disease, the antigen being colloidal, soluble, and directly toxic. There is no incubation period. The affinity is wholly for the cells of tissues of ectodermic origin. The antibody is normal, intracellular, and can fix the antigen with overloading. Compounds of antigen and antibody may be immunizing for the cells and the organism if the quantities are equivalent or if there is an excess of antibody; or they may be more or less pathogenic (anaphyiactic) if there is an excess of antigen with fixation of the latter by the cellular antibody in excess. The intravascular reactions involve the formation of neutral, soluble, and directly assimilable or eliminable compounds of the quantities of antigen and antibody (antitoxin) are equivalent or if the latter is in excess. Anaphylaxis under such circumstances will never be produced.

The Oculocardiac Reflex in Wounded Soldiers.—Gautrelet sums up his investigation of this subject as follows: The oculocardiac reflex is clearly exaggerated in the majority of wounded soldiers observed some months after the injury. There is a constancy and special intensity of this symptom in subjects with reflex contractures. An exception is seen if the traumatism is purely osseous. The sympathetic disturbances seen with a positive oculocardiac reflex indicate the presence among wounded soldiers of a nervous disequilibrium in the interest of the autonomous nervous system.

Le Progrès Médical.

August 11, 1917.

The Myotonic Reaction of the Trapezius in Pleuropulmonary Tuberculosis.—Loeper and Codet refer to the classic belief that in tuberculosis some of the muscles of the shoulder girdle undergo atrophy. There is a possibility that such atrophy is the result of myositis or neuritis but it is chiefly of reflex origin and seldom occurs save in the presence of a deep seated lesion of advanced tuberculosis. In an acute process the evolution of the atrophy may be acute. Difficult of recognition the myopathy has no small diagnostic value when present, but naturally only when it is of precocious evolution. The muscles whose fibers run transversely are those in which reduction of size is most readily recognized. Percussion of an affected muscle causes a contraction and the formation of a knot *in situ* which is limited in extent and of short duration. Pinching does not cause contraction but a knot is formed which persists longer than that above mentioned. This nodal formation has been termed myoedema but myotonic reaction is a better term. Under the former designation have been included phenomena seen in nontuberculous affections and it has even been regarded as a cachexia reaction, an infection reaction, etc. It is not claimed to be in any wise peculiar to consumptives and perhaps connotes only a general muscular irritability due to toxemia. The authors write with special reference to a myotonic reaction limited to the trapezius. If the superior border of the latter is pinched while relaxed, using a special technique, a knot becomes apparent both to vision and palpation and persists from 5 to 10 minutes. The reaction should be equal on both sides and inequality implies a pathological condition. Thus in affections of the lung parenchyma, as pneumonia, the reaction is more pronounced on the affected side. In chronic pleuritis with adhesions the reaction appears to be inhibited. But these inequalities are difficult to appreciate *per se*, and electrodiagnosis must be used to render them more obvious. The authors have studied 300 cases of tuberculosis in respect to the myotonic reaction and learned that inequality is of very common occurrence. In infiltration and cavities of the apex the accentuation of the reaction on the affected side is striking. Even special congestion can determine an inequality. As already stated, acute processes cause a specially lively reaction on the affected side. When there are complications of lesions, which often happens, the diagnostic value of the reaction is weakened. The authors assert their belief that in all routine examinations the state of the myotonic reaction of the trapezius should be worth recording.

Il Policlinico.

June 24, 1917.

Rare Case of Rupture of the Aorta.—Soprano reports the following: A soldier reported ill on a morning, accusing vague rheumatic pains. He was admitted to a medical ward and five hours after his first appearance before the regiment surgeon was seen to turn pale and fall. He had died instantaneously. The victim, aged 36, had been robust and cerebral hemorrhage seemed out of the question. A case of cerebrospinal meningitis had recently occurred in the division and this made it advisable to perform a thorough autopsy. The provisional diagnosis, however, was rupture of an aortic aneurysm. The autopsy was made by an expert pathologist who found the encephalon absolutely intact as was also the abdominal cavity. When opened from in front the thorax seemed quite normal save that the pericardial sac was found distended with blood clots. The heart, although compressed by the latter, was entirely natural. The great vessels at their origin were invested with a mufflike formation of blood clots. About 2.5 cm. from the origin of the valvular orifice of the aorta and on its anterior wall was a long tear (3 cm. in length) with

even borders. The vessel wall was quite normal and showed no dilatation. Nowhere was there any suggestion of lues, malaria, or arteriosclerosis. In other words, here was a veritable traumatism of an intact structure with no clue as to its nature. The autopsy diagnosis was "rupture of the aorta with secondary hemopericardium due to a probable traumatic cause and as the sole cause of death." A history was obtained of a fall on the sternum but there was no trace of external injury. The victim had been working at machine rock drilling and was in the habit of supporting the hammer on his chest when it was not in action. For several days before his death he had worked only with a crowbar. During this period he had complained of a stabbing sensation in the cardiac region and it is possible that this was associated with the fall above mentioned in which he may have struck his chest upon a rockpile. The rheumatoid pains for which he had first applied for relief, which seem to have been felt about the chest, suggest a possible angina pectoris due to aortic disease. But such data throw little light on the probable mechanism of the injury. The author knows of but 4 analogous cases in literature. Three factors are believed to be necessary to rupture a healthy aorta, viz., muscular effort, with high intravascular tension and sustained pressure upon the internal wall of the vessel. In one of the 4 cases on record a soldier fell dead on the march after complaining of vague pains in the chest. He had spent the preceding night in an orgy. At autopsy it was found that the ruptured aorta was free from pathological alterations.

Norsk Magazin for Laegevidenskaben.

July, 1917.

Repair of Perforated Gastric Ulcer with a Free Peritoneal Transplant. Raabe reports a case of gastric ulcer in a man of 45 who was under regulation medical management when a perforation occurred. Laparotomy was performed and the lesion was found on the lesser curvature. Attempts at suture were unsuccessful and a flap 4 cm. x 4 cm. was taken from the peritoneum between the falciforni ligament and the parietal reflection and fixed over the opening with matrass sutures. The infected peritoneal cavity was now disinfected and drained at the lowest angle of the wound. For three weeks patient was nourished with rectal enemata. The first day the Murphy drip was used and thereafter eggs and milk were given by the rectum apparently without attempts at predigestion. From the 23d to 30th day patient was nourished both by rectum and mouth. This prolonged rest of the stomach was doubtless responsible for the success of the transplantation. Importance was also attached to cauterization of the margins of the opening with carbolic acid. After suturing was complete the suture lines were touched with iodine tincture. This operation was performed in August, 1916, and the patient did well until the following May, when he presented symptoms which suggested pyloric obstruction. The final diagnosis after radiography was benign stenosis of that orifice. An operation was performed of pyloric exclusion by retrocolic gastroenterostomy but death occurred from postoperative pneumonia. The anterior margin of the liver, the stomach and part of the transverse colon were adherent to the abdominal wall. The remains of the old defect on the anterior surface could be made out in a mass of scar tissue, with the transplant in place. But a second ulcer was found on the posterior wall of the stomach which showed beginning cancerous involvement under the microscope. During the operation the presence of adhesions had made it necessary to unite the central portion of the stomach to the jejunum where the peritoneal cavity was free.

Acute Leucemia.—An article on this subject by Nicolaysen closes with a summary of differential diagnosis between the acute myelogenous and acute lymphatic forms. The blood picture, when Pappenheim's staining method is used, is usually sufficient. In many cases the diagnosis can be made clinically in association with the application of the criterion of indophenol synthesis. Of three cases reported by the author one appears to have been lymphatic and the other two myelogenous in origin. In the first named, aside from evidences of the blood count, the indophenol test was negative. In one of the myelogenous cases, briefly narrated, there was evidently no room for doubt in the diagnosis, the blood current being unequivocal.

Correspondenz-Blatt für Schweizer Aerzte.

July 21, 1917.

Active or Conservative Treatment of Abortion.—Engler analyzes 170 cases of abortion treated in the Strassburg Gynecological Clinic from April to November, 1916. In all but 10 cases, in which complications were present, active treatment was used, chiefly curettage. Of the 160 cases 100 had no fever at any time, 30 had subfebrile temperatures and 30 actually had fever (38° and above). It is a question whether subfebrile cases should not belong under febrile cases. They often make the impression of sick or infected women and may have premonitory chills. A good rule is to regard all fever-free patients as candidates for active treatment. The average sojourn of this class in the hospital was 5 or 6 days. In both the subfebrile and febrile classes practically all cases ran a mild course and there was no mortality. In fact, but 2 of the 160 cases could be regarded (aside from the temperature) as really ill. The total average sojourn for the 160 patients was but 7 days. Naturally curettage is doubly urgent in the feverish and febrile cases. Bacteriological studies were made in 120 cases and hemolytic streptococci found in 15. In 38 others anhemolytic streptococci were present while in 28 there was an abundance of mixed cultures. Some 25 cases may be regarded as sterile. Comparison of the bacteriological finds in the three types of cases is not instructive. The nonfebrile cases showed as many pathogenic germs as the febrile—perhaps more, for a third of the febrile cases gave negative finds. It is supposed that in such cases the patient enjoys an immunity.

Significance of the Cuti-reaction after Tuberculin Inoculation for the Therapy and Prophylaxis of Tuberculosis.—Lanz sums up his extensive study as follows: Repeated cutaneous inoculation with tuberculin exert—like the injections of the same—a curative effect, the tuberculin being built down to harmless substances, protective antebodies are formed, the system is detoxicated. These processes come about through reactive inflammations in the superficies of the skin as a result of which diseased foci are spared and an injurious general reaction is avoided. Hence cutaneous reactions are superior to injections for the latter are associated with a hemic reaction. Sahli's procedure with groups of punctures is superior to others provided the dosage and increase are proper, because the conditions favor a larger dose of tuberculin. The cutaneous method is readily carried out in the case of the curative and symptomatic treatment of mild and severe cases respectively and is also adapted to the prophylactic treatment of those who have been exposed or who have latent foci. Hence it is possible to use it in the group treatment of the public under certain conditions. The services of several practitioners may be necessary and the group should be treated over a considerable interval. The dietetic-hygienic treatment should be maintained with its customary rigor.

Whole Bread.—According to Lepinay a bread made from whole grains has been used in Paris for the past twenty-five years. Externally it is black and on section yellow-brown. It is palatable and known chiefly as a dietetic bread. It ought to be cheaper than white bread, but for some reason it is dearer. There are whole wheat, whole barley, and whole oat breads of this character, and similar loaves may be made of rice and buckwheat. It is possible to make mixtures which appeal to individual tastes and requirements.—*La Presse Médicale.*

Alcohol and the Needle-Threading Test.—Tössermann abstained from alcohol for two weeks and then for a second period of the same length drank every evening at 11 P. M. 100 c.c. of a 25 per cent. solution of alcohol (about equal to 3 ounces of 100 proof whiskey). At the end of each period he tested his ability to thread 200 No. 6 needles according to a special technique, and computing by time units found his efficiency had been diminished about 10 per cent. as a result of the alcohol ingestion.—*Annali d'Igiene.*

Book Reviews.

SCIENCE AND LEARNING IN FRANCE, With a Survey of Opportunities for American Students in French Universities. An Appreciation by American Scholars. Price $1.50. Published by the Society for American Fellowships in French Universities, 1917. Sales Agents: A. C. McClurg & Co., Chicago.

THE scientific and literary world not only of France but of this country as well owes a debt of gratitude to the Society for American Fellowships in French Universities for conceiving and carrying to execution, under the capable editorship of Prof. John H. Wigmore of Northwestern University, Chicago, the idea embodied in this handsome volume. The publication of the volume is timely now that Germany is closed to students and is not likely to be sought by those of the Allied nations for many years after her defeat. Foreign study is, however, desirable if only for giving a new direction to thought, and it is a praiseworthy undertaking to make known to the many what has long been known to the few, that France holds out opportunities for study in some respects far more to be prized than those formerly so eagerly sought in Germany. That America has not appreciated this sooner is largely the fault of France herself; her spirit of chauvinism, forced on her perhaps in a measure by the overbearing insolence of the Teutonic victors, for many years repelled those who would have visited her universities gladly had they felt they were welcome. Now, however, the University regulations which practically barred out Americans and other foreigners have been removed, and with them, helped on no doubt by the new feeling of brotherhood engendered by the war, has disappeared the chauvinistic spirit that, even more than the University regulations, chilled the ardor of those who admired and loved France and would gladly have studied at the feet of her masters.

The aim of this book is "to put before the American public the contributions of France in all fields of scientific knowledge, and to show her status in the forefront of the world's progress; and, in addition, to furnish to American University students all information bearing on graduate work in France." There are twenty-two chapters dealing with Anthropology, Archæology, and the History of Art, Astronomy, Botany and Agriculture, Chemistry, and the other divisions of literature, science, and art. The introduction comprises two essays on "The Mind of France," by Emeritus President Charles W. Eliot of Harvard, and "The Intellectual Inspiration of Paris," by George Ellery Hale, foreign secretary of the National Academy of Sciences. The three appendices contain much information of a practical character for intending students in French institutions of learning. The section dealing with Medicine is naturally the one that appeals especially to physicians. It comprises six chapters relating to Physiology, Neurology, Internal Medicine, Surgery, and Pathology, with an interesting Introductory Survey by Dr. T. C. Janeway. The other contributors to this section are Drs. William H. Howell, Hugh T. Patrick, Morton Prince, W. S. Thayer, A. D. Bevan, D. B. Phemister, and F. P. Gay. The reader who has been wont to regard the whole of medical science as "made in Germany" will be properly oriented as to the important contributions to all branches of medicine made by Frenchmen. Throughout the book are many portraits of leaders in science, art, and literature in France.

A perusal of this volume leaves one with a feeling of intense gratitude to the armies of France whose valor kept out of Paris the barbarian hordes which had destroyed the University of Louvain and burned or stolen the books and manuscripts in its priceless library, shelled the Cathedral of Rheims, and wrecked so many other matchless monuments of civilization. One shudders to think of the libraries, museums, and art galleries of Paris given over to the destruction and defilement that follow everywhere the incursions of Kultur.

TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY. Twenty-seventh session. Held at the Laurel House, Lakewood, N. J., May 24, 25, and 26, 1915. Edited by LINNAEUS EDFORD LA FÄTRA M.D. Volume XXVII.

THIS volume lives up to the reputation already so well established by the previous ones from this Society. A study of the names of the authors of the articles presented as well as the list of members brings an appreciation of the advances made in pediatrics since the foundation of the Society in 1888. How hard these specialists have worked to develop not only among themselves but also among the general practitioners, a scientific understanding of the body of the child! How long will it be before they wisely decide to put forth as much effort in the understanding of the mental processes which control to rather an amazing extent the physical conditions of the growing boy and girl in a world so completely, so typically all their own?

PRACTICAL DIETETICS WITH REFERENCE TO DIET IN DISEASE. By ALIDA FRANCES PATTEE, Graduate, Department of Household Arts, State Normal School, Framingham, Mass.; Late Instructor in Dietetics, Bellevue Training School for Nurses, Bellevue Hospital, New York City; Former Instructor at Mount Sinai, Hahneman and the Flower Hospital Training School for Nurses, New York City; Lakeside, St. Mary's, Trinity, and Wisconsin Training School for Nurses, Milwaukee, Wis.; St. Joseph's Hospital, Chicago, Ill.; St. Vincent de Paul Hospital, Brockville, Ontario, Canada. Tenth Edition, Revised and Enlarged. Price, $1.50. Mount Vernon, N. Y.: A. F. Pattee, 1916.

ONE studies carefully the seventh, eighth, and ninth editions of books on diseases of the stomach with a sense of bewilderment at the almost hopeless increase in the number of stomach conditions recognized more completely during the past ten to twenty years. Then one picks up a book on dietetics to find it has followed in the footsteps of the books on gastric conditions, bringing up in an almost equal number of editions. What is wrong? Is the race to become one of chronic dyspepsia with an eighth edition of Diseases of the Stomach in one hand, and a sixth edition of Practical Dietetics in the other? Cannot the Practical Dietetics quiet sufficiently the fears of the Diseases of the Stomach, or will the Diseases of the Stomach finally submerge the efforts of the dietetic volumes?

If a brave fight is to be made for healthful living through proper feeding in sickness and disease, then this book of Miss Pattee's well deserves to have lived so wholesomely through six editions. It contains the State Board Examination Questions on dietetics of many States, then proceeds to the principles of nutrition and food preparation. Diets for almost all types of diseases are given; under special diets are given those needed during motherhood, infant feeding, the feeding of young children and adolescents, diet for the sedentary, and ending in a most important, but little recognized dietary field, that of proper food for the aged. Recipes galore are given, and explanations are so clearly given that it does not seem possible that anyone could possibly misinterpret the directions.

The author in her chapter on infant feeding has frankly acknowledged her indebtedness to the work and investigation of several pediatrists, namely, Holt, Shaw, Grulee, and Ladd. She has also expressed her appreciation of assistance received from other medical sources. The dietary routine of many different hospitals is included, naturally, since the author has had such a wide range of experience in teaching in the hospitals of this country and Canada. The book is attractively bound in the blue and white striped muslin used in the making of nurses' uniforms in many hospitals.

THE INTENSIVE TREATMENT OF SYPHILIS AND LOCOMOTOR ATAXIA BY AACHEN METHODS. By REGINALD HAYES, M.R.C.S., etc. Second Edition, Revised. Price, 3s. 6d. London: Baillière, Tindall & Cox, 1917.

BEFORE discarding entirely the older methods of treating syphilis in our enthusiasm for the arsenical preparations it would be well if this handy little volume were consulted. It discusses the mercury inunction, given by trained rubbers and supplemented by sulphur water, both externally and internally, the latter with the idea of forming a soluble sulphide of mercury in the body. This is the treatment as given at Aachen, but the writer is of the opinion that it can be carried out satisfactorily at home, which is interesting in view of the present inaccessibility of Aachen. The book is well written and the illustrations are good.

Food Poisoning. By Edwin Oakes Jordan, Chairman of the Department of Hygiene and Bacteriology, The University of Chicago. Price $1.00 net, postage extra; weight 14 oz. Chicago: The University of Chicago Press.

According to the announcement made in the front of the book, this especial Science Series "owes its origin to a feeling that there should be a medium of publication occupying a position between the technical journals with their short articles and the elaborate treatises which attempt to cover several or all aspects of a wide field. . . . The volumes . . . will present the complete results of an experiment or series of investigations which previously have appeared only in scattered articles, if published at all. On the other hand, they will differ from detailed treatises by confining themselves to specific problems of current interest, and in presenting the subject in as summary a manner and with as little technical detail as is consistent with sound method."

This states exactly what is the matter with this short member of the series. The book is a collection of the newest thought on food poisoning and there is, so far as can be ascertained, no original work incorporated by the author. What is written is well stated, but like so many other attempts that have been made to present scientific knowledge in a popular style, it fails of its purpose. No professional reader would need it, for all of the abstracts have been taken from the journals usually read by the medical and allied professions; as for the nonscientific reader, he would be stranded in a maze of to him unintelligible words. For instance, on page 35, in referring to the presence of benzoic acid in food the author states that "in point of fact, substances present in many ordinary foodstuffs are converted within the human body first into benzoic acid and then into hippuric acid." Turning the page, he refers to a quotation from Folin with reference to the fact that benzoic acid in the system or put there through even unadulterated food, "might be deleterious to health except for the saving hippuric acid forming process." No attempt is made to explain to the reader what this "saving process" is, and even a professional reader would have to brush up his organic chemistry of long ago in order to have a satisfying knowledge from his hour's reading.

The author has no doubt done the best he could in the space allowed him, but it is a pity that such a capable editorial committee as controls this series could not allow a few more pages in order that the book could truly meet the attainment of its purpose, simplicity and clearness as well as brevity, which it at present most certainly lacks.

Mechanisms of Character Formation. An Introduction to Psychoanalysis. By William A. White, M.D. Price $1.75. New York: The Macmillan Company, 1916.

Psychology, perhaps more than many of its sister sciences, has of late years received a tremendous impetus and awakening. This is especially true in its association with the field of medicine, where physicians have been made to realize the value of its employment in the treatment of the mental as well as the physical sides of many so-called abnormal conditions. However much many members of the medical profession may agree or disagree with Freud in his basic facts and theories regarding the processes of psychoanalysis, they are compelled to admit that he has aroused the thinking physician from a trancelike condition as to his responsibility toward his patient. Rather roughly and with a sense of immediate need and advantages of the employment of psychology, Freud has shown that in so many cases not typically medical or surgical there is required a deeper, sounder knowledge of the individual. Not the surface man that the body and ordinary mental processes outline for examination in health and disease has he studied, but that submerged, elusive, unknown self, which, as has proved, governs unconsciously to an alarming extent the attitude and actions of the personality in health, and so much more so when abnormally balanced by fear through disease.

Freud and his theories are not easily understood, even by the followers who so faithfully out-Freud the master. It is not to be expected, therefore, that the average non-psychic, everyday physician can understand or accept so radical an upset of his smugly arranged bases for life, which have carried the most of the profession so safely to port in stormy seas. Freud may be right or he may be wrong, but he has at least accomplished one or two good results—a demonstration of how little is really known about the psychical life of the individual, and a merry war of controversy as to the correctness of the tenets heretofore accepted in psychology together with a controversy over the sweep of the entire Freudian scheme of human life. This controversy has brought forth much literature on the subject. Much has been published which has been almost unintelligible even after considerable study on the part of discerning physicians. This too has been recognized by some of the Freudian adherents, and efforts to elucidate the Freudian concepts have been made. Among these publications is this volume on the Mechanisms of Character Formations offered by White which forms a steppingstone from the old psychology up to the newer field opened up by Freud. The author in as simple words as can possibly be used explains the various terms, symbols, and concepts which form the basis of this new approach to a clearer understanding of humanity. He begins with the genetic approach to the problem of consciousness carries us through the unconscious with its conflict through the libido which seems to be the great stumbling block for many minds, on up to the will and the outcome of the conflict. The book is written with such a sincerity of spirit, such a definiteness of purpose, and with such a subtle charm that whether one is in harmony with the subject matter presented or otherwise controlled, there is no doubt but that the beauty of soul unconsciously imparted, together with the straightforwardness of the attack made on the material offered, cannot help but put the reader in a more tolerant, honest frame of mind and heart toward this new method of comprehension of one's fellow men.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics, Materia Medica and Diagnosis in the Jefferson Medical College, Philadelphia, assisted by Leighton F. Appleman, M.D., Instructor in Therapeutics, Jefferson Medical College, Philadelphia. June 1, 1917. Price, $6.00 per annum. Philadelphia and New York: Lea & Febiger.

The June number of Progressive Medicine contains chapters on Hernia, by W. B. Coley; Surgery of the Abdomen, Exclusive of Hernia, by J. C. A. Gerster; Gynecology, by J. G. Clark; Diseases of the Blood, Diathetic and Metabolic Diseases, Diseases of the Thyroid Gland, Spleen, Nutrition, and the Lymphatic System, by A. Stengel, and Ophthalmology, by E. Jackson. This work is now too well known to need any detailed comment; but we would draw the attention of our readers to Doctor Clark's discussion on the cancer problem, which is always a feature of the June number.

State Board Questions and Answers. By R. Max Goepp, M.D., Professor of Clinical Medicine at the Philadelphia Polyclinic; Assistant Professor of Clinical Medicine, Jefferson Medical College; Assistant Visiting Physician to the Philadelphia General Hospital. Fourth edition, thoroughly revised. Price, $4.25 net. Philadelphia and London: W. B. Saunders Company. 1917.

Previous editions of this work have been noticed in these columns, and what was said on these former occasions will apply to the present edition. Many of the mistakes to which attention has been drawn are still perpetuated. We still read in the pages of this book that the blood is carried by the inferior vena cava to the left auricle; boron is still said to be one of the constituent elements of the human body; a poison is still said to be any substance producing deleterious effects upon the animal organism; the question on the distribution and branches of the middle meningeal artery is still inadequately answered. All of these errors and others too have persisted from the first edition. We would again repeat that "the value of a work of this sort depends upon its accuracy and not upon its size; and the only students who could use the book with safety are those who do not require such assistance."

Society Reports.

REPORT ON POLIOMYELITIS, WITH ESPECIAL REFERENCE TO THE EPIDEMIC OF 1916,

OF THE JOINT COMMITTEE REPRESENTING
THE COMMITTEE OF PUBLIC HEALTH OF THE NEW YORK ACADEMY OF MEDICINE

AND

THE NEW YORK NEUROLOGICAL SOCIETY

MEMBERS OF THE COMMITTEE: Dr. Charles L. Dana, chairman; Dr. Walter Timme, secretary; Dr. Frederick Tilney, Dr. Nathan E. Brill, Dr. Louis Casamajor, Dr. J. Ramsay Hunt, Dr. William M. Leszynsky, Dr. Philip Van Ingen, Dr. Herbert Wilcox.

WITNESSES. The following gentlemen appeared as witnesses before the committee: Dr. Philip Van Ingen, attending pediatrist Roosevelt Hospital, attending physician Willard Parker Hospital; Dr. Herman Schwarz, adj., attending physician to Children's Service, Mt. Sinai Hospital; Dr. H. M. Amoss, Rockefeller Institute, Research Department; Dr. George Draper, associate visiting physician Presbyterian Hospital, attending physician New York Orthopedic Hospital, Associate in Medicine at College of Physicians and Surgeons; Dr. C. W. Berry, Institution Inspector in Brooklyn; Dr. B. H. Waters, Director of the Bureau of Preventable Diseases of the Board of Health, New York Health Department, visiting physician Riverside Hospital; Dr. John A. Smith, Diagnostician to Board of Health in Brooklyn; Dr. J. C. Roper, associate visiting physician New York Hospital; Dr. O. M. Schloss, attending pediatrist of Bellevue Hospital; Dr. A. Zingher, assistant director in the Research Laboratory, Department of Health; Dr. S. J. Meltzer, head of the Department of Physiology and Pharmacology of the Rockefeller Institute; Dr. Haven Emerson, Commissioner of Health of New York City; Dr. Robert J. Wilson, Director of Bureau of Hospitals, New York City; Dr. B. F. Knause, Borough Chief of Brooklyn.

Object and Method of the Investigation.—The object of the committee was to make what might be called a dynamic study of the situation regarding poliomyelitis in order to find out what has been added to our knowledge of this disease through the studies and experience of the past year, both in clinical fields and in the laboratory. We have not undertaken to make any elaborate analysis of recorded observations and statistics. This work has been done by the Health Department of the city and already a publication containing such statistical reports has been prepared.

We were very fortunate in being able to secure the active and willing co-operation of the best experts of the city in all the fields of inquiry in which we were interested. These gentlemen presented to us no set papers or formal statements, but were good enough to reply to the inquiries that were made of them and to the cross-questioning which followed. The result has been a mass of critically discussed information which we have summarized under the following headings:

1. Bacteriology and Pathogenesis.
2. Immunity and Relative Infectivity.
3. Communicability.
4. Prevention of Spread; Hospitalization and Quarantine.
5. Early Diagnosis.
6. Treatment of the Acute Stage and Prophylaxis.

Bacteriology and Pathogenesis.—The microorganism described by Flexner and Noguchi in 1913 as the "globoid bodies" seems to bear a definite relation to epidemic poliomyelitis. These bodies are obtained in culture with great difficulty. While a variety of ordinary bacteria, easily cultivatable, have been obtained by various workers, the globoid bodies represent a peculiar species and thus far alone have sufficed to produce typical poliomyelitis in monkeys by intracerebral inoculation. In general they fulfil Koch's law of causation; they have not been detected in lesions or conditions other than poliomyelitis; they have reproduced the disease experimentally in monkeys, and they have been recovered from lesions thus produced. No other theory concerning the microbe origin of the disease has been generally accepted, although certain strains of streptococci have been described and claimed to be experimentally capable of producing poliomyelitis. Some evidence sustains this contention. On the other hand, there are certain experimental facts which seem to argue against it.

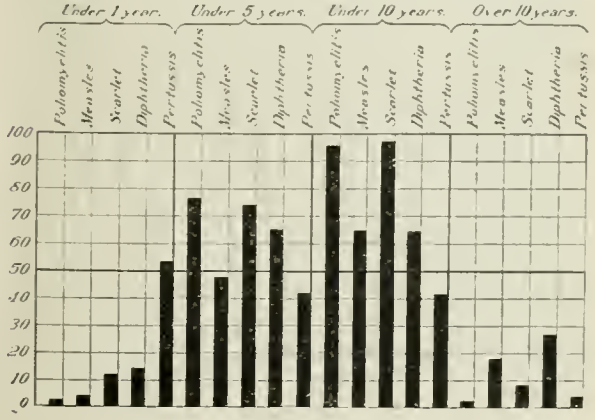
Immunity and Relative Infectivity.—It seems determined that there is a very considerable natural (or acquired) immunity to infantile paralysis. Thus infants under six months of age and most adults have a low susceptibility to the disease. The period of greatest susceptibility is during the third and fourth years. After the seventh year natural immunity seems to be rapidly acquired. The largest reports of cases are of those in the first ten years of life. That the age immunity in poliomyelitis as compared to that of other acute infectious diseases, such as measles, scarlet fever, diphtheria and pertussis is practically identical was shown in the epidemics in Sweden in 1887 and 1889, in Goteberg in 1905, and New York in 1907 and 1916. Ninety per cent. of the cases occurred before the fifth year, and 96 per cent. during the first decade. The epidemic in Sweden in 1905 showed quite a different age-distribution of the disease, as only 17 per cent. occurred during the first three years, 21 per cent. occurring after fifteen years of age, and there was an even distribution of the disease throughout the later years of life. There are rare instances of the disease occurring during the first six months, and very few in the first year of life. The latter half of the second year seems to be the period of greatest susceptibility. The low incidence of poliomyelitis during the first year corresponds closely with that of measles, scarlet fever and diphtheria. In the case of pertussis the incidence is quite different, as one-half of the cases of whooping cough occur during the first two years of life.

The period of greatest susceptibility, that is, from the second to the fifth year, in poliomyelitis again corresponds fairly well with that of measles, very closely to that of scarlet fever, and as compared with pertussis, although the latter is more common in the earlier years of life, the period of greatest susceptibility ceases at about the same time as that of poliomyelitis. In later life the increasing immunity to poliomyelitis seems to go hand in hand with that of measles, scarlet fever, diphtheria and pertussis. The disease incidence decreases quite uniformly in them all, evidencing the steady increase in natural immunity after the tenth year. These facts seemed to indicate that the natural immunity to poliomyelitis is not due to a great prevalence of abortive and unrecognized attacks. It is more likely that this immunity is of the same nature as the natural immunity against diphtheria, scarlatina, etc.

CASES PER 1000 INHABITANTS

	1915	1916
Measles	6.98	3.86
Diphtheria	2.79	2.41
Scarlet fever	1.81	1.04
Pertussis	1.24	1.33
Poliomyelitis	.02	1.61

Age-incidence of poliomyelitis compared with certain other acute infectious diseases in childhood:



Communicability and Contagion.—Poliomyelitis is a communicable disease. It is is mediately contagious, and slightly immediately or personally contagious. This slight personal contagiousness of the disease seems from the facts brought out in the last year's epidemic a thing to be strongly emphasized.

If the Committee's interpretation is wrong, it will have to be shown to be so by further and more careful studies of this phase of the question. Our views are based on the facts given in detail by Dr. Tilney in the appendix. Some of these data are:

1. That only a small percentage of the cases have been shown to have arisen from personal contagion, and in many of these there is not so much proof as inference.

2. That the great mass of the cases arise without any history of personal contagion.

3. That multiple or family cases make up only about 3 per cent., and in more than half of these the members of the family were attacked at about the same time, or not sequentially.

4. That uninfected and healthy children placed in wards containing infected cases do not take the disease.

5. That in an epidemic time (summer of 1916) in institutions caring for children and offering a fair mark for the disease there was no infection expect in a few instances. That in day nurseries in New York City, babies brought from their homes for the day and taken back at night, were not infected.

6. That in urban and rural populations, the number of cases per 1000 is greater in uncrowded country districts than in the crowded city.

7. That the small number of cases of personal contagion is not explained on a theory of very high prevalence of natural immunity.

On the other hand, there are cases which show as plainly as clinical evidence can show, that personal or immediate contagion may occur. Although it is slight and the immunity rate is high, yet its existence must at present be reckoned with. We only wish to emphasize its small absolute importance, and to urge against burdensome quarantine restrictions based on views of its importance.

An infected person, however, can probably communicate the infectious organism to certain agencies, thus making these agencies carriers of the disease. These carriers may be human beings or certain of the lower animals, insects, food, dust, and dirt. No insect or animal has been positively identified as the ordinary and active carrier in the spread of the disease, and there is not as yet any practical method to detect a human carrier.

The evidence that the germs are carried about by agencies which spread the disease, is based on many clinical and experimental observations. It seems possible that certain changes occur in the infecting organisms which make it possible for the carrier to transmit the disease while the infected person does not.

Prophylaxis; Hospitalization and Quarantine.—Experience shows that quarantine so far has never stamped out an epidemic, or affected its progress. This may be because it controls the infected person too late and does not effectively control the carriers. However, as the disease is infectious and is spread through agencies starting probably from the patient, it is wise at this stage of our knowledge to quarantine the patient, and to do this as early as possible. The efficacy of interstate quarantine, as well as of the quarantine of one town or one community against another, has not been demonstrated. On this account such quarantine seems ill-advised because of its harmful effects upon the public state of mind. The public should know that the disease spreads by agencies which we do not now recognize.

The quarantine instructions recommended by the Committee of Conference of State and Provincial Boards of Health of North America should be carefully followed. It has seemed wise that physicians, nurses, and members of the family who come in contact with the child should use the gown and protection to the head regularly required in hospitals for contagious diseases. Children are best protected by having them placed in a region free from the epidemic, or by having them live the cleanly, regular life of a well ordered hospital ward. Such a life would mean:

1. *Diet*, consisting of: Simple well cooked food suitable to the age of the child. Absolutely pure milk. Plenty of boiled or pure water. Stewed fruits and baked apples. No fresh fruits. Thoroughly cooked fresh vegetables, except corn, cabbage, turnips and tomatoes. No candies or other confections except in sealed packages. No ice cream or beverages from public venders. (In so far as possible, home preparation of all articles of food is particularly recommended.)

2. *General Hygiene:* Daily sponge or tub bath. Light washable clothing, frequently changed. Careful attention to the bowels. Avoidance of boisterous or over-strenuous play. Rest and quiet during the middle of the day. Avoidance of undue exposure to the sun. Proper number of hours for sleep according to age of the child. Insistence of routine in this particular. Separate bed for each child. Individual towels, wash cloths, soap, etc. In summer, especially during an epidemic, children should use public conveyances as little as possible, and avoid all public places.

3. *Sanitation:* Thorough cleanliness of the home, including avoidance of scattering dust during sweeping, careful cleansing of floors, woodwork, bedding and clothing. All windows should be screened. Flies should be kept out of all rooms, and especially prevented from gathering about food. Refuse containers must be kept covered, and regularly emptied. The necessity of personal cleanliness should be impressed upon the children.

The duration of the quarantine has not been entirely agreed upon. Hospitalization is recommended for cases in which the following home conditions cannot be fulfilled: (1) The regular attendance of a private physician, (2) a separate room for patient and attendant, (3) a separate toilet for the family of the patient, (4) cooperation in the quarantine regulations.

Hospitalization has proved advantageous to children suffering from poliomyelitis. Furthermore, it seems to be definitely shown that the disease is not transmitted from sick poliomyelitis cases to other sick children in hospitals, and that it is perfectly safe to send cases of infantile paralysis into a general hospital where there are other children without there being any danger of communicating the disease. Poliomyelitis rarely invades hospitals. It did not last summer. These facts appear to be due partly to the slight communicability of the disease—perhaps to the fact that the contagiousness, as in measles, is for the most part in the early stages of the disease, partly to the fact that, in hospitals especially, the methods of care for the sick prevent the transference of the disease from one patient to another. It therefore seems advisable that in any family where the disease breaks out the same methods of care for the sick in the way of contacts, of cleanliness and care of the discharges be used as are followed in the cases of contagious disease in hospitals.

Early Diagnosis.—There is no absolute and infallible means of diagnosis of this disease, but during an epidemic the presence of an acute illness with the accepted symptoms of meningeal irritation, and accompanied by an increase in the cells and pressure of the cerebrospinal fluid, make early diagnosis sufficiently easy. By some authorities the disease is thought to have a definite prodromal period which presents definite signs. These signs may last for a few hours or several days. During this time the child becomes irritable, complains of headache and loss of appetite. and slightly immediately or personally contagious. This clinical picture presents the usual features of an acute gastro-intestinal disturbance. A slight febrile reaction is often noted, varying from 99-101°. The child seems dull and listless. If the infection is particularly virulent in this period, the eye becomes bright and glassy. There is also a puffiness above and below the eye-lids; drowsiness and irritability alternate while the temperature often rises to 102°. Constipation is the rule. Another sign to which much importance is attached is the "stiff spine." This is a muscular condition in which the muscles of the back voluntarily contract whenever the attempt is made to move the child, even to a slight degree. During this prodromal period, the spinal fluid usually presents nothing abnormal beyond a slight increase in pressure. In suspected cases, however, lumbar puncture should be re-

peated every 8-12 hours. There may be no increase in the cells or in the globulin of the spinal fluid at this time.

All of the acute symptoms of the prodromal phase may disappear, and the patient seem to be in normal health for several days. Then there occurs an apparent recrudescence of the infection and paralysis develops. On the other hand, the child may not entirely recover from the acute symptoms and may remain ill for several days. At the end of this time, the paralytic symptoms develop. Immediately before the onset of the paralysis the stiffness of the spine becomes more pronounced. It is at this time that the spinal fluid first gives veritable signs of meningeal involvement. This is shown by the marked increase in the cells as well as an increase in the globulin. The number of cells, and the amount of globulin found in the fluid during this period does not furnish any definite basis for prognosis in regard to the severity or course of the disease. The blood changes are practically without significance. The marked change in cell and globulin content of the spinal fluid noted in the paralytic stage is taken as evidence of infection of the central nervous system. Cases in which the infection is limited to tissues other than those of the brain and cord constitute the group which manifests no neurological symptoms. These have been called the "abortive group," but it would seem more correct to designate them as cases without paralyses in contrast to the even better known group in which the nervous system is involved, i.e., poliomyelitis with paralysis. The prodromal period is difficult to detect except during an epidemic.

Treatment of the Acute Stage and Prophylaxis.—With regard to the treatment of the disease in its acute stage we have received data as to the use of serums—the serums of immunized patients. There is some evidence that the use of such serums does good when it is used in the preparalytic stage or at the very earliest stage of the disease. Injections of convalescent serum, 15 to 20 cc. intraspinally alone, or in addition to 30 cc. intravenously and subcutaneously have been recommended. Normal horse serum has also been recommended, but its use does not seem to be advisable. Most of those who have employed serum of one kind or another are conservative in their statements. They make no claim that they have found a means by which to cope with the disease successfully. It is their belief that since this means of therapy is the only one which has a rational basis and does no injury to the patient, it is worthy of a trial, and should be used in all cases where the diagnosis may be made prior to the paralysis. The statistics of their observations while extremely suggestive, fail to bring conviction that a specific remedy for this disease has been discovered. The intraspinal administration of adrenalin has been recommended but is still in the experimental stage. Tonsillectomy, advised by some, is endorsed by few. Lumbar puncture has been of use where there is increase of pressure and in certain cases multiple puncture at twelve-hour intervals has been helpful. In respiratory difficulties morphine may be given to induce a minimum of respiration, and oxygen may be administered by intratracheal insufflation.

No method of making children immune to the disease, or of testing out the question of their immunity by something analogous to a Schick test has been discovered. The ordinary methods of treating acute attacks have been already widely published, and nothing new has been contributed.

Prophylactic measures such as spraying of the throat and nose and gargling are deemed not only unavailing, but objectionable, if not injurious, in infants. They may tend to make the mucous membrane of the upper-air passages more pervious to the microorganism of the disease.

Acknowledgments of the Committee.—The Joint Committee wishes to express its deep appreciation for the courtesy and cooperation of the following gentlemen, whose earnest efforts in the interest of our knowledge concerning poliomyelitis have furnished the basis of this report; namely, Drs. Haven Emerson, Philip Van Ingen, Herman Schwarz, H. L. Amoss, George Draper, C. W. Berry, B. H. Waters, J. A Smith, J. C Roper, O. M. Schloss, A. Zingher, S. J. Meltzer, R. J. Wilson and B. F. Knause. We are also much indebted to Dr T. H. Weisenberg of Philadelphia for several important contributions.

Appendix to the Report

The following appendix is attached to the report since it gives the statistical basis for the conclusions of the committee concerning the contagiousness of the disease.

Studies of other epidemics as well as the epidemic of 1916 were made under the following headings:

I. Analysis of District Distribution of the Disease.
II. Institutional Incidence in Charitable Institutions.
III. Incidence and Isolated Communities.
IV. Multiple Incidence.
V. Incidence of Isolated Cases.
VI. Other Possibilities than those of Direct Personal Contact.

I. *Analysis of District Distribution of Disease.*—In crowded city districts incidence 1-1000 or 0.1 per cent. In Richmond, a rural or suburban incidence, 3-1000 or 0.3 per cent., that is, triple the incidence in city areas. The opportunities are certainly better in the city for contact, but the incidence is higher in rural districts; hence some element other than contact should be considered. This element is more prevalent, however, in rural districts. This strongly suggests that spread depends upon some population other than human. Cats and rats are more common in the country.

II. *Institutional Incidence.*—In certain institutions which care for children, cases of poliomyelitis developed during the epidemic. They are as follows:

CHILDREN'S HOMES AND NURSERIES

1. *Sea Breeze Home, Coney Island*

1. Number of inmates 2087
2. Total number of poliomyelitis cases..... 2
3. Total number developed in hospital..... 2
4. Personal contact with other poliomyelitis cases .....Not proved
5. Day of development after admittance..... .....Case (a) after 1 day, case (b) after 5 days
6. Development occurring within two weeks incubation after admittance.....Both cases
7. Infected before or after hospitalization..... .....Both cases before
8. Occurrence before or after quarantine was established .....Before
9. Contact with possible carriers.....Not proved

2. *New York Foundling Hospital*

1. Number of inmates..... 650
2. Total number of poliomyelitis cases..... 4
3. Total number developed in hospital..... 4
4. Personal contact with other poliomyelitis cases .....3 (not proved) 1 (adjacent bed)
5. Day of development after admittance..... .....1 (7th day) 3 (14th day)
6. Development occurring within 2 weeks' incubation after admittance. All except 1 case developed in longer than incubation period.
7. Infected before or after hospitalization..... .....1 before, 3 after
8. Occurrence before or after quarantine was established .....All before
9. Contact with possible carriers.....Not proved

3. *Angel Guardian Home*

1. Number of inmates 600
2. Total number of poliomyelitis cases..... 1
3. Total number developed in hospital..... 1
4. Personal contact with other poliomyelitis cases .....Not proved
5. Day of development after admittance.....14th day
6. Development occurring within 2 weeks incubation after admittance...Within incubation period
7. Infected before or after hospitalization.....Before
8. Occurrence before or after quarantine was established.....2 weeks after
9. Contact with possible carriers.....None proved

4. *Home for Destitute Children*

1. Number of inmates.....Not given
2. Total number of poliomyelitis cases..... 3
3. Total number developed in hospital..... 3

4. Personal contact with other poliomyelitis cases .....None proved
5. Day of development after admittance..... .....5th day, 7th day, 10th day
6. Development occurring within 2 weeks incubation after admittance..... .....All cases developed within incubation period
7. Infection before or after hospitalization..... .....Contacts possible after hospitalization
8. Occurrence before or after quarantine was established ..... Before
9. Contact with possible carriers.....Possible (Children allowed to go to Prospect Park)

5. *Sheltering Arms Nursery*

1. Number of inmates..... 116
2. Total number of poliomyelitis cases..... 1
3. Total number developed in hospital..... 1
4. Personal contact with other poliomyelitis cases .....Not proved
5. Day of development after admittance....Not stated
6. Day of development occurring with 2 weeks incubation after admittance.....Not stated
7. Infected before or after hospitalization..Not stated
8. Occurrence before or after quarantine was established ..... After
9. Contact with possible carriers.....Not stated

6. *St. Joseph's Home*

1. Number of inmates.....Unknown
2. Total number of poliomyelitis cases..... 2
3. Total number developed in hospital..... 2
4. Personal contact with other poliomyelitis cases ..... Not proved
5. Day of development after admittance...Not stated
6. Development occurring within 2 weeks incubation after admittance.....Not stated
7. Infected before or after hospitalization..... .....After hospitalization
8. Occurrence before or after quarantine was established .....After
9. Contact with possible carriers.....Not proved

7. *St. Joseph's by the Sea*

1. Number of inmates..... 97
2. Total number of poliomyelitis cases..... 1
3. Total number developed in hospital..... 1
4. Personal contact with other poliomyelitis cases .....Not proved
5. Day of development after admittance....Not stated
6. Development occurring within 2 weeks incubation after admittance.....After incubation
7. Infected before or after hospitalization..... .....After hospitalization
8. Occurrence before or after quarantine was established .....Not stated
9. Contact with possible carriers...No carriers proved

Out of 21,746 children in asylums and charitable homes in the summer of 1916, fourteen cases developed, or $\frac{6}{1000}$ of 1 per cent. Of these fourteen cases of poliomyelitis there was not a single case in which direct personal contact with a patient suffering from poliomyelitis could be proved. After admission, 43 per cent of the cases developed within the incubation period of 2 weeks, and were probably infected before admission. Fifty-seven per cent. of cases developed during residence in hospital beyond incubation period, but in less than a third of these intermediate contact by carriers was indicated.

Hospitals in which cases developed after admittance.

1. *Willard Parker*, 2 cases (may have had infection before entrance). Total number of cases, 2077. Intramural development, 9/10 of 1 per cent.

2. *Kingston Avenue Hospital*, 3 cases (one doubtful). Total number of cases, 1795. Intramural development, 1.1 per cent.

3. *Kings County Hospital*, 1 case (questionable in a distant ward). Total number of cases, 103. Intramural development, 9/10 of 1 per cent.

4. *Babies Hospital*, 1 case (slight facial palsy). Total number of cases, 33. Intramural development, 3 per cent.

Hospitals admitting poliomyelitis in which there was no intramural development of the disease: Bellevue, 202 cases; Louise Minturn, 75 cases; New York City Children's, 5 cases; New York Hospital, no statement; New York Infirmary, no statement; New York Nursery and Children's, no statement; Ruptured and crippled, no statement; St. Luke's, no statement; Mt. Sinai, 58 cases; Presbyterian, 16 cases; Roosevelt, 4 cases; St. Mary's, 14 cases; St. Vincent's, 9 cases; Post-Graduate, no statement; Brooklyn Hospital, no statement; Flushing Hospital, no statement.

Orphan asylums in which no cases occurred: St. Paul's Female, number of inmates unknown; Society of the City of Brooklyn, 25 inmates; St. Dominic German Orphan House, 200 inmates; St. Malachi's Home for Children, 150 inmates; St. Joseph's Female Orphan Asylum, number of inmates unknown.

III. *Isolated Communities.*—(1) Barren Island, 350 children; (2) Governor's Island, 60 children. (No cases occurred in these communities.)

IV. *Multiple Incidence.*—The following figures are taken from Wickman's studies, and seem to throw considerable influence in favor of the contagious character of the disease:

1. Starting from school house of a community of 500, 49 cases, 10 per cent.

2. Out of 102 houses, 19 with poliomyelitis as follows: Six houses, 1 case; 3 houses, 2 cases; 5 houses, 3 cases; 3 houses, 4 cases; 2 houses, 5 cases.

3. Eighty-seven per cent. of cases in houses having more than one case.

4. Lindner and Mally's Epidemic in Steyr, 1908. Ninety-two cases in houses as follows: Thirty-four houses, 1 case; 16 houses, 2 cases; 1 house, 3 cases; 1 house, 4 cases; 2 houses, 6 cases; 1 house, 7 cases.

5. In Massachusetts epidemic, 1907, 62 per cent. of cases in houses having more than 1 case. Out of 215 families: 186 families, 1 case; 13 families, 2 cases; 1 family, 3 cases. Thirteen per cent. of cases showed multiple incidence in the same families.

6. In the New York epidemic, out of 250 families studied, the multiple incidence of more than one case in the same family was 3.4 per cent. incidence. The total multiple incidence in other epidemics, as, for example, in Buffalo, is estimated as 6/10 of 1 per cent.

7. In the study of the 7000 cases in the New York epidemic of 1916, it was found that more than one case rarely developed in the same family. There were 6521 cases, or 96.63 per cent., which did not lead to a second case in the same family. In Lynchburg, Va., cases were widely separated and distributed without relation to sanitary conditions. Three children living 14 blocks apart came down with the disease in 4 days, and Dr. Perrow of Lynchburg concluded that they could not be contact cases, but that they all got the contagion from the same source.

8. Comparative Multiple Incidence. A comparison of multiple incidence of poliomyelitis in New York City in 1916 with that of scarlet fever and diphtheria shows the following:

Cases in Same Family		Cases in Same House, but Different Family	
Poliomyelitis	335, or 56%	Poliomyelitis	257, or 43%
Scarlet fever	198, or 86%	Scarlet fever	31, or 13%
Diphtheria	73, or 78%	Diphtheria	20, or 21%

"It is evident that there is a great difference between poliomyelitis and the other two diseases in the number of later cases that have appeared in the same building, but in a different family. Thus 43 per cent. of the additional cases, or early half, appeared in the same house, but outside the family in which the original case occurred. This is more than double the number (21 per cent.) for diphtheria, and more than treble (13 per cent.) the number for scarlet fever. It seems incredible that such a divergence should exist, if poliomyelitis, like the others, were spread through infection from sick individuals, or healthy carriers, and the susceptibility of the exposed individuals is the same.

"The gradual dropping off of additional cases from day to day and the large proportion of cases occurring in other families in the house, may be easily explained on the basis of the appearance of some non-human population in the house, not definitely restricted by the boundaries which prevent intimate association, followed by its actual disappearance or inability to cause infection after a variable length of time. So far as

this evidence is concerned, this population might be composed either of insects or of higher animals such as rodents or cats."—(From a Monograph on the Epidemic of Poliomyelitis during 1916.)

In this connection, the following communication is of interest:

June 26, 1917.

Dr. Charles L. Dana,

Chairman Public Health Committee of the New York Academy of Medicine.

Dear Dr. Dana: I have read over carefully the section in Dr. Doty's report on the sources of infection, and am of the opinion that as far as the statistical basis for his deductions in favor of the contact theory goes it is unfounded. To reason that the disease is spread by contact because there were 290 cases in which 2 children in the family succumbed to the disease, 17 cases in which 3 persons were taken ill, 2 cases in which 4 persons were taken ill, and 2 cases in which 5 persons were taken ill, when in 3539 cases only one case developed in the family in which there were more than one child, is to my mind contrary to all precepts of logic. The following is a table which I have constructed on the basis of table 5 in the report by Dr. Doty:

Total number of cases of poliomyelitis investigated	4,839
Total number of families in which one child was taken ill	4,528
Total number of families with more than one child in which case of poliomyelitis occurred	3,850
Total number of families with more than one child in which only one person was taken ill	3,539
or, of the total	91.9%
Total number of families in which more than one child was taken ill	311
or, of the total	8.1%

You will notice that in this table I have eliminated all families in which there was only one child. For the remainder of the families I figured the percentage and find that in almost 92 per cent. of families with more than one child only one person was taken ill while in only 8 per cent. of families with more than one child more than one person succumbed to the disease. It seems to me that the fact that 92 per cent. of families escaped the spread of the contagion is more argument against Dr. Doty's theory than the 8 per cent. in which more than one case developed is for it.

Very truly yours,

E. H. Lewinski-Corwin,
Executive Secretary.

Dr. T. H. Weisenburg of Philadelphia made the following statement to the committee: "Personally I started out with the idea after having read Wickman's and Römer's articles and from the New York reports, that the disease was personally contagious, but the more experience I had the more I got away from that impression. To begin with in our multiple cases our data was not like your data in New York. Of thirty cases in all but two the symptoms in the second case appeared within one or at the most two days. Unless therefore, it is argued that the period of incubation is one or two days it must be admitted that there must have been a similar source of infection. Secondly, in our field study of the abortive types the evidence indicated that they appeared at the same time as the frankly paralytic cases, or within one or two days, again pointing to a similar source of infection. Third, of the cases which were admitted to the hospital but which turned out to be other than poliomyelitis, not a single one developed the disease. Fourth, there is no instance of any nurse or physician who either acquired the disease or who carried the disease elsewhere. A number of the attending physicians with young children in their families went home daily and did not carry the infection with them. I have no doubt that many more such examples occurred in New York. Fifth, because of the fact that all cases of poliomyelitis were sent to one hospital, the Municipal Hospital, we had, as was admitted in the New York report, perhaps a better opportunity to observe the disease than you had in New York. It was the impression of all the nurses and physicians that poliomyelitis was not spread by personal contact, meaning by that that it is not spread in the way that measles, scarlet fever or whooping cough is spread. If however, such a possibility is admitted, it must be that the second person must come in contact with some of the excreta such as saliva, etc. It might be interesting also to consider in this connection that in the Municipal Hospital are housed all the contagious diseases such as scarlet fever, diphtheria, etc., and that the attendants and nurses of the various units lived together, and yet there was only one instance in which a child in any other department (scarlet fever) developed poliomyelitis.

"One very striking example of the non-contagiousness of the disease was furnished us in Chester County near Philadelphia. There is in Cedar Hollow a stone quarry in which Italians work. There is a row of ten tenaments in which live about sixty Italians, forty of whom are children most of them under six years of age. The water supply was contaminated. Each family had its pigs and dogs, and the sanitary conditions were beyond belief. Two instances of the disease appeared about the same time in two families living in separate houses. There was also another case about one-half mile away in an Italian family. As is customary with these people, all of the other children and adults visited the sick children before the inspector had the opportunity to pronounce the disease poliomyelitis—indeed he did not take the trouble to quarantine them because he knew the rules could not be enforced. Here was every opportunity for the disease to spread and yet investigation by the local inspector, Dr. Mills and myself, showed that not only were there no other cases of the disease, but there were not even abortive cases."

9. Evidence of contact. Frost, at the Conference of State and Federal Health Officers, of the U. S. Health Service, said: "It is true that 75-90 per cent. of cases, on most careful investigation, cannot be traced to any previous association either direct or indirect. If it is a purely contagious disease, it must be spread from sources other than any recognizably clinically sick person, because such a large percentage must be excluded from direct contact. The spread by direct contact from schools, is not yet established, as children who have the disease are usually under school age, i. e., 1-5 years old."

V. Ineidence of Isolated Cases.—The following cases serve as examples of many similar instances: (1) Instance of a watchman, whose home was at the end of a tunnel. His child contracted the disease. Contact with diseased individual ruled out. (2) Case of cowherd, who lived 30 kilometers from next house. Three year old daughter had disease. Contact with diseased individual ruled out.

VI. Other Possibilities of Transmission.—1. Natural variations in the pathogenicity of the virus. Flexner, Clark, and Amoss found that the virus propagated in monkeys for four years, shows three phases of virulence: 1st phase. Beginning low virulence; 2nd phase. Maximum high virulence, lasting three years; 3rd phase. Low, initial virulence.

Long continued passage through monkeys causes depression in virulence while a state of latency exerts no depressing reaction. The cycle of changes in virulence seems in many ways correlated with the wave-like fluctuations of epidemics which likewise show a rise, temporary maximum and a fall in the number of cases. This conception has led to the formulation of the hypothesis of *concomitant causes* by Pettenkofer and Nägeli. Such concomitants coming rather rapidly to simultaneous maturity in extensive territories would suffice to explain the phenomena of epidemics.

2. Possibilities of animal, food, and dust carriers have not been disproved. There are three types of insects suited by their habits to serve as carriers of infectious diseases. (1) epizootic, lice and bed bugs; (2) migrant, flying insects; (3) ticks, and their allies (which, however, may be eliminated).

3. Human carriers are strongly suspected. Lucas and Osgood have demonstrated the presence of virus in nasal secretions four months after the acute stage. They were able to produce experimental poliomyelitis from washings of the nasal pharynx of parents, attendants, and friends of the patients 204 days after the acute stage.

4. Transmutations in Pathogenicity should be considered, *e. g.* (*a*) As in malaria (from mosquito to man); (*b*) As in kala-azar (from bedbug to man); (*c*) As in typhus (lice to man).

5. "Some new facts of interest and importance relating to the possible transmission of poliomyelitis by insects have resulted from the present study, but these are not so definite or complete as had been hoped. They are also to some extent of apparently conflicting nature, and require at least one unproven assumption to combine them into any working hypothesis. They do not completely disprove the idea that the stable-fly (stomoxys calcitrans) is implicated, although the behavior of the present epidemic does not favor this view. To discard it is to cast aside evidence derived from two sets of experiments, however, and it seems very unwise to do this at the present time of uncertainty. As it has been shown, it is possible with one assumption to form a working hypothesis based upon rats and fleas which seem to fit the epidemiological observations in general features and in many details as well. The general assumption that the rat can act as the reservoir for the virus of poliomyelitis should be capable of experimental proof, and it would seem that such experiments should be attempted.

"This by no means precludes the association of some other insect or warm blooded animal or both. In fact, there is a continual appearance of circumstantial evidence that suggests a population other than the human one, acting as an undercurrent and influencing the progress of the epidemic.

"When the many factors so far in doubt are gradually made known it will be possible to attack the entomological side of the question with better promise of success. Among the unknown factors which cause the greatest confusion in interpreting epidemiological evidence are: (1) the length of the period of incubation; (2) the number of mild, abortive or unrecognizable cases and carriers of the virus and their relation to infection and immunity; (3) the duration of infectivity in clincally recognized cases; and (4) positive knowledge of the presence of the infective agent in insects, domestic animals, or other possible intermediate hosts or reservoirs of the virus." (From a Monograph on The Epidemic of Poliomyelitis during 1916.)

Conclusion: All of these possibilities of communicability necessarily call the contagion theory into question. This theory leaves far too many cases unexplained. It is, therefore, not wholly satisfactory. The most compelling evidence in favor of the contagious nature of the disease, namely, the large multiple incidence, is capable of other interpretations such, for example, as focal coincidence of determinative factors. When the exceptions are so vastly in the majority they counsel against the too ready acceptance of the contagion theory. Indeed, to accept this theory in the present state of our knowledge would prove prejudicial to further advance in the matter of transmissibility.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

CONNECTICUT.

March 13 *and* 14, 1917.

(*Concluded from page* 398.)

PRACTICE AND PATHOLOGY.

1. Name and give the prognosis and treatment of three of the most serious complications of scarlet fever.
2. Give the differential diagnosis between acute miliary tuberculosis and typhoid fever when tubercle bacilli are not found and Widal reaction not yet developed.
3. Describe the symptoms and physical signs of lobar pneumonia in the order of their development.
4. Give the symptoms and signs of a rather slowly developing lead poisoning.
5. Describe fully the signs in the second stage (effusion) of acute pleurisy.
6. Why do not all persons exposed to irritant pollen develop hay fever?
7. Describe the morbid anatomy of the several stages through which untreated chronic gastritis is inclined to pass.
8. Describe your treatment of a moderately severe case of lobar pneumonia in an adult having chronic nephritis.
9. How would you modify your treatment of the pneumonia in a case of arrested tuberculosis?
10. How would you treat the pneumonia in an infant of four years—giving your exact dosage and remedies?

OBSTETRICS AND GYNECOLOGY.

1. Give the clinical history, diagnosis, and management of a typical case of toxemia of pregnancy in the last few weeks.
2. Describe the normal mechanism of labor in a head presentation, occiput to the rear.
3. What are the indications for cesarean section? What are the limits of contraction in the absolute indication?
4. Give the full treatment for prolapsed cord.
5. What are the indications for the induction of premature labor? Describe a method.
6. Give the indications and contra-indications for ventral suspension or ventral fixation of the uterus.
7. Define cystocele. Give the etiology and treatment.
8. Give the diagnosis, pathology and clinical history of carcinoma of the body of the uterus.
9. Give an etiological classification of dysmenorrhea.
10. Give in full the etiology and treatment of ulcer of the cervix uteri.

SURGERY.

1 and 2. Tetanus—(*a*) Describe the germ causing it and its manner of growth. (*b*) Where are the germs chiefly found in nature? (*c*) What is the time of incubation in tetanus? (*d*) What is the prevention? (*e*) Describe the treatment.

3. (*a*) What are the causative organisms in gas producing infections? (*b*) Where are gas infections chiefly found and the reason for this? (*c*) What is the treatment?

4. (*a*) What are the symptoms of acute appendicitis? (*b*) What other conditions not infrequently simulate this disease?

5. State the advantages and disadvantages of the McBurney and the vertical semilunar incisions for appendicitis.

6. State the treatment for a recent fracture of the nose.

7. What are the symptoms of a fracture at the base of the skull?

8. (*a*) Case of thoracic empyema—Pulse for a week running 90 to 120; temperature for a week running 100 to 103; respirations for a week running 24 to 40; heart's action progressively worse; patient very weak. (*b*) Case of thoracic empyema three days' duration—Pulse 80 to 110; temperature 100 to 102; respirations 24 to 30; heart displaced, but strong and regular in action. Describe fully your surgical treatment in each case.

9. (*a*) Describe the treatment of a fracture of both bones of the forearm near the middle. (*b*) Give reasons for this rather than some other form of treatment.

10. What are the essentials in the treatment of a fractured clavicle?

ANSWERS.

PRACTICE AND PATHOLOGY.

1. *Three serious complications of scarlet fever:* (1) *Nephritis.* Prognosis is favorable under proper treatment, but the convalescence may be prolonged and the kidneys may remain susceptible to serious lesions for a long time; in grave cases uremia may occur, and lead to convulsions, coma, and death. Treatment consists of rest in bed, milk diet, hydragogue cathartics (not mercury), hot packs. (2) *Arthritis.* Prognosis is favorable, with care. Treatment consists of warm and sedative applications. The affected joints should be wrapped in cotton wool, and alkalies should be administered (salicylates tend to irritate the kidneys). (3) *Endocarditis.* Simple endocarditis has a good prognosis; the septic or toxic variety is more serious, and may prove fatal. Treatment includes the use of digitalis, strychnine, and (perhaps) alcohol.

2. In *typhoid fever* the pulse is slow and dicrotic; the fever is characteristic and generally responds to hydrotherapy; the spleen is generally (and considerably) enlarged; the rose rash is present and is characteristic; the lungs do not show any lesions; diarrhea

is quite common; intestinal hemorrhage and perspiration are common complications. In *acute miliary tuberculosis*, the pulse is more rapid and is not dicrotic; the fever has no regular cycle, but is irregular or remittent; the spleen is less frequently enlarged and such enlargement appears later and is less pronounced; there is no characteristic rose rash, but drenching sweats are common; the lungs are apt to be affected, and on examination râles, tympanitic percussion note, and pleural adhesions may be found; cyanosis and dyspnea are often present; diarrhea is not common; intestinal hemorrhage and perspiration do not occur.

3. *Lobar pneumonia. The first stage* is characterized by sudden onset with chill, a sharp pain in the side, rise of temperature, a short and sharp cough, rusty-colored, viscid sputum, and dyspnea. There may be headache, insomnia, scanty urine with diminution of urea, chlorides, phosphates, and sulphates, insomnia, and herpetic vesicles on the face, and there is always an increase in the number of leucocytes in the blood. Physical examination will reveal diminished expansion, impairment of the normal percussion note, feeble or suppressed respiratory murmur, moist or dry râles, crepitation, and sometimes a pleural friction sound.

In the second stage the dyspnea is more marked; the face is more or less livid in color; the temperature is high (104°-105° F.); and the pulse increases in rate (110-120), its tension and fullness lessening with the progress of the disease, and growing feeble and intermittent. Headache, delirium, and various other nervous symptoms may be present. Expansion is diminished and vocal fremitus is exaggerated upon the affected side. There is dullness with increased resistance over the consolidated lung, and auscultation detects bronchophony or bronchial breathing over this same area.

The third stage is ushered in by a sudden drop of temperature on or about the fifth or ninth day, followed by a natural sleep, free sweating, and relief from suffering. In this stage the subcrepitant râle (râle redux) is heard in the midst of the bronchial breathing, together with numerous moist râles. Dullness may persist for some time, but usually by the twelfth or fourteenth day the lung has returned to its normal state.—(*Pocket Cyclopedia.*)

4. "As a rule, the first symptoms presented in cases of chronic lead poisoning are debility, general malaise, attacks of indigestion, loss of appetite, constipation, thirst, and a metallic taste in the mouth. When the bowels do move, the stools are usually dark colored from the presence of lead sulphide. The urine is usually scanty and high colored. The breath is fetid. There are frequently attacks of colic in which the pain may be severe and is usually located about the umbilicus. Loss of strength, loss of flesh, cold, moist skin and a rather dull, listless expression are usually associated with it. Perhaps the most definite appearance on physical examination, and the one upon which a diagnosis may be based with a great degree of certainty, is the presence of the so-called 'blue line,' which appears along the line where the gums come into contact with the teeth. Its presence is most marked over the incisors, and is due to the deposition of lead sulphide in the capillaries of the gums. Silver and mercury may also produce a somewhat similar appearance, and it may be absent in lead poisoning, but when present to any considerable degree it is in itself almost diagnostic. In certain cases of lead poisoning the symptoms of digestive disturbances may be almost entirely wanting, while those which depend upon the effect of lead upon the nervous system may be very prominent. The most important of these are so-called 'lead-palsy' or 'lead paralysis,' which is most commonly located in the muscles of the arms, resulting in the well known 'wrist-drop.' Epileptiform convulsions occur not infrequently among the later symptoms of chronic lead poisoning."—(Dwight's *Epitome of Toxicology.*)

5. In the second stage (effusion) of acute pleurisy: *Inspection* shows bulging or fullness of the affected side, with obliteration of the intercostal spaces and displacement of the cardiac impulse.

Palpation demonstrates feeble, or absence of, vocal fremitus over the effusion, with exaggeration of the same above the fluid. The affected side is immobile, and very rarely fluctuation may be obtained. *Percussion.* Dullness or even flatness, with increased resistance may be obtained directly over the fluid, while above the effusion the percussion-note is tympanitic. The line of demarcation is higher behind than in front. Effusion of the left pleural cavity obliterates Traube's semilunar space. The fluid changes its level with different positions of the body and the area of dullness is correspondingly movable. *Auscultation.* During the stage of effusion, the vesicular murmur is feeble or absent on the affected side depending upon partial or complete compression of the lung by fluid. Above the effusion, puerile breathing is heard, and just at the upper margin of the fluid a friction sound may be heard. Vocal resonance is diminished or absent over the fluid and markedly increased above the effusion, egophony being obtained at its upper margin. With the absorption of the fluid, the vesicular murmur and the moist friction sound gradually return.—(From Hughes' *Practice of Medicine.*)

6. The persons who do not develop hay fever after being exposed to irritant pollen are probably lacking in the predisposing factors, namely an inherited tendency to the disease, chronic nasal disorder, and a nervous temperament. The people who suffer from the disease have a particular hypersusceptibility to the toxin.

7. *Chronic gastritis.* "The lesions vary considerably in different cases. In cases, mild and of short standing, the mucous membrane is thickened, pale gray color, somewhat congested, though less so than in acute gastritis, and covered by a tenacious mucus. Many dilated and enlarged veins may be visible, especially in the gastritis of portal obstruction, and there are frequently small areas of hemorrhage and pigmentation—occasionally of superficial erosion. The glands are usually choked with retained secretion and may enlarge to form small cysts. In more aggravated cases, the entire wall of the stomach participates in the process, and the mucous membrane may be thrown up into small polyp-like projections. Histologically, the lesions are those of interstitial inflammation with parenchymatous degenerations. In most cases, after the lapse of time, atrophic alterations, and more or less dilatation of the stomach, result. The mucous membrane, as well as the entire wall of the stomach, becomes much thinned, the gastric tubules atrophy and may eventually disappear and be replaced by sclerotic fibrous tissue, giving to the mucous membrane an exceedingly smooth appearance, which may be interrupted here and there by a small cyst. In rare cases the stomach becomes much diminished in size (so that its capacity may only be a few ounces), and its wall very much thickened in consequence of hyperplasia of the submucosa and muscularis."—(Kelly's *Practice of Medicine.*)

8 and 9. In both of these cases the treatment is that of pneumonia, but in the former case care must be taken lest the patient be unduly exposed to anything which may irritate the kidneys, and the diet must contain as little nitrogenous matter as possible.

The *treatment of pneumonia* "depends entirely on the type of case, and the condition of the patient. Routine treatment is the worst of all treatments. Answer the following questions before prescribing: Is the patient full-blooded, and is there a full bounding pulse? Is the pulse feeble, irregular, or intermittent? In the first case, in a young and previously healthy adult, if there be cyanosis, or signs of dilatation of the right heart, blood-letting to the extent of a few ounces may perhaps relieve the strain, but more generally treatment should be directed to maintaining the strength from the outset. In the latter case we can hope for nothing from a depressing treatment, so stimulants must be resorted to, such as alcohol, ammonium carbonate, egg and brandy mixture, quinine, ether, etc. The giving or withholding of alcohol depends upon its effect upon the pulse; should the pulse rate fall and the tongue become moist it may be continued. In asthenic cases, strychnine hypodermically is necessary from the outset, and normal saline may be given by the rectum or by the skin. Oxygen inhalations are used where there is cyanosis, but it is doubtful whether they have saved many lives. When there is evidence of failure of the heart (weakness of the second pulmonary sound, etc.) digitalis should be resorted to.

Many prescribe it from the outset. The diet should consist of milk, beef tea or broths, white of egg, and so on. The patient should be as little moved as possible, and the bed-pan must be used. As in other fevers, an airy room and good nursing are essential. Remember that narcotics are not well borne in respiratory embarrassment as a rule. Chloral should be avoided, but *if pain be excessive* a hypodermic injection of morphine does *more good* than harm, notwithstanding that theoretically morphine is contraindicated. It should not be given later than the first few days of the illness. The pain may also be relieved by poultices, which, however, are of doubtful use if carelessly made, or by application of ice. Cold packs applied to the trunk only, and frequently repeated, are very useful in relieving both pain and fever. Depressant antipyretics are to be avoided. The results of *serum treatment* are not unequivocally encouraging, but vaccine treatment would seem to be of better promise. Where possible an autogenous vaccine should be used."—(Wheeler and Jack's *Handbook of Medicine.*)

In the case with the arrested tuberculosis, care must be taken during convalescence lest the patient again show signs and symptoms of an active tuberculous process.

10. "It is a well recognized fact that *lobar pneumonia of infancy* and childhood is a self-limited disease, and that unless special indications arise no active medicinal treatment is required. This does not mean that most careful medical supervision is not desirable, or that the most intelligent nursing could well be dispensed with, or that drugs should not be administered if indicated. Without any special line of treatment the mortality of lobar pneumonia in children is less than 5 per cent. The drugs most frequently required are the stimulants. In those cases where the heart action becomes weak and rapid, the use of the ammonium preparations, such as the aromatic spirits, in 5- to 10-drop doses, may be repeated every hour or two, or the carbonate of ammonia in 1-grain doses, the taste of which should be disguised by a syrup. In extreme cases the tincture of digitalis in 1- to 3-drop doses, for a child under six years of age, or the hypodermatic injection of camphorated oil (10 per cent.) in doses of 5 to 10 drops, may be repeated at intervals of one to two hours. If cyanosis occurs, with dilatation of the right heart, strychnine used hypodermatically in doses of 1/100 to 1/150 of a grain, and repeated cautiously, seems sometimes to tide a patient over a critical period. Those cases which seem to go into a collapse during the precritical period are benefited by hypodermatic injection of strychnine or the inhalation of oxygen."—(Musser and Kelly's *Practical Treatment.*)

OBSTETRICS AND GYNECOLOGY.

1. "The important signs and symptoms of toxemia are those indicated by disturbances in digestion and assimilation, an altered state of the blood, and as a result nausea and vomiting, persisting throughout the patient's waking hours. Accompanying this is great prostration, loss of appetite, a heavy lethargic sleep, later giving place to unpleasant dreams and restlessness, the failure to retain anything upon the stomach, obstinate constipation, and substernal pain extending from the epigastrium. The pulse is rapid and grows progressively weak, respiration is sluggish, and as the disease *progresses* the matter ejected from the bowel contains an abundance of disintegrated blood cells which resemble coffee-grounds. The urine is diminished greatly in quantity, with high specific gravity, frequently albuminous, and often contains epithelial or granular casts. The nitrogen partition shows greatly lessened urea with corresponding increase in creatin and creatinin, the rest nitrogen is increased, and indican is present. Casts of various sorts are often found. As the *disease* progresses the patient in some cases becomes greatly emaciated, in others there is considerable deposit of fat, the action of the heart is progressively rapid and weak, frequently becoming thready and irregular. The mouth and gums become covered with sordes, the odor about the patient is offensive and the skin is in places the site of a purpuric or hemorrhage condition."—(Davis's *Manual of Obstetrics.*) Later on eclampsia may ensue.

The symptoms of this condition are: Headache, nausea, and vomiting, epigastric pain, vertigo, ringing in the ears, flashes of light or darkness, double vision, blindness, deafness, mental disturbance, defective memory, somnolence; symptoms easily explained by the circulation of toxic blood through the nerve centers. These may be preceded by lassitude, and accompanied by constipation, or by diarrhea. Headache is perhaps the most significant and common warning symptom. In bad cases the urine is reduced in quantity (almost suppressed,) very dark in color, its albumin greatly increased, so that it becomes solid on boiling. Next comes the final catastophe of convulsions. The convulsive fit begins with twitching of the facial muscles, rolling and fixation of the eyeballs, puckering of the lips, fixation of the jaws, protrusion of the tongue, etc., soon followed by violent spasms of the muscles of the trunk and limbs, including those of respiration; hence lividity of the face and stertorous breathing, biting of the tongue, opisthotonos, etc. The fit last fifteen or twenty seconds, ending in partial or complete coma, possibly death; or consciousness may return, to be followed by other convulsions. For *preventive treatment:* (1) The amount of nitrogeneous food should be diminished to a minimum; (2) the production and absorption of poisonous materials in the intestines and body tissues should be limited and their elimination should be aided by improving the action of the bowels, the kidneys, the liver, the skin, and the lungs; (3) the source of the fetal metabolic products and the peripheral irritation of the uterus should, if necessary, be removed by evacuating that organ. The *curative treatment includes:* (1) Controlling the convulsions (by chloroform, veratrum, or chloral); (2) elimination of the poison or poisons which are presumed to cause the convulsions; (3) emptying the uterus under deep anesthesia, by some method that is rapid and that will cause as little injury to the woman as possible.

2. *Mechanism of L. O. P. position.* 1. Flexion. 2. Descent. 3. Rotation, in the majority of cases all the way round to the symphysis pubis (when, on reaching left acetabulum, it, of course, becomes converted into a L. O. A. position); in the minority of cases backward rotation of occiput to sacrum. 4. Extension of occiput downward and backward over perineum, while forehead, nose, and chin, successively escape under public arch. 5. Restitution, internally of shoulders, right one to pubes, left to coccyx; externally of occiput to left thigh (thigh corresponding to the sacroiliac synchondrosis at which it originally presented).—(King's *Obstetrics.*)

3. The *absolute indications for cesarean section* are: Extreme pelvic contraction or deformity in which delivery by forceps or version or symphyseotomy is impossible, and in which craniotomy is either impossible or would be more dangerous to the mother; the presence of extreme atresia of the vagina; rupture of the uterus; sudden maternal death. A pelvis of seven centimeters or less in its conjugate diameter is an indication for cesarean section.

4. *Treatment of prolapsed funis* consists in: (1) Not rupturing the membranes prematurely unless there is some positive indication; (2) postural treatment, in which the woman is placed on her back or on the opposite side to that on which the cord lies, with hips and pelvis elevated, or the knee-chest position may be adopted; (3) reposition of the cord, either manually or with some form of repositor; (4) speedy delivery, by forceps or podalic version. If the child shows signs of asphyxiation, the various methods of artificial respiration should be tried and persisted in.

5. Conditions that justify the induction of premature labor: (1) Certain pelvic deformities; (2) placenta prævia; (3) pernicious anemia; (4) toxemia of pregnancy; (5) habitual death of fetus toward the end of pregnancy; (6) hydatidiform mole; (7) habitually large fetal head. The methods that may be employed are: Partial dilatation of the cervix and the introduction within the cervix (and vagina) of a tamponade of sterile gauze; (2) dilatation of the cervix; (3) puncturing the membranes; (4) introduction of soft rubber bougie into the uterus; (5) intrauterine injection of glycerine, water, or some other fluid.

6. *Ventrofixation* consists in fixing the uterus to the anterior abdominal wall; it is performed for displacement of the uterus, and is often more satisfactory than

shortening the round ligaments. Hermann (*Students' Handbook of Gynecology*) states objections to this operation as follows: "(1) Its risk. Oversights will occur in the practice even of the most careful; but the risk is very small. (2) Adhesions within the peritoneum are sometimes absorbed. They are absorbed often enough to make stitching of peritoneum to peritoneum unsatisfactory. After abdominal section ventral hernia may first develop after the scar has held firm for twelve years, and possibly the new attachment of the uterus may also, after many years, give way. (3) The operation lifts up the uterus. If the vulval orifice is very large there may still be a protrusion of the vaginal mucous membrane. It is well, therefore, to precede ventral fixation in women past child bearing by posterior colporrhaphy. (4) It is said to cause difficulty in labor, should the patient become pregnant. It does not always do so, and in many cases reported as illustrating such difficulty, the ventral fixation was not the cause of the difficulty. Ventral fixation after colporrhaphy, if the result be permanent, relieves the patient of any necessity for the continual readjustment of a pessary, and lifts the uterus up effectually. Ventral fixation is not advised in cases in which the womb can be comfortably kept up by a pessary."

7. *Cystocele* is a hernia of part of the bladder into the vagina, covered by the mucous membrane of the anterior vaginal wall. *Causes:* Lacerated perineum, prolapsed uterus, relaxation of the structures forming the pelvic floor, and subinvolution of the vagina after labor.

For radical cure of cystocele: "The patient is placed in dorsal position. The posterior vaginal wall is kept out of the way with a weighted speculum. The cervix is drawn down with a bullet-forceps. With a pair of tenacula the sides of the prominence are drawn together in the median line in order to see how much of the wall is redundant and these points are marked with small nicks. Next, the whole surface is put on the stretch between four pairs of forceps—one at each of the sidemarks, one near the cervix, and one at the transverse ridge at the inner end of the urethra. With a pair of scissors curved on the flat, a strip about ¼ inch wide is cut out of the mucous membrane. Similar strips are removed on both sides until an oval is denuded. Finally a running suture of chromicized catgut is passed under the whole pared surface, uniting the edges from side to side." If necessary, a perineorraphy should be done at the same time.

8. *Cancer of the body of the uterus is diagnosed* by the history, symptoms, and physical signs. It is a disease of advancing years, and generally occurs after the menopause; nulliparæ and multiparæ are equally liable. The chief symptoms are hemorrhage and discharge with an offensive odor, pain, and cachexia. The cervix is soft, the uterus enlarged and tender.

Pathology: Cancer of the body occurs *in less than 2 per cent. of all cases.* It is more frequent in *nulliparæ* than *carcinoma cervicis*, and tends to occur rather *later in life* than cancer of the cervix. The disease begins *superficially* or *deeply in the mucosa. Epithelioma, malignant, adenoma, adeno-carcinoma,* and *pure carcinoma* are found, the latter being of the *scirrhous* or *medullary type.* In the malignant adenoma there is an *atypical proliferation of the glands;* they become folded up *irregularly;* the intervening connective tissue may be *very scant,* and the gland spaces may *touch at points.* They are lined with a *single layer of columnar epithelium.* In the adeno-carcinoma, parts may show the structure of the *malignant adenoma,* and parts that of the *ordinary* cancer where the *loculi are filled with epithelial cells.* These growths form *swellings in the wall.* When near the cavity, the *mucosa may ulcerate over them.* Gradually the *uterus becomes excavated.* Adhesions *may* form with *adjacent structures,* and secondary deposits develop in the peritoneum, ovaries, tubes, vagina, etc. The epithelioma may grow *diffusely* through the *whole cavity,* or as an *isolated fungoid growth,* which may become polypoidal. Metastatic nodules may form in *different parts of the uterine wall.* These tumors are covered with *layers* of *polyhedral cells;* very rarely *pavement epithelium* is found like that in ordinary epithelioma. The mucosa of the body gets thinned."—(Webster.)

9. *Dysmenorrhea is classified* as: Congestive, ovarian, membranous, obstructive, and neuralgic. *Causes:* Pelvic congestion, pelvic inflammation, malnutrition, overwork, lack of development, neuralgia, stenosis or obstruction of the cervix, prolapse or displacement of the uterus.

10. An *erosion* of the cervix is an area on the vaginal surface of the cervix which is covered with columnar epithelium, and consequently presents a reddened, inflamed appearance. Some confusion has resulted from the application of the term *ulceration* to this condition. There is no ulcer and no granulating surface, for the whole area is still covered with epithelium. The erosion is caused by an irritant vaginal or uterine discharge (*e.g. gonorrhea,* endometritis). The causes are unknown; friction, ill-fitting pessaries, carcinoma, tuberculosis, chancre and chancroid have been said to be causative factors. *Treatment:* A possible cause should be sought for and corrected. The general health will be improved by the administration of preparations containing iron, such as Blaud's pill, Basham's mixture, and the four chlorides. Exercise, diet, and the condition of the bowels should receive attention. The local treatment consists in the administration of hot vaginal douches two or three times daily; the use of glycerine tampons for twelve hours, twice a week; the application of tincture of iodine to the cervix, once a week; and the application of silver nitrate, zinc chloride, pure carbolic acid, or Churchill's tincture of iodine directly to the cervical mucous membrane.

SURGERY.

1 and 2. Tetanus is caused by the bacillus of tetanus, which is a rodlike organism, with one end somewhat enlarged owing to the presence of a spore. It is anaerobic, and is found chiefly in punctured wounds; it can also grow on surface wounds when pyogenic cocci absorb all the oxygen. It is found in the soil. The period of incubation is about ten days. Prevention lies in the careful disinfection of all wounds; punctured wounds should be enlarged, disinfected, and drained; antitoxin is recommended by some. Treatment consists in excision of the affected part (if possible), followed by dressing with antiseptic fomentations. Tincture of iodine is a good antiseptic. Antitoxin has been used. The patient should be isolated and kept quiet in a darkened room. Bromides, chloral, morphine, and even chloroform may be required. Venesection followed by intravenous infusion of salt solution is sometimes employed.

3. The causative organisms in gas-producing infections are the *Bacillus aerogenes capsulatus, Streptococcus pyogenes, Staphylococcus pyogenes,* the bacillus of malignant edema, and the *Bacillus coli communis.* Gas infections are chiefly found in injuries which have destroyed the circulation of the part, and in which the general resistance of the tissues has been lowered; crushing injuries, in which the soil and other dirt may have been ground into the tissues, are also liable to this form of infection. The gas bacilli are found in the soil, being anaerobic. Treatment consists in prompt amputation high up above the gangrene and infection. If seen very early, free incisions with constant irrigation or immersion in a warm antiseptic fluid may be of benefit. Tonics, nourishing food, and stimulants are indicated. During the war, gas gangrene has been found to affect the muscles chiefly; treatment consists in resection of the affected muscles.

4. *Symptoms of acute appendicitis:* Sudden pain in right iliac fossa, vomiting, constipation, slight fever, tenderness at or near McBurney's point; there may be localized rigidity and swelling. The patient lies on his back with the right thigh flexed.

Symptoms simulating those of appendicitis may be found in: Gastroenteritis, intestinal obstruction, typhoid fever, gastric ulcer, duodenal ulcer, salpingitis, ovaritis, kinking of ureter, renal colic, hepatic colic, ruptured extrauterine pregnancy, peritonitis.

5. The *advantages of McBurney's operation* are that no nerves are severed and there is little or no chance of an abdominal hernia after the operation. The *disadvantages* are that it is not applicable in cases where there are many adhesions, and the incision cannot be enlarged at will.

The *vertical incision* is suitable for all cases, the in-

cision can be extended and almost any point be reached; but there is a possibility of hernia after the operation, and nerves are severed.

6. *Treatment for a recent fracture of the nose:* External pressure aided by padded forceps in the nostrils; plugging of the nostrils; a moulded gutta-percha splint fixed over the nose by a bandage; sometimes a Mason pin is required.

7. FRACTURE OF BASE OF THE SKULL. The *Signs* are those of (1) injury to the brain, (2) escape of cranial contents, (3) injury of cranial nerves. (1) *Injury to the brain* may be of the nature of concussion, compression, or laceration. (2) *Escape of cranial contents,* which may be blood, cerebrospinal fluid, or rarely brain itself. 1. *Hemorrhage* manifests itself in various situations, according to the position of the fracture. In the *anterior fossa* the bleeding may be from the nose or into the orbit, or may pass back into the pharynx, be swallowed, and subsequently vomited. The eye may be pushed forward and pulsate if the cavernous sinus be ruptured. In the *middle fossa* blood usually runs from the ears; but slight bleeding from the ear may be caused by minor injuries, such as rupture of the membrana tympani, tearing of the lining of the auditory canal, and fracture of the tympanic bone. In the *posterior fossa* a hematoma may form behind the mastoid process. 2. The escape of *cerebrospinal fluid* is a certain sign that a fracture communicates with the subdural space. It may appear in the same situations as hemorrhage, but is usually found escaping from the ear owing to fracture of the petrous bone. The fluid is limpid, specific gravity 1005, with no albumin, but containing pyrocatechin, which gives the same reaction as sugar with Fehling's solution. The amount which escapes may be small or very large, but as a rule it soon ceases. (3) *Injuries to the cranial nerves* vary according to the site of fracture. That most commonly involved is the facial in the aqueductus Fallopii, and the paralysis may come on immediately from rupture, or after two or three weeks from the pressure of callus. —(From *Aids to Surgery.*)

8. "Although it is true that aspiration will occasionally cure a pneumococcal empyema in a child, it is generally regarded by surgeons as an exploratory or palliative measure. For the latter purpose it may be used in cases of rapid phthisis, or as a preliminary measure to operation in bad cases in which the effusion is very large or exists on both sides. With these exceptions, *thoracotomy* (opening the pleural cavity), with or without resection of a rib, is recommended in all cases. *Thoracotomy without resection* of a rib is indicated when the patient's condition is very serious, as it is easily performed under local anesthesia, by making an incision about two inches in length along the lower border of the sixth or seventh intercostal space in the midaxillary line. A small opening is made in the pleura, in order to allow the pus to escape slowly; the opening is then enlarged, loose pieces of lymph removed, and a short rubber tube introduced. The tube should be sutured to the skin, to prevent its expulsion, and transfixed with a large safety pin, to prevent its dropping into the cavity. *Resection* of a portion of a rib is the usual operation, as it allows more room for exploration and free drainage. Ether is contraindicated, because of its effect on the lung. The best general anesthetic is nitrous oxide and oxygen, but chloroform or a local anesthetic may be employed. The patient lies on his back and is brought to the edge of the table. A two or three inch incision, with its center in the midaxillary line, is made over the seventh rib, and the periosteum divided, and separated from the entire circumference of the rib with closed curved scissors or a periosteal elevator. The rib is divided at each extremity of the incision with bone forceps and removed, the intercostal vessels having been pushed aside with the periosteum; the operation then proceeds as in thoracotomy without resection of the rib. Irrigation of the cavity should never be employed in acute cases, as it is occasionally followed by death. In chronic cases, however, in which the adhesions are firm, irrigation with sterile salt solution is often advisable, particularly if the discharge is very fetid. The tube may remain in place until the purulent discharge ceases, or, better, it may be removed at the end of a week, and a Bier suction pump used once or twice daily until the lung is fully expanded. If the sinus persists (pleural fistula), there is caries of a rib or non-obliteration of the cavity. In either case a secondary operation will be required. If the lung fails to reach the chest wall after several months, the chest wall should be taken to the lung by *thoracoplasty* (Estlander or Schede operation). One may first try, however, injection of Beck's bismuth paste. The cavity is filled with mixture No. 1 (not more than 100 grams being used) and the opening allowed to close. If the temperature rises above 101° or severe pressure symptoms appear, the accumulated fluid is evacuated and the opening again allowed to close. Repetition of the injection is necessary only when the paste is discharged with the pus. *Estlander's operation* consists of the resection of a sufficient number of ribs, with the periosteum, to obliterate the abscess cavity. The length and number of ribs to be removed depend upon the size of the cavity. In a large cavity it may be necessary to remove three or four inches of all the ribs from the third to the ninth. This is best done through an I or U-shaped incision, although separate incisions may be made in every other intercostal space, and the rib above and below removed through each incision. The cavity is emptied of all debris and packed with gauze. *Schede's operation* is more radical and more severe. A U-shaped incision is made from the origin of the pectoralis major at the level of the axilla, down to the lower level of the pleural cavity, then up to the level of the second rib between the spine and the scapula. This flap is reflected upward, and all the ribs over the cavity from the second down, and from their tubercles to the costal cartilages, excised together with the periosteum, intercostal structures, and thickened parietal pleura. Bleeding is checked, the cavity curetted with gauze, and the flap sutured so as to lie in contact with the long, drainage being provided by sterile gauze. After any operation for empyema pulmonary gymnastics should be given to expand the lung. The patient should also have been informed that the resulting deformity is necessary to the cure."—(Stewart's *Surgery.*)

9. In fractures below the insertion of the pronator teres the forearm is placed midway between pronation and supination, and the interosseous space preserved by means of pads. In fractures above this point the forearm should be put on an anterior angular splint, in full supination. If there is a persistent tendency to ulnar bowing of the forearm, *i.e.* convex toward the ulnar side, the elbow may be extended and a long straight splint or a plaster cast applied.

The essential point is to prevent the growing together of the four fragments in one bony mass, with consequent loss of pronation and supination. Hence, the radius and ulna are kept as far apart as possible, namely in a position halfway between pronation and supination.

10. *The essentials in the treatment of a fractured clavicle,* are to correct the deformity as soon as possible, by fixing the shoulder upward, outward, and backward. The patient may be placed on his back, on a hard bed, with a small pillow under his head and a firm and narrow cushion between the shoulders, a bag of shot on the site of the fracture, and the forearm lying on the front of the chest, while the arm is kept close to the side by a sandbag.

Arsenic Content of Normal Urine. — Ivar Bang has shown that arsenic to the extent of a definite percentage may be present in normal urine. Of twenty-seven subjects studied only three had no arsenic in their urine. Fifteen others showed up to 0.1 mgm. in the diurnal urine and in nine others the amount ranged from 0.1 to 0.2 mgm.—*Hospitalstidende.*

Eclampsia Not Prevented by Certain War Conditions. —It having been asserted that absence of eclampsia was due to low diet or to absence of coitus during pregnancy Lichtenstein announces that there has been no percentage decrease of eclampsia in Germany as a whole, or at least that such cannot be shown. In individual clinics some decrease in incidence can be accounted for by various factors. In Leipzig a decrease began before the war; the birth rate has fallen off; cases from outside the city are fewer, etc. If eclampsia is less common so too is placenta previa, and for just the same reasons.—*Zentralblatt für Gynäkologie.*

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DIABETES INSIPIDUS IN CHILDREN.*

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THE literature concerning diabetes insipidus in general is quite extensive, despite the relative rarity of the condition. That which deals especially with the affection in children, however, is limited, both in scope and volume. In many of the textbooks on pediatrics the subject is disposed of with a few lines, or at most a few pages; and the major number of references encountered are found to be merely reports of cases.

A compilation and analysis of all the cases reported to date would prove more tedious and difficult than the value of such an undertaking would warrant, because of the fact that so many cases in children are reported in general discussions of the subject of diabetes insipidus, with nothing in the title to suggest that children are concerned. Furthermore, many cases are now dealt with under the various phases of endocrinology, and to differentiate those in which the diabetes insipidus forms merely a part of the entire ductless glandular syndrome from those in which the polyuria, polydipsia, and other symptoms of diabetes insipidus give chief color to the pathological picture, would be a task fraught with many difficulties.

The fact that so little specific attention has been devoted to the discussion of diabetes insipidus in children is the more remarkable when one recalls the percentage of cases occurring before puberty. According to von Noorden[1] 10 to 15 per cent. of the total number affected occurs in the first decade, the majority of these being in the second half of this decade. Garrod[2] states that about half of all cases are in patients between the ages of ten and forty years. The figures of Gerhardt,[3] so often quoted, give sixty cases, compiled from the records of four observers, occurring in patients under ten years of age. Of these, thirty were in children between five and ten, and thirty under five years of age.

The occurrence of diabetes insipidus in early infancy is indeed rare, as the above figures would indicate. Rachel[4] was not able "to find the record of a case while scanning the literature pretty carefully." He reported four cases, however, of his own, four, five, ten, and eleven months of age respectively. Among the cases in children encountered in the literature, only one other, reported by Brunton,[5] was an infant under one year of age.

In children, as in adults, the larger proportion of cases occurs in males. Of thirty-six individual cases encountered in the published reports reviewed, twenty-eight were in males and eight in females. Since these reports range in date from 1888 to 1916, it is fair to assume that this proportion holds.

CASE.—B. S. was admitted to the Children's Service of the German Hospital on Jan. 14, 1917, born in the United States, age 6 years. Male child. Chief complaint was of frequent urination and pain on urination.

Present History.—For 2 months patient has had frequency of urination. He has both diurnal and nocturnal diuresis, urinating about every hour. Micturition is accompanied by pain and burning occasionally. Patient has moderately severe pains in the hypogastric region. He has also been troubled with urgency and slight urinary tenesmus, but no blood was ever noted in the urine. He is always very thirsty and feels hot at times. At other periods has sensations of chilliness; feels weak, and has lost weight. His appetite is poor, bowels are fairly regular. Has a very slight cough.

Past History.—He had measles at two years. Tonsillectomy was performed last year. He had no history of sore throats and no other illnesses. There was no history of trauma to the head.

Family History.—Father and mother are both alive and well. There are three other children in the family, alive and well. There is no history of any member on either side having had a similar condition.

Physical Examination.—A poorly developed and nourished male child, who appears apathetic and somewhat prostrated. Has no other evidence of acute disease.

Head: Scalp clean. Hair light. Pupils are equal and react to light and accommodation. No strabismus. Lips are dry and crusted. Teeth are decayed, and a few missing. The tongue is heavily coated. No tonsils present. Pharynx slightly injected. Few small glands felt in the neck. No rigidity of the neck.

Chest is very thin and poorly developed; expansion fair. Heart apex is visible as a diffuse impulse and is felt in the fifth intercostial space at the nipple line. No thrill is felt. The sounds at the apex are loud, the first sound being accompanied by a slight systolic murmur. The second pulmonic is accentuated, reduplicated and loud. Brachial arteries are seen to pulsate. A pistol shot sound is heard at the femorals. The pulse is regular, of fair quality, but somewhat thin. Moderately rapid; not of the Corrigan type.

At the upper lobe of the right lung along the spine some dullness and increased expiratory phase are noted. An occasional rale is heard in the chest.

The abdomen is soft and flat, no rigidity, no masses felt. Some tenderness obtained in the hypogastric region. Extremities present no edema or eruption, no clubbing; they are both cold and moist. Reflexes are markedly exaggerated, no clonus or Babinski. Small glands are to be felt in the axillæ, cervical and inguinal regions. No abnormalities of the genitals noted.

Examination of blood: Hemoglobin, 90 per cent.; white blood cells, 10,500; polymorphonuclears, 53 per cent.; small lymphocytes, 47 per cent. Culture of

*From the A. Jacobi Division of the German Hospital.

throat for diphtheria, negative. Von Pirquet reaction positive. Blood pressure, 105 systolic. Schick test negative. Blood, Wassermann, negative. Spinal fluid globulin negative, cell count, normal. Wassermann on spinal fluid, negative.

Examination of urine:

Reaction.	Specific Gravity.	Color.	Albumin.	Sugar.	Microscopical.
Acid	1005	Watery	0	0	Few white blood cells
Acid	1001	Watery	0	0	Negative.
Acid	1002	Watery	0	0	Negative.

Chemical examination of blood: Urea N 10 milligrams per 100 cc.

Creatinine 1:0.

Sugar as dextrose 0.066 per cent.

Special chemical examination of urine:

Chlorides as NACl 1.6 gms. in 24 hours.

Total Nitrogen 22.6 gms. in 24 hours.

cardiac shadow: Lateral 10 cm., M. R. 2.5 cm., M. L. 7.5 cm."

On February 21 another *x*-ray examination was made by Dr. W. H. Stewart, who reported: "On Jan. 19, I examined this child's head to ascertain if there were any Roentgenographic signs of pituitary disease. At that time I reported negative although we found a shadow behind the posterior clinoidal which seemed abnormal. We were unable to explain what this indicated. Upon re-examination on Feb. 20 we found that the above shadow is distinctly increased and I am now suspicious that it represents some tumor mass in this region, probably involving the hypothalamus, but not disturbing the sella turcica."

January 22. General condition apparently good. Drinks enormous amounts of water and passes large amounts of urine. Complains of pain in abdomen if water is not supplied. No abnormalities in the abdomen made out. Kidneys are not palpable or tender.

January 29. The patient has been on a salt free diet for several days. Very little change was noted in the intake or output of fluids.

January 31. Ice pills were tried for several days

Ammonia 1:40 grms. Ammonia N. 1-13 grms. 5 per cent.

Urea 36.4 grms. Urea N 17.0 grms. 77 per cent.

Examination of urine for inosite—negative.

Examination by Dr. E. Henes, Jr., of blood for cholesterol—normal.

January 23. Sugar tolerance test done. 100 grams of glucose given and no sugar obtained in urine, specimens being collected every hour for 8 consecutive hours and for the entire 24 hours.

February 23. Eyes examined by Dr. Denig. He found a beginning atrophy of the left temporal disc. The right was normal.

The following day the patient was examined by Dr. G. W. Jacoby. The above findings were verified. The possibility of cranial abnormality was considered. The skull was noted to be broad and flat.

x-ray examination of the thorax was made by Dr. Wm. H. Stewart on January 23, who reported: "We do not find sufficient Roentgenographic evidence to justify us in making a diagnosis of tuberculosis nor is there any marked cardiac enlargement. The following approximate measurements will give an idea of the

but the thirst was apparently not diminished.

February 3. Injections of atropine sulphate have been used with very little result.

February 7. Pituitrin has been used several days with very good result. The thirst is markedly diminished. The general condition is very good.

NOTE.—During the patient's stay in the hospital the amount of fluid intake varied from 1,000 c.c. per day to 9,000 c.c. per day, depending upon what treatment the child was receiving, which can be observed by an examination of the chart. The same was true of the fluid output in the urine, which varied from 7,000 c.c. to 2,000 c.c. per day. This great difference in the amount of fluid output and intake was markedly influenced by the use of pituitary extract given in ½ c.c. doses hypodermically twice a day. The reader should refer to the chart. A discussion of the history will be taken up more fully under the conclusion.

The study of the above case led us to make a fairly comprehensive review of the entire subject of diabetes insipidus, as given in the published reports of various observers. We have made an especial effort to study carefully all of the cases which have occurred in children. Short abstracts have been inserted in the text in order to show the observations and investigations which have been made by other workers and additional references are given in the bibliography.

Historical.—Thomas Willis,[6] of "Circle of Willis" fame, in 1674, first directed attention to the fact that the urine of diabetic patients is sweet to the taste; in other words, that in some cases of polyuria the urine is sweet and in others not so. This led to the classification of saccharine and non-saccharine diabetes.

Simmons,[7] in 1792, reported two cases of polydipsia, one of which was said to be a "drought without example." According to Fitz,[8] these are the first cases of diabetes insipidus recorded in English, though not so called.

In 1794, two years after the publication of Simmons' cases of "drought," Frank[9] first defined the condition, in accordance with Willis' discovery, as a long-continued secretion of urine, non-saccharine in character. He called this diabetes insipidus, or spurious diabetes, as differentiated from diabetes mellitus, or true diabetes.

The first attempt at a classification of the cases of diabetes insipidus was made by Robert Willis,[10] in 1838. This classification, which no longer holds, was based on the amount of solids contained in the urine.

The experimental study of diabetes insipidus was inaugurated in 1849, with the well-known animal experiments conducted by Claude Bernard,[11] who found that injury to a certain point in the floor of the fourth verticle, just above the so-called "diabetic center," produced transitory simple polyuria. In addition to his observations upon the central nervous system, Bernard conducted stimulation, section, and other experiments upon various individual nerves.

Eckhard[12] produced temporary polyuria by injury (mechanical), and irritation (chemical and electrical) of the vermiform process of the middle lobe, and injury of the posterior lobe, of the brain.

Kahler[13] was able to produce permanent polyuria, accompanied by polydipsia, in rabbits, the condition resembling diabetes insipidus in man. He accomplished this by injecting minute quantities of concentrated silver nitrate solution into various parts of the brain.

Ralfe,[14] in 1897, pointed out the possible effects of remote lesions of the nervous system on urinary secretion.

The discovery by Schäfer and Magnus[15] of the diuretic effect of extract of the posterior lobe of the pituitary gland, and the observation, by Schäfer and Herring,[16] that the renal arteries are exempt from the constricting effect exercised by this extract upon other vascular channels and upon unstriped muscle in general, were important links in the chain of evidence leading to the association of diabetes insipidus with the hypophysis cerebri.

Frank[17] believed that many cases of diabetes insipidus result from hypersecretion of the pituitary gland, with resultant diuretic effect, holding to the view that this secretion does not exercise the constricting action upon the renal vessels that would be inferred from the rise of blood pressure. This latter view, it will be noted, is in keeping with the observations of Schäfer and his coworkers.

It is impossible, in this review of the subject, to do more than cite some of the more distinctive links in the chain of evidence whch has brought clearly to light an etiological relationship between the hypophysis and at least a certain proportion of (some maintain all) cases of diabetes insipidus. It may be said, however, that the brilliant work of Cushing[18] and his associates, together with the many observations upon the subject from the point of view of the endocrinologist, have served to focus both experimental and clinical attention in this direction.

Despite this trend of opinion toward the cerebral or endocrine origin of diabetes insipidus, certain observers, notably Tallqvist,[19] Meyer,[20] Seiler,[21] Socin,[21] and Rosenbloom and Price[35] have maintained that diabetes insipidus is the result of a primary inability on the part of the kidneys to excrete urine of normal concentration. Schwenkenbecher,[22] Falta,[60] Finkelnberg,[23] and Forschbach and Weber,[24] among others, have expressed the view that the excretion of large amounts of urine is the result of some pathological condition giving rise to stimulation of the kidneys, rather than the outcome of primary incapacity for concentration on the part of these organs.

Etiological Factors.—From a study of the reported cases, whether adults or children, it would seem that certain predisposing factors play a part in the production of diabetes insipidus. The influence of age and sex, as apparent in the histories of reported cases, has already been noted. Heredity has long been thought to bear an etiologic relationship to this affection, and the remarkable collection of cases of familial diabetes insipidus published by Bulloch[25] seems to bear out this view. It is held by many that an hereditary influence is not incompatible with organic inefficiency of the kidney with endocrine disturbance, or with any of the other factors which have been proposed in the effort to discover the etiology of diabetes insipidus.

The clinical classification of cases as *primary* or *idiopathic*, and *secondary* or *symptomatic*, which was so long accepted as being satisfactory, has been challenged in the light of modern research. It has given way to another, based upon the three leading theories of etiology, viz., (1) that the condition is due to faulty concentrative powers on the part of the kidneys; (2) that it is a primary polydipsia, the renal function being normal; (3) that it is the result of a stimulation of the kidney from different causes, the polyuria being symptomatic. Added to these, or included with them, is the view that the condition is the result of hypersecretion of the hypophysis. As previously stated, attention is now chiefly centered upon disturbance of function of the hypophysis from whatever cause arising, as the prime factor in the production of diabetes insipidus.

The disturbance of function of the hypophysis is generally considered as being hypersecretion. To this view, however, there are dissenting opinions. Meyenburg[26] expressed the view, based upon his

clinical and experimental observations, that the endocrine disturbance is one of hypo- and not of hypersecretion. Simmonds,[27] studying secondary growths of the pituitary body in connection with diabetes insipidus, concluded that this affection, if of pituitary orgin, is due not to a hyperfunction but to an absence of function of this organ. In one of his cases, a boy, nine years of age, who had not developed well since his fifth year, there was polyuria, intense polydipsia, and extreme emaciation. Postmortem examination revealed a hemorrhagic tumor of the size of a walnut on the floor of the third ventricle, projecting toward the sella turcica. The pituitary body was macroscopically normal; microscopically, however, the posterior lobe and the stalk were invaded by sarcomatous tissue of the same structure as that of the tumor of the third ventricle.

From certain clinical observations, coupled with assembled experimental data, Cushing[15] suggested that not only are the emotional polyurias, in all probability, the expression of a neurogenic discharge of hypophyseal secretion, but that the clinical polyurias are, in many instances, merely symptomatic expressions of an internal secretory disturbance brought about by injury or disease involving the hypophyseal region. "Hence," he said, "whether or not there actually proves to be a form of polyuria of primary renal origin, our present conceptions of so-called diabetes insipidus need to be recast, with especial reference to the factor of the secretory activity of the pituitary body and particularly of its posterior lobe."

Summing up the question in 1914, Brown[28] said: "The conclusion that we are forced to is that there is no such thing as idiopathic diabetes insipidus. The hypophysis cerebri may be irritated by syphilitic meningitis, tumors, injury, or other nervous stimuli, and throwing more of the secretion of its posterior lobe into the circulation causes polyuria. Some of the cases in which the permeability of the kidney is damaged are simply cases of chronic interstitial nephritis. In others this condition is also associated with hypophyseal disease, which may perhaps have set up a secondary injury to the kidney by raised blood-pressure. For although interstitial nephritis may induce a rise of blood-pressure it is also true that interstitial changes in the kidney may be induced by vascular disease as is seen in the arteriosclerotic kidney. A polyuria secondary to polydipsia is not diabetes insipidus. At the present time the hypophysis seems to be the dominating factor in producing the condition to which that name may be fairly applied."

The fact that polyuria and polydipsia so frequently make their appearance, especially in children, following an acute infectious disease, led the earlier observers to conclude that the infection exercised an irritative influence upon the kidneys which resulted in polyuria of greater or less severity and permanency. In the light of endocrinological investigations, however, the hypophysis would seem to be the organ primarily affected by the toxins of the infectious disease.

In connection with the pathogenesis of this interesting condition, the following editorial summary[6] seems well worth reviewing at this point: "At one time the view was advanced that the polyuria is secondary to a chronic polydipsia, and cases have been reported in which this condition seems to have existed, but these cases are of an atypical, transient form, dependent on neuroses, and quite distinct from the typical persistent form of the disease. Strubell found that in the typical cases a rise in the concentration of the blood soon follows a brief period of thirst, showing that the excessive renal secretion is not dependent on an excessive amount of liquid in the blood, as is the case in polyuria resulting from polydipsia. This and other observations have led to the view now prevailing that diabetes insipidus depends on a functional abnormality in the kidneys, which is not the sequel of any evident structural alteration, but rather depends on some change in either the vascular or nervous mechanism of the kidney. In many instances there is definite evidence of nervous involvment, as in two cases studied by Seiler in which the disease followed fracture of the base of the skull, and it may be recalled that Claude Bernard, in his classical experiments on experimental glycosuria, found that lesions of the medulla might be followed by polyuria without glycosuria. There are many cases, however, in which no central nervous lesions can be demonstrated, and some in which hereditary influences bear a part.

"According to many observers, the increased flow of urine depends ultimately on a dilatation of the renal vessels, unaccompanied by general rise in arterial pressure; presumably this vaso-dilatation is the result of the primary nervous lesions, for a similar condition of polyuria is said to be produced in animals by cutting the renal nerves. R. Schmidt believes it possible to modify the course of the disease by reducing this renal hyperemia through artificial hyperemia of other vascular regions; *e.g.* catharsis in cases with obstipation, and external heat or diaphoretics in patients with dry skins. Spaether also considers diabetes insipidus to be the result of a paresis of the renal vasomotor nerves, of either central or peripheral origin; and he explains the favorable results which sometimes follow the method of treatment by strychnin injections advocated by Feilchenfeld, as due to stimulation of this nerve plexus.

"Studies of the conditions of metabolism in this disease seem to prove that it is not the cause or the result of metabolic disturbances, but apparently depends exclusively on secretory abnormalities. Tallqvist made the interesting observation that variations in the amount of nitrogenous food cause a corresponding variation in the amount of urinary secretion, so that the proportion of urea in the urine remains practically constant; the same change followed variations in the amount of sodium chloride in the food. A. Wolf found that the reverse is also true, namely, a reduction in the quantity of the urinary secretion by any means leads to an equal reduction in the amount of urea excreted, the proportion remaining constant. These results are confirmed in a careful study from Sahli's clinic by F. Seiler, who found that ingestion of large quantities of nitrogenous food is not followed by a rise in the specific gravity of the urine, as is the case with normal individuals. Apparently in diabetes insipidus the kidneys can not excrete urine containing nearly so large a proportion of solids as normal urine; therefore, the total excretion of solids

can reach the normal only when a sufficiently large quantity of water reaches the kidneys to carry out all the accumulating solids of the blood. Should there not be sufficient water to accomplish this, the concentration of solids in the blood will increase, leading to the sensation of thirst which causes the characteristic polydipsia and polyuria of the disease. Seiler suggests that the polyuria of chronic interstitial nephritis similarly may depend on the sensation of thirst produced by an increase in the concentration of the blood due to retained solids. In diabetes insipidus, however, uremia does not follow, because there are no renal lesions to prevent the polyuria being sufficient to remove all excess urinary solids from the blood. Just why the kidney is unable to secrete a normally concentrated urine in diabetes insipidus Seiler does not attempt to explain, beyond ascribing it to nervous defects. He does not believe the view held by Tallqvist, that there is a failure of resorption of water from the tubules, can be the correct explanation."

Symptomatology and Diagnosis.—The symptomatology, as stated by Futcher,[29] is as follows: Polyuria; polydipsia; absence of sweating; appetite poor; constipation the rule; ocular changes (cataract, xanthoma palpebrum, pigmentary choroiditis, incipient or advanced optic atrophy, etc.); headache; lumbar pains; impotence; blood-changes—slight; loss of weight; edema of feet; knee-jerks exaggerated; metabolism not much disturbed.

The presence of polyuria and polydipsia suggests the diagnosis of diabetes insipidus. The study of the urine gives the most conclusive evidence. According to Koplik,[30] if the daily amount of urine is three or more times the normal amount, there is polyuria. The specific gravity does not exceed 1.006. The urine is light-colored.

The polydipsia, which may first direct attention to the condition, is generally extreme, and not the least distressing symptom. Instances have been recorded in which the thirst was so great that the individual, whether adult or child, would go to the extreme of drinking water from puddles of water, from waste vessels, some even drinking their own urine, in order to quench the veritable "drought" which consumed them.

The other symptoms vary greatly. In some of the cases reported the polyuria and polydipsia were the only symptoms of consequence, the patient being otherwise fairly comfortable and healthy.

Prognosis.—The prognosis of diabetes insipidus depends largely upon other conditions and upon the causative factors. Cases have been reported by Brunton,[5] Guthrie and Sutherland,[31] and others, in which the condition proved to be transitory, leaving little or no ill after-effects. Those who hold the view that diabetes insipidus, like diabetes mellitus, sometimes comes under the category of an "emotional" disorder, give a favorable prognosis in such cases. Polyuria and polydipsia may continue through life, as von Noorden[1] has pointed out, "as an inconvenience rather than a disease." As a rule, however, in true diabetes insipidus the prognosis is considered unfavorable. To what extent the prognosis will be modified in future by treatment along the lines suggested by the endocrine origin of the affection cannot at present be predicted.

Treatment.—The treatment of diabetes insipidus, as given in the literature, varies with the symptomatology, and with the individual conception of the etiology of the affection, from dietary and hygienic measures, through the gamut of nerve stimulants, vasoconstrictors; vasodilators, and organotherapeutic agents to sella decompression and such other surgical measures as may be suggested by the exigencies of the case.

Quoting again from the editorial summary:[46] "As to therapeutics, Seiler believes that the practice of restricting the amount of fluid taken by the patient should not be carried too far, as retention of solids will result with all its evil effects. The mere reduction in quantity of urine is not a desirable result when there is not a corresponding increase in specific gravity, for otherwise retention of solids must be taking place. In some mild cases, in which the primary nervous disorder is either transitory or purely functional, reduction in the amount of fluid ingested, together with such nervous stimulants as strychnin, or vasoconstrictors, such as ergot, may lead to improvement or recovery; but it is imperative that the amount of urinary solids must remain normal as the polyuria decreases. Attempts made by Seiler to improve the function of the kidney by diuretics did not give favorable results."

Herrick, J. B.[47] has made an interesting observation in the case of an adult male which he reports because of the remarkable effect of lumbar puncture in diminishing the amount of urine and raising its specific gravity. Typical case of diabetes insipidus. Lumbar puncture was made and less than 5 c.c. of fluid withdrawn, slowly, under low pressure. Within 48 hours the daily amount of urine (7,500-11,000 c.c.) had dropped to 660 c.c.

In our treatment of this interesting condition, we began, as will be seen on the chart, by having the patient placed on a soft, non-restricted diet, with plenty of water during the first eight days in the hospital with the thought in mind of seeing just how much the water intake and the water output would be in 24 hours, and also with the idea of seeing just what had been the condition of the child during the weeks before.

Having reviewed Meyer's[26] article on the effect of a salt free diet, in cases of diabetes insipidus, we were anxious to see if this worked out in our case. This salt free diet we continued for six days with only a slight decrease in the water intake, the water output remaining about the same. For the next two days the child was given no water, was fed only a few ice pills, and this, while it lessened the water intake and output, made the child complain bitterly of abdominal pain and weakness.

Being familiar with the effect of pituitrin on the amount of water output, in some of the cases of diabetes recorded, Falta[50] and others, in the literature, we began by the injection of one-half c.c. of pituitary extract twice a day. This lowered the water intake and water output, as will be seen by the chart, to a very marked degree, and without producing any disagreeable symptoms to our patient. This we continued for eight days, keeping the urine output below 2,000 c.c. with a great dimunition in the amount of thirst, and weakness. This observation has been made by a number of other investigators, which seems to indicate that there is some

connection between the pituitary gland and diabetes insipidus.

Summary.—Diabetes insipidus is a disease which is characterized by polyuria; polydipsia; absence of sweating; anorexia, appetite poor; constipation the rule, ocular changes (cataract, xanthoma palpebrum, pigmentary choroiditis, incipient or advanced optic atrophy, etc.); headache; lumbar pains; impotence; blood-changes—slight; loss of weight; edema of feet; knee-jerks exaggerated; metabolism not much disturbed.

A study of the cause of the polyuria, from a careful investigation of a large number of histories of this condition and from the careful observations which we made in studying our reported case, leads us to believe that the whole chain of symptoms, which is so characteristic and which is always present in the true cases, has its fundamental origin in the pituitary gland and not in other parts of the body.

We must disagree with Eric Meyer and his coworkers, for we do not believe that the changes in the concentration of the urine are due to a primary disorder of metabolism, but that the changes in metabolism of the body are secondary to the disease which is present in the pituitary body.

This change in function which takes place reacts undoubtedly upon other glands of internal secretion, and upon the entire organism.

There is a good deal of evidence which leads us to believe that the changes which have been observed by Tallqvist,[19] Meyer,[20] Socin,[21] and others, in the kidney vessels themselves are only part of the result of absence of pituitary secretion.

TABLE OF CASES ENCOUNTERED IN THE LITERATURE
(Not supposed to be a complete list)

Cases.	Sex.	Age. Yrs.	Age. Mos.	Reported.	Author.
1	F	4½		1888	Weiszharth.
2	M		5	1890	Rachel.
3	F		10	1890	Rachel.
4	M		4	1890	Rachel.
5	M		11	1890	Rachel.
6	M	2½		1892	Brunton.
7	M		9	1892	Brunton.
8	F		20	1892	Brunton.
9	M	1½		1892	Brunton.
10	M	5		1893	Bulyubash.
11	M	7		1894	Lewi.
12	M	10½		1896	Eichhorn.
13	M		26	1897	Cima.
14	F	5½		1897	Cima.
15	M	2	3	1898	Cima.
16	M	7		1898	Cima.
17	M	3		1902	Butler and French.
18	M	6		1902	Butler and French.
19	F	11		1902	Butler and French.
20	F	13		1904	Futcher.
21	M	13		1909	Verco.
22	F	2½		1910	Cherry.
23	M	7		1912	Johnson
24	M	2½		1913	Guthrie and Sutherland.
25	M	2		1913	Guthrie and Sutherland.
26	M	7		1913	Sequeira.
27	F	4		1913	Stern.
28	M	3		1913	di Giorgio.
29	M	4½		1913	di Giorgio.
30	M	12		1914	Jewett.
31	M	12		1914	Fitz.
32	M	13		1914	Zundel.
33	M	4		1914	Whippham.
34	M	9		1914	Simmonds.
35	M	5		1915	Reuben.
36	M	4		1916	Rosenbloom and Price.

During the course of our exceptional opportunity to study the case here reported, we were able to try the effect of reduction in the amount of sodium chloride intake and of water intake over a considerable period of time, which can be seen by an examination of the chart in the text. These various experimental observations did not prove helpful at all, for the case continued passing the same large quantities of urine notwithstanding the reduction in the amount of sodium chloride intake. This observation has been made by other workers in the same field and the unsatisfactory results obtained lead us to the investigation of the pituitary body as a possible cause of the entire condition. Our observations showed that injections of a half cubic centimeter of pituitary extract two or three times a day lessened the amount of urine output to a very marked degree, there being a drop of from 7,000 or 8,000 c.c. to 1,500 to 2,500 per day. This same observation has been made by Schäfer and Magnus,[15] Frank,[17] Simmonds,[27] Cushing,[18] and others.

REFERENCES AND BIBLIOGRAPHY.

1. von Noorden: Diabetes insipidus. In: The Diseases of Children. Pfaundler and Schloosmann, 1912, Vol. II., 231.

2. Garrod, Archibald E.: In Diseases of Children, Edited by Garrod, Batten and Thursfield. (Chap. XI., Metabolic Disorders, p. 592.) London, 1913.

3. Gerhardt, D.: Der Diabetes Insipidus. Nothnagel's Handbuch, 1899, Bd., VII., Th. VII.

4. Rachel, G. W.: Polyuria in Early Infancy. *Med. and Surg. Reporter*, Phila., 1891, LXV., 650. Also: *Med. Monatschr.*, New York, 1890, II., 461.

5. Brunton, J.: Diabetes in Children Caused by Hot Weather. *Brit. Med. Jour.*, 1892, II., 735.

6. Willis, Thomas: De Diuresinimia, ejusque remedio, et speciatim de Diabetes, in cujus Theoriam et Therapiam inquiritur, Opera Omnia, Pharmaceutice Rationalis, Sectio IV, Caput III. Henricum Wetstenium, Amsterdam, 1682.

7. Simmons: Medical Facts and Observations. London, J. Johnson, 1792.

8. Fitz, R.: A Case of Diabetes Insipidus. *Arch. Int. Med.*, 1914, XIV., 706.

9. Frank Johann Peter: De Curandis Hominum Morbis, III., Classis V. (Profluvia), Ordo I (profl. serosa), Genus II. (Diabetes), p. 28. Florence, Caen et Socios, 1832. (Lib. V, 1784.)

10. Willis, Robert: Urinary Diseases and Their Treatment, 1838.

11. Bernard, Claude: Lecons sur les proprietes physiologique et les alterations pathologiques des liquides de l'organism. Paris, 1859.

12. Eckhard: Beitrage zur Anatomie u. Physiologie, 1869, IV., I., 153; 1870, V., 147; 1872, VI., 51.

13. Kahler: Die Dauernde Polyuria als cerebrales Herdsymptom. Prager Vierteljahrschrift, Prag u. Leipz., 1886, Bd. VII.

14. Ralfe, C. H.: Diabetes Insipidus. In: Albutt's System of Medicine, 2d Ed., 1907, 212.

15. Schäfer and Magnus: The action of Pituitary Extracts Upon the Kidney. *Jour. Physiol.*, London, 1901, XXVII., p. IX.

16. Schäfer and Herring: The Action of Pituitary Extracts Upon the Kidney. Phil. Trans. Roy. Soc., London, 1906, CXCIX., 1.

17. Frank, E.: Ueber Beziehungen der Hypophyse zum Diabetes Insipidus. *Berl. klin. Wchnschr.*, 1912, XLIX., I., 393.

18. Cushing, Harvey W.: (1) The Pituitary Body and Its Disorders. J. B. Lippincott Co., Phila., 1912; (2) Concerning Diabetes Insipidus and the Polyurias of Hypophysial Origin. Bulletin of the Massachusetts Medical Soc., Medical Communications, Vol. XXIV., Pt. I., 1913, 25. Also: *Bost. Med. and Surg. Journ.*, 1913, XXIV.

19. Tallqvist: Untersuchungen über einen Fall von Diabetes Insipidus. *Zeit. f. klin. Med.*, 1903, XLIX., 181.

20. Meyer, Eric: Ueber Diabetes insipidus und andere Polyurien. *Deutsches Arch. f. klin. Med.*, Lepiz., 1905, LXXXIII., 1. Also: *Deutsch. klin.*, 1910, XXIII., Supplement II., 271; *Ztschr. f. klin. Med.*, 1912, LXXIV., 352; Ueber den gegenwärtigen Stand de Path. u. Ther. d. Diabetes Insipidus, Halle, 1914.

21. Socin, C.: Ueber Diabetes insipidus. *Ztschr. f. klin. Med.*, Berlin, 1913, LXXVIII., 294.
22. Schwenkenbecher, A.: Ein Beitrag zum Atiologischen Studium des Diabetes insipidus. *München. med. Wchnschr.*, 1909, LVI., 2564.
23. Finkelnburg: Ueber die Konzentrationsvermögen der Niere bei Diabetes insipidus nach organischen Hirnerkrankungen. *Deutsche. Arch. f. klin. Med.*, 1910, C., 33.
24. Forschbach and Weber: Beobachtungen über die Harnund Salzausscheidungen bei Diabetes insipidus. *Ztschrft. f. klin. Med.*, 1911, LXXIII., 221.
25. Bulloch, William: Treasury of Human Inheritances. Section Ia, Diabetes Insipidus. 1990, Part I.
26. Meyenburg: Diabetes insipidus. Ziegler's Beiträge, 1916, LXI., 550.
27. Simmonds, M.: Ueber sekundäre Geschwülste des Hirnanhangs und ihre Beziehungen zum Diabetes insipidus. München. med, Wchnschr., 1914, LXI., 180. Also: Hypophysis un Diabetes insipidus. München. med. Wchnschr., 1913, LX., 127.
28. Brown, W. L.: Polyuria. Editorial, *Med. Rev.*, Lond., 1914, XVII., 1.
29. Futcher, Thomas B.: A Clinical Report of Nine Cases of Diabetes Insipidus. Trans. of the Assoc. of Am. Physicians, 1904, Vol. XIX., 247. Also: Diabetes Insipidus. In: Modern Medicine (Osler), 1914, Vol. II., 721.
30. Koplik, Henry: The Diseases of Infancy and Childhood, 1910, 712.
31. Guthrie, L., and Sutherland, G. A.: Two Cases of Transitory Diabetes Insipidus. Proc. Roy. Soc. Med., London, 1913-14, VII., Sect. Stud. Dis. Child., 76.
32. Seiler, F.: Ueber das Wesen des Diabetes Insipidus. *Ztschr. f. klin. Med.*, Berl., 1907, LXI., 1.
33. Goodall, H. W.: Metabolism Studies in a Case of Diabetes Insipidus. *Boston Med. and Surg. Jour.*, 1911, CLXV, 788.
34. Herringham, W. P.: A Case of Diabetes Insipidus. *Lancet*, 1914, I, 16.
35. Rosenbloom, J., and Price, H. T.: A Metabolism Study of a case of Diabetes Insipidus. *Am. Journ. Dis. Child.*, 1916, XII., 53.
36. Butler and French: A Research Upon the Metabolism of a Patient Suffering from Diabetes Insipidus Following Upon Fracture of the Skull. *Guy's Hosp. Reports*, 1902, Vol. LVII, 133.
37. Minkowski, O.: Zur Therapie des Diabetes Insipidus. *Therap. d. Gcgenw.*, Berl., 1910, LII, 4.
38. Eichhorn, G.: Ueber Diabetes Insipidus im Kindesalter, *Jahrb. f. Kinderh.*, Leipz., 1896, n.F., XLII, 44.
39. Babonneix and Roustan: Polyurie essentiele chez l'enfant. *Gaz. des Hop.*, 1907, LXXX, 1731.
40. Johnson, F.: Diabetes Insipidus. *Wisconsin Med. Jour.*, 1911-12, X, 590.
41. Verco, J. C.: Diabetes Insipidus. *Australas. Med. Gaz.*, Sydney, 1909, XXVIII, 531.
42. Rathery: Diabete Insipide datant de l'enfance. *Clinique*, Paris, 1914, IX, 130.
43. Külz: Diabetes Insipidus, Gerhardt's Handbuch d. Kinderkrankheiten. Bd. XIII, 1.
44. Cima, V.: Diabete Insipido in Bambini; Osservazioni Cliniche ed Urologiche. *Pediatria*, Napoli, 1897, V. 15. *Ibid.*: 1898, VI, 78.
45. Sequeira, J. H.: A Case of Diabetes Insipidus with Papular and Nodular Xanthomata. *Brit. Jour. Dermat.*, London, 1914, XXVI, 332. Also: Diabetes Insipidus with Papular and Nodular Xanthomata. Proc. Roy. Soc. Med., London, 1913-14, VII, Dermatological Sect., 262.
46. The Pathogenesis of Diabetes Insipidus. Editorial, *Jour. Am. Med. Assoc.*, 1907, August 10, 499.
47. Herrick, J. B.: Report of a Case of Diabetes Insipidus with Marked Reduction in the Amount of the Urine Following Lumbar Puncture. *Arch. Int. Med.*, 1912, X., 1.
48. Weber, F. P.: Diabetes Insipidus in a Boy with Positive Wassermann's Reaction; Remarks on Polyuria in Children and Infantilism. *Brit. Jour. Child. Dis.*, London, 1912, IX, 211.
49. Farini, Francesco: Diabete Insipido ed Opterapia Ipofisaria. *Gazz. degli osp. d. Clin.*, Milan, 1913, XXXIV, 1135.
50. Falta, Wilhelm: The Ductless Glandular Diseases. Trans. by Meyers, 2d Ed., 1916.
51. Lewis and Matthews: The pars intermedia; its relation to diabetes insipidus. Trans. Chicago Path. Soc., 1913, IX, 16.
52. Matthews, S. A.: Experimental diabetes insipidus in dogs. *Arch. Int. Med.*, Chicago, 1915, XV, 451.
53. Camus and Roussy: Diabète insipide et polyurie hypophysaire; regulation de la tenure en eau de l'organisme. *Presse méd.*, Paris, 1914, XXII, 517.
54. Berblinger: Diabetes insipidus und Tumor in der Hypophyse. Verhandl. d. deutsch. path. Gesellsch., Jena, 1913, XVI, 272.
55. Goldzieher, M.: Ueber Sektionsbefunde bei Diabetes insipidus. Vergandl. d. deutsch. path. Gesellsch., Jena, 1913, XVI, 281.
56. Benario, J.: Zur Pathologie und Therapie des Diabetes insipidus. *München. med. Wchnschr.*, 1913, LX, 1768.
57. Jewett, D. B.: Hypophyseal disease as related to diabetes insipidus; with report of two cases. MEDICAL RECORD, 1914, LXXXV, 242.
58. Reuben, Mark S.; Dysendocrinism in children. *Am. Jour. Dis. Child.*, 1915, August, 110. Also: Dyspituitarism. *Ibid.* September, 1913, 145.
59. Maminoff, A. Y.: (Diabetes insipidus in a child.) *Trudi i Protok. Imp. Kavkazsk. Med. Obsh.*, Tiflis, 1914, I, 238.
60. Whippham, T. R.: Diabetes Insipidus with Infantilism. Proc. Roy. Soc. Med., Lond., 1914-15, VIII, Sect. Dis. Child., 10.
61. di Giorgio, G.: Diabete insipidio in bambini tubercalotici. *Gazz. internaz. di med.*, Napoli, 1913, XVI, 153.
62. Tzarkies (Mlle.) S. B.: Diabète insipide et hypoazoturie chez l'enfant., Montp., 1913.
63. Zundel, C. E.: Diabetes insipidus with infantilism. Proc. Roy. Soc. Med., Lond., 1913-14, VII, Sect. Dis. Child., 2.
64. Reiss, E.: Treatment of diabetes insipidus in childhood. *Gyogyaszat.*, Budapest, 1912, III, 394.
65. Ehrmann, R.: Familiärer Diabetes insipidus bei 3 geistig zurückgebliebenen Kindern. *Berl. klin. Wchnschr.*, 1911, XLVIII, 496.
66. Cherry, P. T. S.: A case of diabetes insipidus and chronic hydrocephalus. *Australas. Med. Gaz.*, Sydney, 1910, XXIX, 302.
67. Sahut, Rapheal: De la polyurie essentielle chez l'enfant. Par., 1908.
68. Variot: Dipsomanie avec polyurie chez un enfant de quatre ans. Soc. med. des. hôp., 1899, 155.
69. Löfqvist, R.: Vahän Diabetes insipiduksesta. [. . . of the child.] Duodecim. Helsinki, 1898, XIV, 195.
70. Haushalter, P.: Polyurie essentielle chez un enfant de 6 ans. *Ann. de méd. et chir. inf.*, Par., 1898, II, 469.
71. Eichenberger, E.: Ein Fall von diabetes insipidus im Kindesalter. Festchr. Ed. Hagenbach-Burckhardt, Basel u. Leipz., 1897, 51.
72. Lewi: A case of Diabetes insipidus. *Archives of Pediatrics*, June, 1894, 449.
73. Bulyubash, F. V.: Diabetes insipidus u 5-liet nyavo malchika. [. . . in a boy of 5 years.] *Med. Obozr.*, Mosk., 1893, XXXIX, 363.
74. Weiszbarth, G.: Diabetes insipidus 4½ eves leánygvermeknél. [. . . in a girl 4½ years old.] *Orvosi Hetilap*, Budapest, 1888, XXXII, 257. Also: *Pest. med.-chir. Presse*, Budapest., 1888, XXIV, 225.
75. Liebmann, A.: Ueber Diabetes insipidus bei Kindern. Berlin, 1888.
76. Ullmann, B.: Diabetes insipidus esete hét éves gyermaknél. [. . . in a child seven years old.] Ein exquisiter Fall von Diabetes insipidus in Kindesalter. Jahrb. f. Kinderh., Leipz., 1888, n.F., XXVIII, 95.
77. Courmont, P.: Le diabète insipide hyperchlorurique. *Bull. Soc. méd. d. hôp. de Lyon*, 1907, VI, 207. Also: Lyon méd., 1907, CIX, 72.
78. Couvée: Diabetes insipidus. *Med. Rev.*, Haarlem, 1907, VII, 279.
79. de Elizalde, P. E.: Un caso de diabetes insipida. *Rev. Soc. med. Argent.*, Buenos Aires, 1907, XV, 33.
80. Engel, K.: Diabetes insipidus és primaer poly-

dipsia. *Diaet. és physik. gyógyitóm.*, Budapest, 1907, 17.

81. Finkelnburg, R.: Klinische und experimentelle Untersuchungen über Diabetes insipidus. *Deutsches Arch. f. klin. Med.*, Leipz., 1907, LI, 345.

82. Fontana, V.: L'atropina nel diabete insipido. *Gazz. d. osp.*, Milano, 1907, XXVIII, 601.

83. Goujoux and Delmas: Des polyuries insipides; essai de classification pathogénique. *Montpel. med.*, 1907, XXV, 457; 481.

84. Larré, M. Gustave: Recherche sur la polyurie insipide. Paris, 1907.

85. Lomovitski, L. F.: [Diabetes insipidus following syphilitic basilar meningitis.] *Russk. J. Kozhn, i Ven. Boliezn.*, Kharkov., 1907, XIV, 159.

86. Plicque, A. F.: Les médications symptomatiques; le traitement des polyuries. *Bull méd.*, Paris, 1907, XXI, 987.

87. Senator: Diabetes insipidus. Ziemssen's Handbuch der spec. Path. und Therap., Bd. XIII, 1.

88. Stadelmann, S.: Der Diabetes insipidus. *Heilkunde*, Berl., 1907, 1.

89. Teschemacher: Ueber die Fortdauer der Polyurie bei Diabetikern nach vollständig verschweindener Glykosurie und den Uebergang von Diabetes mellitus in Diabetes insipidus. *München. med. Wochnschr.*, 1907, LIV, 561.

90. Versanni, M.: L'adrenalina in un caso di diabete insipido. *Gazz. d. Osp.*, Milano, 1907, XXVIII, 637.

91. Winckelmann: Ueber den Diabetes insipidus. *Med. Klin., Berl.*, 1907, 111, 1005.

92. Allaria, G. B., and Rovere, G.: Ricerche sulla funzione renale in un ragazzo rachitico affetto da diabete insipido. *Rassegna di terap.*, Tor., 1908, 546.

93. Braenung, H.: Neure Unterssuchungen über Diabetes insipidus. *Würzb. Abhandl. a. d. Gesamtgeb. d. prakt. Med.*, 1908, X, 27.

94. Debove: Du diabéte hypophysaire. *Rev. gén. de clin. et de thérap.*, Paris, 1908, XXII, 803.

95. Ebstein, W.: Beiträge zur Lehr vom Diabetes insipidus. *Deutsch. Arch. f. klin. Med.*, Leiz., 1908-9, XCV, 1.

96. Kolossow, G. A.: Zur Frage des Diabetes insipidus. *Deutsche Aerzte Ztg.*, Berl., 1908, 169; 219. Also: *Prakt. Vrach.*, St. Peterb., 1906, V., 725; 804.

97. Nepdoff, V. V.: Diabetes insipidus. *Protok Obsh. Russk. Vrach.*, Mosk., 1908-9, 1.

98. Reichardt, M.: Der Diabetes insipidus, symptom einer Geisteskrankheit? *Arb. a. d. psychiat. Klin. zu Würzburg*, Jena, 1908, 2 Hft., 49.

99. Reilingh, D.: Over de behandlung von diabetes insipidus. *Nederl. Tijdschr. v. Geneesk.*, Amst., 1908, 2 R., XLIV, 1 Afd., 738.

100. Rodhe, E.: (A case of diabetes insipidus successfully treated by injections of strychnia.) *Hygiea*, Stockholm, 1908, 2f., VIII, 1178.

101. Verstraete and Sablé: Sur un case de diabète insipide coexistant avec des lésions anciennes du corps strié et suivi de tuberculose pulmonaire. *J. de sc. med. de Lille*, 1908, I, 278.

102. Weil, A.: Ueber die hereditäre Form des Diabetes insipidus. *Arch. f. klin. Med.*, Leipz., 1908, XCIII, 180.

103. Silvestri, T.: Del diabete insipido, con specialo riguardo all' etiologia e patogenesi. *Riforma med.*, Napoli, 1911, XXVII, 91; 120.

104. Strauss, H.: Diabetes insipidus und Entwicklungshemmung, nebst Bemerkungen zur Differentialdiagnostik des Diabetes insipidus. *Folia urolog.*, Leipz., 1911, VI, 389.

105. Stuber, B.: Euber diabetes insipidus zugleich ein Beitrag zur Entstehung des Kochsalzfiebers. *Deutsch. Arch. f. klin. Med.*, Leipz., 1911, CIV, 394.

106. Vires, J.: Traitement des polyuries. *Rev. gén de clin. et de therap.*, Par. 1911, XXV, 324.

107. Braenung: Ueber Diabetes insipidus. *Berl. klin. Wchnschr.*, 1910, XLVII, 803.

108. Friedlander: Psychoneurose und Diabetes insipidus. *Ztschr. f. d. ges. Neurol. u. Psychiat.*, Berl. u. Leipz., 1910, III, 581. Also: *Deutsch. Ztschr. f. Nervenh.*, Leipz., 1911, XL, 215.

109. Kroell, H.: Adrenalin gegen Diabetes insipidus. *Strassb. med. Ztg.*, 1910, VII, 281.

110. Strauss, H.: Ueber vier Fälle von Blasenerweiterung bei Diabetes insipidus. *Folia Urolog.*, Leipz., 1910-11, V, 452.

111. Cardarelli, A.: Un caso spettacoloso di poliuria simplex. *Studium*, Napoli, 1909, II, 47.

112. Crowe, Cushing, and Homans: Hypophysial Transplantation following total hypophysectomy. *Quart. Jour. Exper. Physiol.*, 1909, II, 389.

113. Engel, K.: Ueber Diabetes insipidus. *Ztschr. f. klin. Med.*, Berl., 1909, LXVII, 112.

114. Gastaldi, G.: Osservazioni sul diabete insipido. *Folio clin. chim. et micros.*, Salsomaggiore, 1909, II, 1.

115. Meirelles, E.: Polyuria nervosa ou diabete insipido. *Tribuna medica*, Rio de Janeiro, 1909, XV, 227.

116. Mohr, H.: Dauernder Diabetes insipidus nach Schädelgrunbruch. *Monatschr. f. Unfallheilk.*, Leipz., 1912, XIX, 362.

117. Rosenthal, A.: Zur Pathologie der Sekretionen bei Diabetes insipidus. *Berl. klin. Wchnschr.*, 1912, XLIX, 1265.

118. Steiger, O.: Ueber einen Fall von Diabetes insipidus und seine Beziehungen zur inneren Sekretion resp. zum erweiterten Vagussystem. *Deutsch. med. Wchnschr.*, Leipz. u. Berl., 1912, XXXVIII, 1869.

119. Stoewer, P.: Neuritis und Iridozyklitis bei Diabetes insipidus. *Klin. Monatsbl.* f. Augenh., Stuttg., 1912, II, 624.

120. Hanssen, O.: Om diabetes insipidus og dens behandling med salt-og aeggelwidefattig diaet. *Nord. Tidsskr. f.* Terapi. Kbenh., 1911-12, X, 237.

121. Bach, H.: Heilung eines Falles von Diabetes insipidus durch Bestrahlung en mit ultraviolettem Quarzlampenlicht. *Deutsch. med. Wchnschr.*, Leipz. u. Berl., 1911, XXXVII, 1990.

122. Braga, and Corelli: Diabete insipido. *Boll d. Soc. med. di Parma*, 1911, 2 s. IV, 62.

123. Goetsch, Cushing, and Jacobson: Carbohydrate Tolerance and the posterior lobe of the hypophysis cerebri. Bull. Johns Hopkins Hosp., 1911, XXII, No. 243.

124. Heitz-Boyer and Morens: Volume des urines et concentration maxima; signification diagnostique de la polyurie. *Presse méd.*, Par., 1911, XIX, 245.

125. Nobuoka, K.: A case of diabetes insipidus. *Sci-i-Kwai M. J.*, Tokyo, 1911, XXX, No. 6, June 10.

126. Pechkranc, S.: (Diabetes insipidus, also imperfect development of the entire body and of the genitals). *Medycyna i. Kron. lik.*, Wars., 1911, XLVI, 458, 482.

127. Rosendorff and Unna: Zur Differentialdiagnose und Therapie des Diabetes insipidus. *Berl. klin. Wchnschr.*, 1911, XLVIII, 377.

128. Ruggiero, E.: Diabete insipido; due casi. *Ann. di med. nav.* Roma, 1913, XIX, 520.

129. Sainton, P. and Rol. L.: Le Diabète hypophysaire. *Gaz. d. hôp.*, Par., 1913, LXXXVI, 1553.

130. Skorodumoff, A. M.: (Case of eosinophilia in diabetes insipidus.) *Izviest. Imp. Voyenno-Med. Akad.*, S. Peterb., 1913, XXVII, 731.

131. Strauss, H.: Ueber die Diätbehandlung des Diabetes insipidus und ähnlicher Polyurien. *Vort. U. prakt. Therap.*, Leip., 1913, 5 s., 111.

132. Thinius, Walter: Zur Kenntnis des Diabetes insipidus. Greifsw. 1913.

133. Arnozan: Diabète insipide d'origine syphilitique. *J.* de Méd. de Bordeaux, 1912, XLII, 165.

134. Beutter: Diabéte insipide survene â la suite d'un traumatisme Crânien. *Loire méd.*, St. Etiénne, 1912, XXXI, 223.

135. Ebstein, E.: Ueber Eunuchoidismus bei Diabetes insipidus, *Mitt. a. d. Grenzgeb. d. Med. u. Chir.*, Jena, 1912, XXV, 441.

136. Ellern, H.: Ein Beitrag zum ätiologischen Studium des Diabetes insipidus. *Deutsches Arch. f. klin. Med.*, Leipz., 1912, CIX, 85.

137. Eno, H.: Diabetes insipidus: Report of a case of probable tuberculous pathogenesis. Proc. Canal Zone Med. Assoc., 1912, V. 19.

138. Goldberg, J. and Hertz, R.: (Secretion of chlorides in diabetes insipidus, and the influence of sodium bicarbonate upon it.) *Medycyena i. Kron.*, Wars., 1912, XLVII, 210. Also: *Rev. d. méd.*, Par., 1913, XXXIII, 91.

139. Hanssen, O.: Om diabetes insipidus. *Norsk Mag. f. Laegevidensk*, Krist., 1912, 5 R., X, 480.

140. Legueu, F. and Lagarde, de B.: Critique de la polyuria expérimentale. *J. d. urol. et chir.*, Par., 1912, II, 461.

141. von Gierke, E.: Hypophysis und Epiphysis bei Diabetes insipidus. Verhandl. d. deutsch. path. Gesellsch., Jena, 1914, XVII, 200. Discussion; 231.

142. Antoine: Diabète insipide et syphilis. *Arch. méd. d'Angers*, 1913, XVII, 147.

143. Balint, R.: Beiträge zur Aetiologie des Diabetes insipidus. *Berliner klinische Wochenschrift*, 1913, I, 2379.

144. Boari, E.: Sulla dietetica ipoclorurata nel diabete insipido. *Gazz. d. osp.*, Milano, 1913, XXXIV, 1063.

145. Bonnet, L. M.: Polyurie essentielle chez un psoriasque. *Lyon méd.*, 1913, CXXI, 18.

146. Borelli, L.: Diabete insipido. *Gior. d. r. Accad. di med. di.* Torino, 1913, 4 s., XIX, 91.

147. Camus, J. and Roussy, G.: Polyurie expérimentale par lésions de la base du cerveau; la polyurie hypophysaire. Compte rend. Soc. de biol., Par., 1913, LXXV, 628.

148. Farini, A.: Sull' attività diuretica della sostanza ipofisaria. Communicazione Accademia med. di Padova, 16 Maggio, 1913.

149. Forschbach: Zur Frage des Konzentriervmögens der Niere beim Diabetes insipidus. *Ztschr. f. klin. Med.*, Berl., 1913, LXXVII, 153.

150. Gunther, H.: Anhydrosis und Diabetes insipidus. *Ztschr. f. klin. Med.*, Berl., 1913, LXXVIII, 53.

151. Leuret: Les polyuries. *J. de méd. de Bordeaux*, 1913, XLIII, 671.

152. Lurye, Y. N.: (Diabetes insipidus following syphilis.) *Russk. J. Kozhn. i. Ven. Bollezn.*, Mosk., 1913, XXV, 438.

153. Mamrot, A.: Diabète insipide, dystrophies générales avec prédominance aux organes génitaux; ensemble symptomatique lié à une insuffisance hypophysaire. *Arch. de méd. d. enf., Par.*, 1913, XVI, 927.

154. Marie, P. and Boutier: Diabète insipide avec infantilisme. *Rev. neurol.*, Par., 1913, XXI, 555.

155. Cardarelli, A.: Un caso di poliuria simplex traumatica. *Studium*, Napoli, 1915, VIII, 127.

156. Kleebatt, F.: Diabetes insipidus nach Schädelvertzungen. *Med. Klin.*, Berlin, 1915, XI, 915.

157. Alexandrescu Dersca, C.: (Clinical observations concerning rhythmic urinary secretions and diuresis provoked by ingestion of water; experimental polyuria according to Vaquez and Cottet.) *Spitalul*, Bucuresci, 1915, XXXV, 61.

158. Graul, G.: Ueber einen mit Hypophysin-Höchst erfolgreich behandelten Fall von Diabetes insipidus. *Deutsche med. Wchnschr.*, Leipz. u. Berlin., 1915, XI, 1905.

159. Römer, C.: Die Beziehungen zwischen der Funktion der Hypophysis cerebri und dem Diabetes insipidus. *Deutsche med. Wchnschr.*, Leipz. u. Berl., 1914, XI, 108.

160. Lichtwitz, L., and Stromeyer, F.: Untersuchungen über die Nierenfunktion. I. Die Funktion der Niere im Diabetes insipidus. *Deutsches Arch. f. klin. Med.*, Leipz., 1914, CXVI, 127.

161. Berge, A. and Pagniez, P.: À propos des injections d'extrait hypophysaire dans le diabète insipide. *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1914, 3s., XXXVII, 633.

162. Laignel-Lavastine: Diabète insipide chez un syphilitique, amélioré après traitement spécifique. *Rev. neurol.*, Paris, 1914, XXII, 481.

163. Auerbertin, C. and Ambard, L.: Le fonctionnement rénal dans le diabète insipide. *Tribune méd.*, Par., 1914, n. s., XIVIII, 97. Also *Bull. et mém. Soc. d. hôp. de Paris*, 1914, 3s, 437.

164. Lerebouillet, P. and Faure-Beaulieu, M.: Les effêts des injections souscutanées d'extrait hypophysaire dans le diabète insipide. *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1914, 3s., XXXVII, 517.

165. Biach.: Zwei Falle von Diabetes insipidus. *Berlin klin. Wchnschr.*, 1914, LI, 380.

166. Orlandi, N.: Sopra un caso di diabete insipido con sindrome di insufficienza pluriglandulare endocrina. *Osp. Maggiore*, Milano, 1914, 2s, 11, 634.

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PROGRESS IN SURGICAL THERAPEUSIS.*

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The title of my paper gives great latitude regarding the extent to which the subject may be approached. Taking advantage of this, I shall refer to but a few of the points upon which I can speak from personal observation and experience.

There is much in the surgical therapeutics of to-day that seems thoroughly reliable for us and beneficial to our patients, and yet it is too true that comparisons can be made relating to certain forms of sepsis, in which results are not much better than four decades ago. Laboratory research has done much to aid us in our precision of diagnosis, but on the other hand have we made that progress in treatment consistent with these advances? If we are candid with ourselves, must we not admit that there are too many deaths from septicemia, not only among members of our own profession, but among patients from all the various walks in life; not in one city or section, but from our country at large? To express my convictions that in our studies regarding laboratory experiments and results I am convinced that we have placed too much confidence in the mildness of certain forms of pathogenetic microbes, and forgotten somewhat our long-established knowledge of the histology and location of certain anatomical structures. We must harmonize our knowledge and become more alert in the application of wisdom.

A man at my time of life may be presuming in asserting that there are many divisions of bacteria, and various microscopical organisms that are not fully understood in their seriousness, when aroused into action, especially in structures possessing little resistance, and in alarming proximity to important organs. We are only beginning to understand that there is a variety of staphylococcus aureus much more virulent than we had ever supposed, and this observation applies to other more precise classification and new discoveries. We also understand that there are in one organ latent pathological organisms that may be started into activity by an operation, and, having an affinity for some important organ elsewhere, do serious damage. Witness what we are only beginning to recognize, and not fully understand, of myocarditis and acute dilatation of the heart in connection with our gall-bladder work.

Case I.—Mr. W. L., æt. 47, a man of excellent habits, very active in business. For nearly two years he suffered more or less from acne vulgaris, located, more especially, over upper part of back and in region of neck, assuming a condition of true furunculosis. Cultures developed the staphylococcus aureus, and under the use of autogenous vaccines he improved decidedly for a period of six months or more; then a return of the trouble presented itself. He was examined with the utmost care by his physician, who had treated him for a long time, and an *x*-ray of his teeth showed that the root of a molar in the upper jaw—the tooth having been crowned for nearly two years—presented evidence of infection. The crown was removed, a few drops of pus escaped, and after this the patient made a somewhat rapid recovery. The tooth was treated and left

*Read by title at the eighteenth annual meeting of the American Therapeutic Society, New York, June 1, 1917.

open for a long period. The patient spoke most decidedly of the improvement in his general condition after this treatment, and he is greatly impressed with the belief that many of his former symptoms of exhaustion, and, at times, inability for prolonged exertion in his business, were due to this septic tooth. In a fairly short period his boils disappeared and there was no recurrence.

This and other cases are not presented as perhaps demonstrating a fixed principle to guide us in the study of our pathology, but as having some bearing upon our therapeutical investigations. It matters not what may be our treatment for the relief of pathological lesions, since it is becoming more and more demonstrated that bacteriological examinations of secretions and discharges, and the researches constantly going on in our laboratories, are becoming of great value, and that such thorough investigation of surgical lesions is indispensable. It reverts to the principle that settled in upon my convictions of many years, that when our patients are not recovering along such lines of treatment as we had expected in confirmation of our diagnosis, time passing, we cannot be too energetic in reviewing the situation, in going over the patient's history and symptoms. Every possible condition, such as boils, tonsils, septic teeth, various sinuses, results of old surgical lesions, or of physical ailments that may have prevailed at one time, should be investigated with the utmost care, and we must include a thorough laboratory study of the secretions from the auditory canal as well as the nose and the Eustachian tubes. In fact, no part of the human body should be slighted ere we call a consultation.

The keen, up-to-date consultant will have all the more confidence and respect for the practitioner of medicine who covers the ground so thoroughly. It may make his study of the case exceedingly difficult. He will consider himself very fortunate, when he is called in consultation with such an exact practitioner; therefore, although no hidden factor in the case be found, the consultant with a broad view of the situation will not infrequently coincide with the diagnosis, and then be able to mark out a line of treatment somewhat different; in this manner he adds much to the therapeutical atmosphere of the situation.

Our laboratory researches of to-day place us upon a more solid foundation with reference to the proper understanding of the examination of the blood, the urine, the secretions that come from mucous surfaces, and as the result of laboratory research we can readily understand certain symptoms along lines of absolute knowledge, especially in regard to the mouth. Perhaps at no time has there been a greater interest than at present in reliance upon the importance of making a correct diagnosis regarding infection of joints, in the disturbance of certain functions pertaining to the muscles or nerve centers, in going over more thoroughly a tonsil that in the past has not attracted very much attention. A more careful observation of conditions may assist materially in determining a line of treatment that will lead to recovery of the patient.

Case II.—Somewhat recently I had my attention called to a patient, a lady, act. 60, with a previous history of excellent health, who had every possible comfort, but who, for a period of two years, had suffered from supposed rheumatic conditions with, at times, a painful condition of the neck resembling incipient torticollis, with that marked lameness of the knees that led to the diagnosis of a supposed broken arch. She wore most persistently a metal support, but with no permanent improvement. Her teeth had had admirable treatment by a very competent dentist. Since she did not improve, it was suggested that a warmer climate might be beneficial. As she was leaving, her dentist advised an *x*-ray of her teeth, but this was not possible at the time. The months of change of climate did little good, so she was finally persuaded to make an extra trip in order to consult a very competent radiographer. However, before doing this, it was thought advisable for her to consult a nearby, exceedingly good dentist, for examination of what was called a double crown of the two molars in the upper jaw, the work having been done two years previously. At that time it was stated that the one tooth was not free from an ulcerative process of the root, but the root had been carefully filled, and a crown surrounding this tooth, together with the one fitted over the next tooth, which was supposed to be free from any disease, was removed. This double crown formed a bridge holding the diseased tooth more firmly, but when the dentist separated the bridge and took out the tooth that had been filled, it was found to be in a most marked condition of advanced caries; in fact, the root that had been removed was immediately recognized as the source of the secretion that had been escaping into the patient's mouth for a period of eight or ten months. At the time she thought it came from an abscess connected with the tooth, but of these conditions patients are often not so concerned as they should be.

After this treatment she had an explosion of symptoms. Her neck was much worse, and she had an acute exacerbation of pains about the knee joint, all of which improved later. But the condition of the muscles of the neck did not progress, as it was hoped. The *x*-ray examination showed that the cavity of the tooth had healed and that the adjoining tooth was in good condition. But the *x*-ray picture of the neck showed a decided spur projecting from the fifth cervical vertebra—not the development of an extra rib, but a condition that probably had had much to do with her disturbed lesions. The patient has improved, while taking treatment at one of the sulphur springs of the Middle South, increased comfort coming to her, her friends, and her physician, in knowing that a more correct diagnosis had probably been reached.

Case III.—An excellent physician of middle age, in the enjoyment of a well-earned practice, had felt, for a period of two years, a reluctance to and difficulty in doing his work, but no observations of his own nor examinations made by competent associates seemed to reach a positive diagnosis, whereby treatment granted any relief. Finally, the suggestion was made that he have his teeth examined, due, somewhat, to the fact that he had had considerable work done on them for a period of two or three years. This *x*-ray examination demonstrated that a crowned tooth had a well-marked lesion about the root. The crown was removed and the tooth treated partially. It was not filled, but an attempt was made to keep it in an aseptic condition, and in six months he was so decidedly improved that it was fair to assume the cause and effect, in that this tooth was undoubtedly septic and the absorption gave him much of the uncomfortable distress from which he had suffered.

I should say that in the former case a very careful blood examination had been made, the patient stating that nothing was found to aid in a better understanding of her case. In the latter case it was said that the result of the examination showed profound anemia.

I am speaking of these cases, not arranging them on the basis of a scientific paper, but perhaps to demonstrate that there are yet conditions where much good can be derived from a more thorough effort at diagnosis, and which, from the surgical side of our practice, really becomes a therapeutic agent.

Lesions of the joints, lesions of the muscles and of the nerves, of the various sinuses, and other regions of the body, not responding to prolonged medical treatment, eventually drift into the hands of the surgeon, or a consulting surgeon, and whenever operative intervention can be avoided and therapeutic remedies made use of it is certainly much to our credit to take advantage in that direction.

To every surgeon the secretions of the mouth have been a source of anxiety for years. One who has been in practice for any length of time will call to mind a not infrequent number of serious lesions that have resulted from puncture about the edge of the finger nail, from the bristles of a nail brush, when a rapid infection occurred, and abscesses developed along the forearm and in the axilla, requiring decided surgical operative intervention. In many of these cases the recovery was somewhat tedious, and there was a mortality list.

The surgeon of much experience will look upon these conditions with as much apprehension as he looks upon the cases of the abscess or furuncle that appears about the angle of the nostril, about the lip, or within the nasal outlet. We know how exceedingly dangerous they may be.

In the Mayo Clinics, Vol. 6, Charles H. Mayo has published a valuable paper on "Mouth Infection," referring more especially to pyorrhea and like conditions, but it requires a much more extensive study on the part of the members of our profession to grasp its full meaning. He refers to Rosenow's great work, with an indorsement resulting from a very large experience, and I make the following quotation, as it seems to be so very appropriate here: "The physicians engaged in this line of observation require fully as much training in the rudiments of dentistry as the dentist does in the signs of infectious diseases. While we have leaders in all professions, through the energy of their kinetic glands, the 'big stick' which leads to our advancement is in the hands of the progressive and educated public, who are constantly demanding more of their dentists, of the medical profession, and of the State in protecting them against preventable diseases.

In days past, when our bacteriological examinations came to us, we felt somewhat comforted when the report of *staphylococcus aureus* was obtained, realizing that the condition was not so serious as the case presenting streptococci. Now, recent laboratory investigations and the reporting of a fatality that has continued, teach us that this form of staphylococcus has a virulency that must be respected, and reached promptly when once the symptoms and examination tell us of the danger. To-day the bacteriological work is giving the surgeon the greatest help that has been presented at any time since our understanding of cultures, as well as the classification of bacilli, and association of micro-organisms. Therefore, I want to emphasize that we must encourage efforts in investigation, that therapeutical agencies must be recognized and employed to bring as favorable results as do the most difficult operations, or exhibiting our surgical skill to the utmost. As professionals we are far from being perfect in our diagnosis. Amidst all our wonderful progress in surgical work our laboratory autopsies show an unmistakable record of errors. Let us, therefore, be reasonable and sensible with one another, and, wherever possible, gain a point that will enable us to become clearer.

I think that when a surgeon has reached my time in life, and has passed through decades when nothing was known of bacteriology and laboratory research, he may, with the profoundest gratitude, refer to the advances that have come to that branch of his profession due to the pathological studies and investigations of the laboratory. And I now wish to emphasize that no surgeon can be successful without encouraging and employing to the fullest extent the aids rendered by the splendid workshops that are now in all our medical centers.

When we consider the great advances made in the last decade in the study and understanding of pathogenetic micro-organisms, there are too many fatalities, especially among the members of our own profession. In our midst death stalks, and we apparently are left helpless in the cases of septicemia that baffle our every effort.

28 Eagle Street.

THE EXAMINATION OF PATIENTS SUSPECTED OF BEING INSANE.*

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The necessity for determining whether a person is insane may arise during the course of treatment of many forms of disease, for example, thyroid or Bright's; or a person who has been more or less peculiar for some time may commit some illegal act and the question of his or her responsibility must be determined.

In the first case we are dealing with a purely medical question, in the second the medicolegal status is of greater importance than the medical question of what may be done to bring about recovery. In both cases, however, the examining physician will probably be required to fill out a certificate that the patient is insane and requires treatment in a hospital specially organized for the treatment of mental cases.

On account of his knowledge of the patient when mentally normal the family physician is probably the person best qualified to judge whether his present symptoms are a departure from his normal, and should make the initial examination. If the physician is in doubt as to the interpretation of his observations and has difficulty in forming an opinion, the proper step is to call in an alienist or other consultant, and together they may make an examination and give the necessary certificate for commitment. Whenever possible, however, it is best for patients needing treatment to seek the same voluntarily. There is apt to be much better cooperation on the patient's part if he or she is able to recognize the necessity of hospital care and has been persuaded to sign a statement to the effect that he enters the hospital voluntarily. If this point has been gained he has a partial insight into his condition and has started on the road to recovery.

Voluntary admissions are quite common to many

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of our hospitals and sanatoria and recent legislation makes easy the admission of such cases to our state hospitals, so that probably before long the majority of cases under mental care will be voluntary. There will always, however, be a small number who must be admitted by certification or by *de lunatico* proceedings.

The first examination of such cases usually is made by the family physician, who may be untrained in the observation of mental cases. On this account he may approach his task with diffidence and a lack of confidence. I believe that this is caused to some extent by a knowledge that a complete mental examination is a long and apparently complicated affair. As a rule, so complete an examination is unnecessary to bring out the fact that the patient is mentally alienated which is all that is required for making the certificate of insanity. It is not necessary to make a differential diagnosis and state the form of alienation from which the patient may be suffering; it is necessary only to determine whether the patient is mentally normal or abnormal.

For those who feel impelled to classify their cases, I believe that it will be well if they adopt one of the oldest and simplest classifications, one which divides mental cases into mania, melancholia, and dementia. This will include all cases of excitement, depression, and weak mindedness. Expressed in other terms, but with practically the same meaning, we have cases which show a hyperfunction, a hypofunction, or a parafunction. The advantage of a classification is that by a word or two we are given a mental picture. For example, when we are told that Jones has pneumonia, we know that Jones has an inflammation of the lung with certain accompanying symptoms. Our conception of Jones' illness may also be considerably amplified if an adjective such as croupous, catarrhal, lobar, etc., is added to pneumonia. Just so, the adjective "acute" prefixed to mania, signifies to us that the patient is restless, talkative, and shows pressure of activity to a marked degree. In other words, that there is hyperfunction.

While these names are convenient for daily use, they do not indicate the degree of illness. With pneumonia, or even croupous pneumonia, we cannot form an adequate conception of just how seriously sick Jones is. Nor by the term "acute mania" can we exactly conceive the condition in which our patient may be. Hence it is better to describe the condition which we find rather than to trust to names for description.

It also simplifies the examination of mental cases if we go back to a very simple form of psychology which divides the psychic functions into three spheres: Those controlling conduct, or the will; those controlling intellect, or ideation; and those controlling emotion or feeling.

Frequently, at a glance we know whether a patient is depressed or elated or apathetic or demented. The facial expression, attitude and actions may indicate this. Experience tells us whether this emotional state may be regarded as pathological or not, so that we may have already discovered that our patient shows a disturbance in his emotional sphere without our having had any conversation with him. By the same inspection the patient's foolish actions may have given evidence of an intellectual disturbance. Inspection may have also given evidence of organic brain disease, such as paresis, by the facial expression, fixed pupils, lack of coordination, etc. This evidence, of course, must be confirmed by further examination.

A number of years ago I formulated a very brief examination to be used in the Neurological Dispensary of the Johns Hopkins Hospital. This has worked very satisfactorily, and is of special value where time is limited and the examiner wishes to reach a conclusion as quickly as possible. When the patient is quiet I often preface my question with the statement that I am about to ask him some questions which I wish him to answer naturally, even though they may appear to be foolish to him. Whether this is done or not will depend on circumstances.

What is your name? is first asked. A correct reply will indicate that the patient is oriented as to person, and is not suffering from any delusion that he is Wm. J. Bryan, or other celebrity. Even when answered correctly, a symptom may be shown; for example, we would hardly expect an adult to reply "Jack." "John Paul Jones" might be normal, or if said with a combative manner might indicate persecutory ideas; or, in a grandiose tone, might give us the key to our patient's trouble.

Where are you? The reply indicates whether the patient is oriented in place, and should certainly be answered correctly. An incorrect answer would probably indicate mental confusion, but a silly reply would be made in a case of dementia præcox.

An error of several days may be permitted in replies to the question, What is the date of today? This shows us whether our patient is oriented in time or not.

Are you sick? From this we learn of the patient's ideas of his physical condition, and often this question will open up a great many physical delusions, or ideas of reference.

Are you happy? This question is also apt to open up any delusive ideas which may be present, and a knowledge of which can be elaborated by further questioning.

Is every one kind to you? This will bring out any persecutory ideas.

Have you ever seen objects or heard noises which you afterward found were imaginary? This question may be put in a different form. The patient being asked about his dreams, and being led up, more or less gradually, to the above question; the object being, of course, to learn if the patient has had any fallacious sense perceptions; that is, hallucinations or illusions. I recall that one patient had answered all the former questions correctly, but when this one was put to him he replied that he had often heard the Lord Jesus Christ talking to him, following up which lead it was easy to bring out a number of paranoid ideas.

It should be understood that when an answer to any question indicates an abnormal way of thinking, this lead should be followed up, and the questioning on this point not abandoned until

the examiner is satisfied that upon this point, at least, the patient's ideation is or is not abnormal.

Memory should be tested by questions relating to the life of the patient, such as date of birth, marriage, change of residence or position, etc.; also by certain historical events, such as the date of onset of the present European war, the Spanish-American War, the Baltimore fire, etc. Memory may also be tested by explaining that the examiner will say three words, which he does not wish the patient to repeat to himself or aloud until the examiner asks what they were.

The words, "desk," "chair," "table," are often used, and the time when they are spoken is noted. The patient's attention is then engaged with other questions, and after two or more minutes the patient is asked what the three words were. Normal persons are able to give these three words at the end of two or three minutes, no matter how much distraction has occurred in the interim.

While the attention can be noted while the patient is answering other questions, which should be done without circumlocution or prolixity, without losing the goal idea, it is well to test the attention by the so-called "six from one hundred test," the patient being asked to subtract 6 from the 100, six from the remainder, and keep on subtractiing six from the remainder until he gets to zero. You will note the suggestion about the last, which may be avoided by saying "until you can go no further," in place of "until you get to zero." But this suggestion does no harm.

The subtraction should be done correctly, evenly, and in at least 55 seconds, even though the patient says the subtraction aloud. Pauses between the various steps indicate a lack of power of controling voluntary attention. It is interesting to note some of the remarkable results obtained with this test. Only yesterday a well-educated young woman whom I was examining gave the following answers: 6 from 100 leaves 94; 6 from 94 leaves 87, 77—no, 81, 67, 61, 57, 47, 41, 37, 31, 27, 21, 15, 10; 6 from 10 leaves 4 and nought. Eight minutes were required for the performance of this test. This length of time may indicate a degree of mental confusion or of mental weakness, as defects in the control of voluntary attention occur in these kinds of cases.

Besides the "6 from 100" test it is well to test the patient's ability to calculate and reason by a few simple arithmetical problems, such as: How much is 6 plus 2? How much is 6 minus 2? How much is 6 times 2? How much is 6 divided by 2? A further step is increasing addition, such as 6 plus 2 equals 8; 8 plus 14 equals 22; 22 plus 36 equals 58. It is better not to correct the patient if he makes any error.

I was rather surprised at the aforesaid young woman's not knowing the meaning of the word "plus," so that I had to change my question to: How much is 6 and 2? Ignorance on this point is far more common than one would suppose.

Elsewhere I have spoken of an abbreviated association test which has considerable value in giving us leads to find out what delusions may be troubling our patient. If you have read detective stories, or played parlor games, you are probably in a measure familiar with this test. The average normal reaction time is two seconds. This is best taken with a stop watch, as by it one can ascertain slight abnormalities; but a little practice with an ordinary second hand enables one to judge fairly correctly on this point. The technique of this test may be briefly stated: that the patient is told to say the first thought that comes to him when he hears the given word, the time between this and the response being noted. A delay in reaction time usually occurs when the patient has something to conceal, either consciously or subconsciously. By questioning the patient on his delayed responses it is frequently possible to bring out delusions or suppressed complexes.

The use of this test, however, brings us to the finer points of mental examination. It is rarely necessary to use it for the purpose of finding out if our patient is sane or insane.

We must not forget that a history of peculiar actions is important. It is quite proper to question our patient concerning these, and it is not unusual to find in his explanations ample reason for certifying that he is insane.

I have given you very briefly a short form of mental examination which has proved of value in determining the mental status in many cases. Like everything else, familiarity with it will increase its value to you. I trust that you will find it useful.

THE TECHNIQUE OF TRANSDUODENAL LAVAGE IN OFFICE PRACTICE WITH OR WITHOUT OXYGEN INSUFFLATION.

By M. ERNEST JUTTE, M.D.,

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THE striking results obtained with transduodenal lavage, especially in conditions previously unresponsive to other forms of treatment, entitle it, in the author's opinion, to more general adoption as an office procedure. He feels justified, therefore, in supplying in this paper a demand for a more detailed description than was given in his previous, perhaps too condensed, articles on the subject, especially, too, in view of a few important novel features. The method is now so simplified that it is possible to administer simultaneously with it Oxygen Insufflation into the intestine by way of the duodenum, which is also described in the following.

Transduodenal lavage is the most effective method of removing from the intestinal tract all noxious material. It consists in flushing the bowel from pylorus to rectum in the normal direction of peristalsis, and depends for its cleansing effect upon the mechanical action of fluid in bulk.

Gross[1] in 1911 first spoke of Duodenal Lavage, meaning thereby extension of gastric lavage to the duodenum, that is, he injected water and recovered it by syphonage, and in some cases allowed it to remain *in situ* where it became subject to absorption.

Transduodenal lavage, as a method of cleansing and flushing the entire intestinal tract by means of a medicated solution designed to pass all along the bowel unabsorbed by the mucous membrane, was first described by the author.[2] Subsequently, others[3] have employed transduodenal lavage, *e. g.* Palewski,[4] who modified, though not improved upon it, and who

also describes a technique, suitable for hospital use, of combining with it oxygen insufflation into the intestine. Oxygen insufflation per se, by means of a duodenal tube. was originally practiced and described by Ad. Schmidt[5] and later by Gross.[6]

The idea of transduodenal lavage first came to the author when puzzled as to how best to empty the bowel of its fermenting, mucoid contents in a case of bronchial asthma, where he suspected absorption of intestinal poisons as a causative factor. The ultimate recovery of this case justified his suspicion; since then cures in many other ailments differing widely in their manifestations have strengthened his belief in the correctness of the arguments advanced by those who hold "autointoxication," "intestinal toxemia," "intestinal stasis," or whatever other name may be associated with the condition of absorption of intestinal toxins, responsible for many ill-understood ailments so often treated without success for the simple reason that their intestinal origin is not recognized and therefore remains untreated.

The indications for transduodenal lavage are, therefore, exceedingly wide, for besides ailments of distinctly intestinal origin, such as ptomaine poisoning, indicanuria, typhoid fever, diarrhea, enteritis, colitis, "gas," worms, many others less obviously dependent upon the gastrointestinal tract come within its scope. Among these conditions, already satisfactorily treated with transduodenal lavage are primary and secondary anemia, goitre, rheumatism, gout, arthritis, bronchial asthma, chronic catarrh of the respiratory tract, certain cases of high blood pressure, biliousness and other liver and gallbladder diseases, pancreatitis, general malaise, melancholia, neuroses, neuritis, insomnia.

Some of the considerations upon which transduodenal lavage is founded are: Laxatives and purgatives do not produce nearly the cleansing and salutary effects produced by transduodenal lavage and hence cannot take its place. The drinking of water, even in large quantities, does not flush the bowel, since the pylorus allows only a small quantity to pass through at a time. Water, also, is speedily absorbed by the intestine. Hypertonic solutions, if they could be taken by mouth, are similarly subject to pyloric control, but they are out of consideration because they are too distasteful and would not be tolerated by the stomach. Consequently, the fluid must be carried to a point beyond the pylorus, in bulk sufficient to flush and free the bowel of its noxious content, and it must be fairly isotonic, that is, of such a nature as to remain unabsorbed by the mucous membranes and still not hypertonic to such a degree as to act as an irritant to the intestinal mucous membrane.

To be suitable as an office procedure, the treatment should be fairly easy to take and must not interfere with the patient's occupation; the tube must be so constructed that it will enter the duodenum quickly and a simple method is necessary to ascertain when it has passed the pylorus. All these points are covered by the use of the author's duodenal tube, solution and test described in the following.

Other points of importance are: Concerning the patient: His stomach must be empty, since only then does the pylorus relax and permit the tube to pass into the duodenum. Therefore, the best time for treatment is before breakfast; if not feasible, he should have eaten nothing for from 5 to 6 hours prior to coming to the office.

Concerning the tube: The author's tube has at least two conspicuous advantages over all other types. First, with the aid of an obturator it can be manually introduced into the stomach. Secondly, owing to its small sinker it slips through the pylorus without delay, so that it need not remain in the stomach for hours before the treatment nor need it be retained between feedings if used for duodenal alimentation.

Concerning the lavage fluid: In a busy office it is convenient to keep a stock bottle on hand with grams 90. each of sodium chloride and sodium sulphate dissolved in 1000 c.c. of water slightly alkaline and filtered through cotton. To 100 c.c. of this solution add 900 c.c. of water at 100° to 110° Fahr. This concentration usually passes along the bowel unabsorbed, but in order to make certain it is often well to add one-half to one teaspoonful of a 10 per cent alcoholic solution of phenolphthalein, stirring the mixture to prevent precipitation en masse. This standard solution is suitable to most cases, but modifications will suggest themselves according to conditions, *e.g.* addition of quinine in amebic dysentery; salicylic acid, gram 1.0 in severe fermentation; medicinal soap gram 0.5 in disturbed fat digestion and pancreas disease, anthelmintics in intestinal worms, etc.

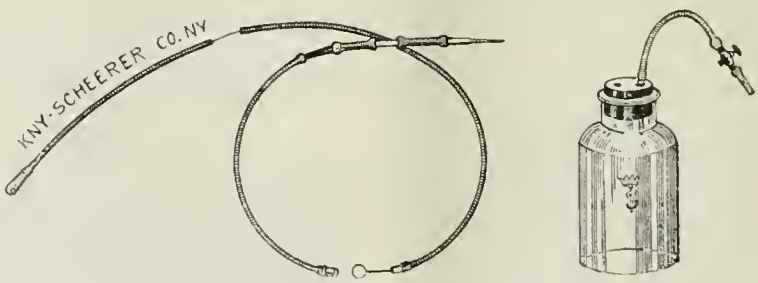

Fig. 1—Author's Duodenal Tube, with Suction Bottle

The author's outfit consists of: The duodenal tube with obturator. A bottle of glycerin and a small, all-glass hypodermic syringe for forcing glycerin into and lubricating the interior of the duodenal tube so that the obturator may be withdrawn without friction. A large all-metal syringe and a wide-mouthed four-ounce bottle with doubly perforated rubber stopper for aspirating gastric and duodenal contents, respectively; one perforation carries a piece of glass tubing two inches long, to which is attached about 10 inches of rubber tubing with a stopcock in its middle, for maintaining suction. An

atomizer with 1 per cent cocaine for spraying the throat. The stock solution described above. A 10 per cent alcoholic solution of phenolphthalein. A tapering glass tip for attachment to the duodenal tube. One or two ounces of milk to which is added a little crushed cracker.

The technique of transduodenal lavage is as follows: Prepare 1000 c.c. of the lavage fluid as above described and suspend container about 6 feet from the ground. Force a little glycerin into the duodenal tube with the hypodermic syringe and insert the obturator to bottom of the hollow stem of the sinker. Protect patient's clothing with a rubber apron and let him be seated comfortably in a chair. If he is sensitive spray his throat with the 1 per cent cocaine solution. Explain to him the steps you are going to take. Take hold of the tube about 6 inches from the end, place its tip on the back of his tongue and tell him to swallow once. This opens the pharynx and allows of thrusting the tip of the tube over the back of his tongue; then while he breathes audibly and takes occasional drafts of water gently push the tube step by step into the stomach. When down the œsophagus a few inches it is well to hold on to the obturator and to slide the tube along it until introduction is finished, when the obturator is withdrawn entirely. With care there is no gagging or appreciable discomfort.

Let him lie down on a couch on his right side. The weight of the sinker and peristalsis stimulated by the water taken, carries the tube almost at once into the duodenum. Adjust the proximal end which carries the glass tip to the suction bottle and aspirate with the metal syringe. As long as the tube is still in the stomach, only fluid of watery consistency comes up. When the pylorus is passed the return fluid begins to flow like syrup, *i.e.*, it draws out into a thread, owing to the admixture of duodenal secretion. As the fluid flows or drops down into the bottle the change from watery to syrupy consistency is easily seen. The author has found this simple working test for locating the tube perfectly reliable hundreds of times; no *x*-ray is required. At times fluid of gastric origin comes up bile-stained and may for that reason deceive the operator. At other times duodenal secretion is abnormally thin in consistency and flows almost like water. When in doubt it is well to try to stimulate peristalsis by letting the patient drink more water or to force about 2 or 3 ounces of water through the lumen of the tube. If after five minutes still no syrupy fluid is returned the tube may safely be regarded as having entered the duodenum; usually this occurs within two minutes. In hyperacidity the drinking of half a glass of water with half a teaspoonful of sodium bicarbonate dissolved in it, will quickly relax any spasm. The patient then sits up in a chair next to the irrigator stand and is given 2 or 3 ounces of milk with crushed cracker to drink; this causes the pylorus to contract and close in upon the duodenal tube, and prevents a backflow of any lavage fluid into the stomach.

Adjust the leader of the container, after draining the cooled-off fluid, to the duodenal tube in such a manner that the connecting glass tip points upward. This regulates the flow and prevents the fluid from running in too fast. The rate of flow should be a quick drip, the amount about 1½ to 2 pints, and the time consumed in running in from 5 to 10 minutes.

The rate of drip may be further regulated by occasionally turning the stopcock for one-half to one minute. This should also be done if the patient has a sensation of fullness. Very soon after beginning the lavage the patient is liable to become conscious of peristalsis and to feel or hear fluid and gas passing onward; there is no griping or discomfort at this or any other time. When all the fluid has entered the duodenum the patient is given a basin to hold and the tube is very gradually withdrawn. He can now have his breakfast. In from half an hour to two hours he has from one to three fluid, easy movements which leaves him relieved and refreshed. The whole treatment takes from 15 to 20 minutes. Sometimes useful information may be obtained by testing the aspirated fluid with litmus and congored paper.

The frequency of treatment depends on the severity of the case. In very severe cases it may be given once daily for up to 10 to 20 days; then two or three times a week for 1 to 3 months; in the average case two or three times a week for about

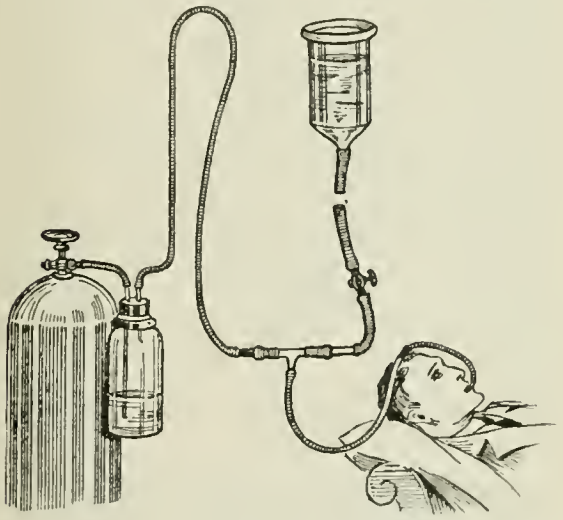

Fig. 2—Combination of (Trans-) Duodenal Lavage and Oxygen Insufflation

one month and thereafter at rarer intervals; sometimes once a week is sufficient. Each case should be treated individually, the endeavor being first to establish normal conditions in the bowel and then to maintain them by an occasional treatment until such a time as nature needs assistance no longer.

As regards oxygen insufflation, the author has not practiced it sufficiently, at this writing, to enable him to add to the existing literature by way of therapeutic results but what follows is stated because the technique employed now makes it possible to administer it together with transduodenal lavage in the doctor's office.

In adding oxygen insufflation to transduodenal lavage it is only necessary to make provision for connecting the duodenal tube also with a tank of compressed oxygen. This is done by inserting into its upper end a Y-shaped piece of glass tubing; the rubber connection between the free arm of this glass tubing and the oxygen tank should be of small caliber and be long enough to be carried to a point above the irrigator as otherwise gravity will force some of the lavage fluid into the tank.

The technique is in all respects the same as that described above except that the patient is placed on his back while oxygen and lavage fluid enter the duodenum. In this combined process it is essential that the patient take some milk or semifluid after the tube is *in situ,* as otherwise some of the oxygen will escape upward. Both oxygen and lavage fluid are allowed to enter simultaneously, the rate of influx being easily controlled by the operator who manages valve and stopcock as occasion demands. The duration of this procedure depends upon the amount of gas that it is desired to introduce. Four quarts are easily borne. Gross states that Ad. Schmidt is in the habit of giving daily oxygen insufflation lasting from half to one and a half hours. There is moderate distension of the abdomen. A good deal of the oxygen is absorbed; the balance is passed as flatus. Both objective and subjective results of oxygen insufflation are very striking, especially in fermentative and putrefactive dyspepsias and catarrhs.

REFERENCES.

1. Gross, M. H.: Direct Lavage of the Duodenum, *N. Y. Med. Jour.,* Jan. 28, 1911.
2. Jutte, M. E.: Transduodenal Lavage: A New Method in the Treatment of Chronic Ailments, with Report of Results in Asthma, and Pernicious Anæmia. *N. Y. Med. Jour.,* March 16, 1912.
Jutte, M. E.: Transduodenal Lavage; Treatment and Report of Some Cases of Chronic Diseases. *Jour. Amer. Med. Assn.,* Feb. 22, 1913; LX 586-87.
Jutte, M. E.: Autointoxication and Its Treatment by Transduodenal Lavage. *Amer. Jour. of the Med. Sciences,* May, 1917. No. 5, Vol. CLIII, p. 732.
3. McDonald, Ellice: Treatment of the Toxemia of Pregnancy by the Duodenal Enema.
4. Palewski, I. O.: Irrigation, Transinsufflation and Visualization of the Intestines by the Duodenal Tube. *N. Y. Med. Jour.,* July 17, 1915.
5. Schmidt, Ad.: Darmdesinfection durch Sauerstoffinsufflation. *Zentralblatt fur Innere Medizin,* 1912, No. 1
6. Gross, M.: Disinfection of the Intestines by Insufflation of Oxygen. MEDICAL RECORD, Nov. 30, 1912.

124 WEST FIFTY-FIFTH STREET.

A NEW METHOD FOR THE DETERMINATION OF GLUCOSE CONTENT IN URINE.*

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GLUCOSE in solution is quantitatively determined in one of three ways, viz., the gravimetric process, the polariscopic, and the volumetric method or titration. Of the three the gravimetric is most accurate, the volumetric the least accurate. For various reasons glucose in urine is almost exclusively estimated by titration. The reagents for this purpose commonly consist of copper sulphate in solution of some alkali. The main fault of the older reagents is that they reduce other substances in the urine than glucose, they deteriorate upon standing and are not sufficiently sensitive. In 1911 Benedict (*Journal A. M. A.,* LVII, 1193) described a method for estimating glucose in the urine, in which all of the above faults were largely eliminated. The investigation of Maclean (*Biochem. Jour.,* 1907, II, 156) and Benedict (*Jour. Biol. Chem.,* 1907, III, 101) have shown that copper sulphate solution in alkali with a hydroxide radical lose their reducing power toward glucose if the titration is to be continued for any length of time. Such reagents also reduce other substances, as creatinin aldehyde, chloral, uric acid, etc. Whereas if the hydroxide radical is replaced by that of a carbonate, the reducing power is not interfered with and is not affected by other substances than glucose. But there is one very important defect common to all reagents, and that is the difficulty of determining just when the end reaction takes place. In the reagents referred to, the blue color of the copper sulphate serves as an indicator and the end reaction is shown by the disappearance of the blue color.

This is a very uncertain factor, as it varies with a number of circumstances, is dependent upon personal equation, and is therefore a source of great error. Thus, in the original Fehling's the red oxide so much obscures the blue color that it is practically valueless for quantitative work. One of the earliest attempts to obtain a definite end point was to moisten a white piece of filter paper with a solution of ferrocyanide, the titration being continued so long as a drop of the reagent transferred to the cyanide paper gave a brownish color. The procedure was as inaccurate as it was tedious. Numerous modifications have since been made by Purdy, Rudisch, Pavy, and others to overcome this difficulty, as for instance by the addition of ammonia to dissolve the red precipitate, or as in Benedict's reagent the red oxide is converted into white thyocyanate. But in all those reagents the recognition of the end point is a matter of some difficulty. For at the time the blue color is discharged the resulting solution is not colorless but has a brownish tinge, due to the carameling of the glucose with the alkali as well as to some elements in the urine. The difficulty of recognizing the disappearance of the blue color is thereby accentuated; and although the white thyocyanate somewhat lessens this difficulty it does not entirely eliminate it. The illumination of the room is also not an important factor in titration; for unless there is a perfectly good light the transition of color is not readily noticed and will be a source of error. It is here too that personal equation enters as an element.

In the new method the end reaction does not depend upon the disappearance of color but upon the appearance of a precipitate. The principle of the method is based upon the fact that copper sulphate in alkaline solution is reduced by glucose to copper oxide. If a solvent (in this case potassium ferricyanide) be added to the solution in an amount less than is necessary to dissolve all of the copper oxide the reagent will remain clear throughout the titration until all of the cyanide has combined with tne greater part of the oxide when precipitation will take place, which will indicate the end reaction. This precipitate may be made to occur at any desired point of the titration and serve as a standard of measure.

It was noted, however, that with aqueous solutions of glucose or diabetic urines highly diluted the precipitate was rather faint, whereas with urines of low dilution the precipitate was bulky. It became evident, therefore, that some substance in the urine is responsible for the nature of the precipitate. Accordingly, each of the solid ingredients of the urine has been investigated to ascertain the

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particular substance. To an aqueous solution of glucose uric acid, the urates, phosphates, and sulphates have each been added separately, but without any effect. On addition of sodium thyosulphate the precipitate became more profuse, filling the whole volume of the fluid. This makes the end point very sharply defined.

Composition of Reagent.

	Gm. or c.c.
Copper sulphate	10.0
Potassium ferricyanide	1.9
Sodium thyosulphate	1.5
Sodium carbonate	240.0
Sodium citrate	240.0
Distilled water to make a total volume of	1,000.0

The copper, cyanide, and thyosulphate should be weighed very accurately. Dissolve the carbonate and citrate in 700 c.c. water by the aid of heat and filter. Dissolve the copper sulphate in 75 c.c. water and add gradually to the other solution with constant stirring. The cyanide and thyosulphate are each dissolved separately in 30 c.c. water and added to the rest, then enough water to dilute exactly to 1000 c.c. The estimation of glucose in the urine is then conducted as follows: Dilute the urine as described below and fill the burette to the zero mark. Into a test tube 15 to 20 cm. long, measure accurately 10 c.c. of the reagent and 3 c.c. water. Add a small piece of pumice stone to prevent spurting. The reagent in the test tube is brought to boiling over a naked flame and the test tube is then placed over an asbestos wire gauze (similar to a porcelain dish) and its upper end is held by a burette holder directly under the burette; the flame is so adjusted as to keep the reagent at steady boiling. The diluted urine is now run in a few drops at a time, at intervals of about a minute, when the reagent has become considerably paler, the urine is added 2 or 3 drops at intervals of 20 to 30 seconds. As the titration proceeds the blue color will almost or entirely disappear, the reagent remaining clear and transparent until the end reaction is about to take place when it will become suddenly turbid, the turbidity deepeninng rapidly, and the whole volume of the reagent filled with a bulky precipitate.

One c.c. of the reagent is reduced by one mg. of glucose. The calculation of percentage is made according to the formula $\frac{n}{x}$ in which n equals the number of times the urine has been diluted, and x the number of c.c. of diluted urine necessary to reduce 10 c.c. of the reagent. If to 10 c.c. urine, 40 c.c. water has been added (*i.e.*, diluted 1:5) and of this 4 c.c. was required to obtain an end reaction then $\frac{n}{x} = \frac{5}{4} = 1.25$ per cent. glucose content.

As the reagent is specific for glucose it may also be used as a qualitative test. Five c.c. of the reagent are heated to boiling and 0.5 c.c. urine added, then again boiled vigorously for one to two minutes. In the presence of glucose a yellow precipitate will form.

In conducting the titration with the reagent here described two important factors must be borne in mind, viz., the time of boiling the reagent after each addition of urine and the degree of diluting the urine. As to the boiling no arbitrary time can be fixed, but by referring to the chemical reaction this may be readily judged. It will be recalled that after each addition of glucose solution there is a tendency for a precipitate to form, which dissolves in the ferricyanide upon *boiling;* the more glucose is added therefore the longer the boiling is to be continued. This point will be made more clear in connection with the second. A preliminary titration should be made with the original urine to ascertain approximately the strength of glucose. The urine is then diluted to make a glucose content of 0.5 per cent. or less. The time lost in the preliminary test is only apparent as the second titration can then be done carefully and accurately at the least expenditure of time. Supposing the preliminary test shows a glucose content of 3 to 4 per cent. The urine may then be diluted 1:10. It will be at once apparent that it will take about 3 to 4 c.c. of this diluted urine to reduce 10 c.c. of the reagent. About 2 c.c. of the urine can be run in at once and the reagent boiled for one minute or even two. The rest of the urine may then be added 2 or 3 drops at a time at intervals of 20 or 30 seconds, and this is to be continued until the precipitate appears.

To the experienced laboratory worker these explanations may he superfluous but the novice and those of less careful propensities may meet with confusion if the above remarks are not heeded. The method is very simple, rapid, convenient, and accurate. But some familiarity with the behavior of the reagent is essential to obtain the best results. Its sharply defined end reaction eliminates many sources of error inherent to other forms of titration. The following table shows to what extent accuracy in this method has been obtained.

Sample of Urine	Gravimetric Method	Polariscope	New Method
1	0.996	....	1.00%
2	0.90	....	0.84%
3	...	0.228	0.22%
4	...	0.373	0.40%
5	1.23	....	1.20%
6	0.37	....	0.40%
7	4.93	....	5.00%
8	1.00	....	1.00%

As the table shows, the new method approaches the gravimetric process not approximately but absolutely. In the construction of this table I am highly indebted to Mr. D. Chercass for his valuable assistance in making the comparative tests with the gravimetric process and polariscope.

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SOME ANCIENT HEALTH LAWS OF THE JEWS.

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The preservation of physical well-being was looked upon in Judaism as a religious command. "And live through them but not die through them" was the principle applied to all the laws of the Bible, from which the rabbis deduced that in case of danger to life all laws except those against idolatry, adultery, and murder might be violated. The neglect of one's health was regarded as a sin, and the Nazarite who vowed to abstain from wine was considered a sinner, as well as he who fasted or underwent other penance without reason. Purity, which was the aim of most of the biblical sanitary laws, was to be not only physical, but also moral.

There was not a distinct department of public health in the government of the ancient Jews. The charge of infectious diseases, such as leprosy, and of epidemics of all kinds, was delegated to the priests, who acted as physicians. In later times every town counted among its permanent officials a physician who supervised the circumcision of children and looked after the communal well-being. A scholar was forbidden to live in a city where there was no physician. The rabbis have various laws regulating diet. They enjoin also divers precautions, many of which go to improve the physical welfare of the community. Special emphasis was laid upon early breakfasts. No one should force himself to eat; he should wait until he is really hungry, not hurry his meal, and not talk while eating. The rabbis even prescribed the kind of food men should eat, and that from which they should abstain, wheat bread, fat meat, and old wine being recommended as the most wholesome. Salt and hot soup are pronounced to be essentials of a meal. "After all solid food, eat salt, and after all beverages drink water," is the advice of the rabbis.

For domestic sanitation, the commandments given in the Bible direct the covering of the blood of a fowl or a wild beast with dust, and the covering of excreta with earth, and the appointing of a special place outside of the camp for the depositing of the excreta. The rabbis forbid the erection of tanneries or the establishment of cemeteries within fifty cubits of the city limits. To deposit carcasses within that distance was also forbidden. Tanneries even beyond that limit could be built only to the east of the town, so that the west wind might dispel the bad odors arising therefrom. The thrashing floor must also be removed fifty cubits from the city, on account of the chaff and the dust coming from it. It was suggested by some scholars that perpetual fires be kept up in the valley of Hinnom, outside of the gates of Jerusalem, for the purpose of consuming the refuse of the city, thus disposing of all the offal in order to preserve the health of the city. In order to prevent the spread of leprosy, a complete system of quarantine laws was developed in the Levitical code. The numerous laws of purity scattered throughout the Bible, especially in Leviticus and Numbers, were probably not intended primarily as health laws. The rabbis built up a complete system with regard to things clean and unclean upon these laws. All these laws may be conveniently divided into two classes: (1) Those which govern cases of impurity created in the body of a person, as leprosy, unclean flux of man or of woman, menstruation, etc., and (2) those which govern cases of impurity caused by contact with unclean objects, as contact with a dead body or with a person of the former class. By the careful isolation of such persons and objects and by the complete system of baths and ablutions provided by the law for their cleansing, the chances of the propagation of infectious diseases were much decreased. The rabbis regarded the laws of health as of greater importance than those which were of a mere ritualistic character. "You have to be more careful in cases where danger is involved than in those which involve a mere matter of ritual." On account of danger it was forbidden to eat the meat of an animal that had eaten poison, or to eat meat and fish together, or to drink water left uncovered over night. It was considered dangerous to drink water at the beginning of the seasons. In many places it was customary to place a piece of iron on all articles of food at that period. This was supposed to remove the danger. In time of plague the rabbis recommended staying at home and avoiding the society of men. Perspiration was considered especially dangerous, and it was therefore forbidden to touch, during meals, any part of the body which is usually covered or to hold bread under the arm, where the perspiration is usually profuse. Coins should not be placed in the mouth, as there is the apprehension that they have been touched by persons suffering from contagious diseases. Articles of food should not be placed under a bed, because something impure might fall on them. It was also forbidden to eat from unclean vessels, or from vessels that had been used for unseemly purposes, or to eat with dirty hands. These and many other laws are derived by the rabbis from the expression, "and ye shall not make your souls abominable." The washing of the hands and of the face in the morning and, according to some, in the evening also, and the washing of the hands after relieving nature were considered important, so that a special blessing was pronounced after each ablution. The rules concerning the washing of the hands before meals occupy a considerable portion of the ceremonial law, and minute regulations were prescribed as to the manner of pouring the water, the size of the vessel employed, and the kind of water to be used.

The system of baths and ablutions, which forms a large portion of the Jewish law of cleanliness, and which is still observed to a large extent by pious Jews, had a marked influence on their physical health, so that in epidemics they have frequently been immune. Provisions were also made by later rabbis with regard to sleeping. They warned against eating heavy meals immediately before going to bed, and approved first of lying on the left side and then on the right side, this being considered good for digestion. Maimonides lays down certain regulations by which man should be guided at sexual intercourse in order to preserve his physical well-being, and he promises him who complies with these precepts that he will be well, need never consult a physician, and will live to a good old age.

There are some laws whose purpose it is to prevent any cause of injury to others as well as to oneself. One who builds a new house must erect a battlement around the roof, so that no person shall fall from it. The battlement must be at least ten "fist-breadths" in height, and must be well constructed, so that one may lean upon it without apprehension. To guard against an injury one must not leave a well or a pit on one's premises uncovered, nor must one keep a vicious dog or a broken ladder. It is forbidden to walk alone at night; to stand under a wall that is likely to fall; to walk upon a poorly constructed bridge; to enter a ruin, or to drink in the dark from a well, lest some poisonous animals lurk in the water. He who defies the law saying, "It is no one's affair if I wish to expose myself to danger" is punishable with stripes, for life is considered as belonging to God and not to man.

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THE WAR AND VENEREAL DISEASES.

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THE sanitary problem of venereal diseases should at the present time demand wide consideration. The importance of the subject is most vividly and urgently emphasized not only by the ravages which these diseases have produced among the laity during peace, but by their great increase among the troops in time of war. The scanty attention they have received in this country has been due, I feel sure, less to the ignorance of their importance than to the deliberate refusal to deal with them. The knowledge that next to tuberculosis, syphilis is the most dangerous scourge of the human race seems to be gradually making its way into wider circles and there is now hope that this hitherto much neglected menace is becoming appreciated. Since the beginning of the war England, Germany, France, and Italy all seem to have awakened from a lethargy extending over a period of many years, to the fact that these diseases must be considered and considered carefully with the same thoroughness and promptness that are exercised in regard to other infectious diseases.

There is no doubt that syphilis, gonorrhea, and chancroid never would have obtained the proper and necessary publicity were it not for the fact that this great war is causing these diseases to spread throughout the various countries involved with greater rapidity than normally. However, the worst is yet to come. What may seem a menace today in Europe will develop to become a collosal scourge in our own country when the war is over and the men come back from the front. That this fear is well grounded may be shown by what followed the Crimean and the Napoleonic wars and the statistics compiled in the various countries of Europe both before and after these conflicts regarding venereal infections. The present war has produced reports along this line that far exceed those of the past. E. Gaucher in the *Bulletin de l'Académie de Médecine* of Paris emphasizes the extraordinary prevalence of gonorrhea and syphilis in both men and women since the beginning of the war, and states that he has been appalled at the ignorance of the dangers of these conditions, revealed by inquiry among the young men of the army and navy.

Many are the lessons we have learned from our European neighbors in connection with the present war and many of them have we digested, developed, and put into actual practice. Some there are still, however, that need attention and would receive it were it not for the flimsy curtain of mock modesty that seems to have blinded us in the past. This barrier must now be broken down and thrown aside and the press of the country urged to help us to remove it. The supreme law that has facilitated so many decisions in the course of the war must prevail here also—health is a public matter. The health, sanitation, and comfort of the soldier and sailor must be of first consideration and the cooperation of the military and civil authorities perfected to that end. There is no time to spare if we expect to produce and keep physically perfect men. We are already at war. Thousands of men are under mobilization and the work should be begun. It is a stupendous job, but not too large a one for us to undertake. The number and prominence of the many authors from the various armies engaged in this great struggle who have written upon the subject of venereal diseases in the army and navy will attest the importance of the subject from the standpoint of military efficiency. We have only to review the surprising statistics compiled by Gerrish, who in 1911 estimated that 10 per cent. of the population of New York City were syphilitic and that over 18 per cent. of the people of the United States showed signs of the disease, to realize one of the vast undertakings in the hands of the medical profession upon our entrance into the war. Today syphilis has increased, probably doubled, certainly not diminished, as no precautions have been officially taken to check it. In the army not long ago Bartlett found 10 per cent. of one command infected, and Archibald Church, in a very interesting and instructive article, estimated that there were twenty million syphilitics in the United States, with an expenditure of over eight millions for the care of luetic insane alone. If we compare the statistics of Pilcz, who found that during 1890 there were 70.64 per cent. of four thousand one hundred and thirty-four officers in the Austro-Hungarian army who either died or were permanently incapacitated, were syphilitic, with a report published from the Surgeon General's office of the Royal and Imperial Army during the present war which stated the number of cases of this disease found among the officers of the same army to be 78 per cent., it is easy to calculate its steady increase despite the modern methods of treatment.

British authorities state that venereal diseases are the cause of more hospital admissions among the soldiers than any other disease or group of related diseases, causing 38.8 per cent. of the total inefficiency of the British armies in France and one-third of all illness of the British navy, both at home and abroad during 1911. V. L. Kellogg states that in 1910 the British Naval Force included 113,530 men, of whom nearly 15,000 were ill from venereal diseases and that hospital admissions of soldiers for these diseases averaged more than 1 case for every 5 men in that branch of His Majesty's service.

With these figures of one of the highest morally rated armies before us shall we hesitate immediately to consider and take hold of this stupendous problem that may place us, if left alone, far below the efficiency rating among world powers that we now hold. There is no doubt that this country, if it wishes to keep abreast of its present excellent sanitary and health status, will find itself compelled in the near future to combat syphilis as secondary to no disease other than tuberculosis, and its imperious duty will be to restrict and control its devastating action on the strength of the nation.

We must bear in mind that it is not only a question of the present health of the sailor and soldier at sea and in the field, but of the prevention of all the misery that must necessarily follow for the family at home. A brief résumé of the venereal records of the militia during their mobilization recently on the Mexican border will disclose that

notwithstanding the excellent prophylactic treatment afforded them by the Medical Corps of the Army, many acquired all three of these well known infections to a startling degree, and had it not been for the plentiful supply and compulsory use of the prophylactic furnished them and the semimonthly talks or lectures as to the seriousness and fatality of these infections by the regimental medical officers, many more would have become victims of their indiscretions.

A complete and careful examination and inspection of over six thousand men, under my care in the Austro-Hungarian army revealed conditions that proved of startling significance. Primary lesions were found upon almost every part of the body, the palms of the hands and soles of the feet not excepted. Over 60 per cent. of the discoverable lesions, the diagnosis of which was substantiated by a Wassermann reaction, had not been reported nor had an application been made for treatment. Many of them did not know or realize the severity of their infections, and were astonished to hear of the results that were sure to follow if treatment was withheld. Few men there are, either sailors or soldiers, who suffer from venereal disease by choice, owing their malady in many instances to ignorance and the lack of proper instruction, supervision, and care by the higher authorities.

The medical and surgical officers of the ship or regiment should constantly bear in mind that if they wish to keep their men up to the top-notch of efficiency they must keep them free if possible from these too easily and quickly acquired infections. No prudery should be allowed to prevail in so doing. Provision should be made to facilitate in every way the furnishing to the men of preventive means and measures to help this end. New bodies of men or recruits should receive thorough and complete instructions upon the subject and old members of the service should be constantly reminded of their dangers. The men should be told of the great danger that every intercourse with a prostitute brings with it, a fact that many fail to comprehend. Warning signs or placards should be hung about in the barracks, hospitals, and other quarters and prophylactic measures and appliances should be placed at the disposal of the men. Not only should this be done, but each and every one should be compelled, after illicit intercourse, to take and apply a protective prophylactic treatment. Of course there are some who consider this practice and advice repugnant on so-called moral or ethical grounds, but if they will but consider seriously the dependence upon good sanitary and hygienic conditions of the welfare of their troops in the field and at sea, among whom health plays the most prominent part, they must agree that this practice is a most promising measure in obtaining results.

The best results may be obtained in the service by, first, careful supervision and frequent inspection of the men with the establishment of a severe penalty for failure to administer the prophylactic provided; secondly, providing carefully inspected, restricted, districts or houses of prostitution conducted especially for the men in the service under military supervision. This practice is successfully employed in Italy, Germany, Austria, and but lately in France and England with surprisingly satisfactory results. With the establishment of these houses during the course of venereal inspection of the men, which was held in the German army religiously every two weeks, the appearance of any venereal disease could be traced directly to the seat of infection and the prostitute placed under arrest and sent to a government hospital, where she remained until pronounced cured. For those living at sea on board ship the establishment of such districts or houses would prove a godsend for the men given liberty on shore, and would with the prophylactic almost eradicate the disease from the naval service.

Not only could steps be taken to safeguard against these diseases in the service, but proper facilities and treatment without cost should be placed at the disposal of the public at large. This is being done today in England and a few of the European countries.

The following are the details of the newly enforced scheme of the British Government toward this end.

Hospitals are established, especially at naval stations or bases, where treatment is carried out under the direction of a trained medical officer. The clinic is opened at least three afternoons and evenings each week and a stated time designated for the treatment of males and females. There is provision for six beds for each sex and the treatment will be absolutely free to every patient without distinction. Laboratory facilities are installed for the examination of all specimens and the performance of the Wassermann test. The station with its equipment is open for the use of all physicians in the district without cost. Salvarsan, neosalvarsan, and mercurial preparations are furnished for the use of all physicians gratis, and the strictest confidence is observed in regard to all persons receiving treatment.

Such clinics could be established in this country under State or municipal control, not only in the large centers, but in the small ones as well, and instruction given at them to the practitioner, student, and public at large in the care and treatment of venereal diseases.

Two prophylactic treatments for these diseases have received wide attention and consideration. The former Army "K" packet, containing a solution of 20 per cent. protargol or 10 per cent. argyrol, a medicine dropper or syringe, and a vial of 30 per cent. calomel ointment, was effective when used not only as a prophylactic, but within two hours after intercourse. In a section of over seventeen hundred militiamen who received this treatment properly on the border during the last mobilization, thirty-eight developed venereal diseases. Ten were primary luetic sores, ten chancroids, and the remaining eighteen gonorrhea which was complicated in seven cases with one of the former infections. With these results this treatment could hardly be called successful and the large percentage of infections resulted either because of the failure of the men to apply for the treatment within the prescribed time after intercourse or because of the failure of the ointment to come up to its declared standard of efficiency. With these possibilities in view and with the idea of providing for the men in the naval service who are unable to obtain treatment within the prescribed two-hour period necessary for proper results, Surgeon Robert A. Bauchman, U. S. Navy,

after an exhaustive investigation and experimentation, both at home and abroad, prepared an ointment similar to Metchnikoff's preparation, but which Metchnikoff himself declared to be a great improvement over his own original preparation in the treatment of syphilis. This ointment, which contains 33 per cent. calomel reinforced by 1 per cent. trikresol, he placed in a collapsible tube carefully prepared and enameled throughout inside to prevent a degeneration of the mercurial substance by contact with the metal of the tube itself. A soft rubber tapering nozzle one and one-half inches long, which may be introduced well up into the meatus beyond any possible area of infection, covers its mouth. This preparation he claims is most efficacious, and from the many reports of trials given it and the excellent results obtained in cases in which I have recommended its use, I am convinced that it has decided advantages over all other prophylactics of its kind at present in use. It is smaller in bulk, more compact, and therefore more easily handled. If carried upon the person at all times and properly used both before and immediately after intercourse, or within an hour, it has decided advantages over all other treatment.

EFFECTS OF POISONOUS SUFFOCATING GASES ON THE NERVOUS SYSTEM.

Of a symposium of five articles on gassing, in *Russkii Vrach* for May 6, 13, and 20, no less than three are devoted to the effects produced on the nervous system. Neiding and Serjesky write on the general subject, while Lenorsky devotes his paper to the effects of gassing on the vegetative nervous system. So fas as we know, no description of gas poisoning on the Western front has laid any emphasis on nervous manifestations in this connection, nor has it been claimed that any of the gases in common use have special neurotropic activities. Even in Professor Boldyreff's general survey of the treatment of gassing we find no special reference to nervous manifestations. Neiding had had under his care some 274 victims of gas poisoning. This material shows no evidence of selection of any kind. Eliminating cases without nervous symptoms, or with but a single nervous manifestation, there remained 136 patients with two or more manifestations which would place them fairly in the category of nervous subjects. In 26, these manifestations were all objective, the balance presenting subjective or mixed symptoms. For example, 10 patients complained of headache and vertigo, and were analgesic, while 37 presented pupillary anomalies, heightened reflexes, and analgesia. Absence of the pharyngeal reflex was frequently encountered.

In a few cases there were noted lesions of the eye and ear. Generally speaking, the symptoms suggest, in part, those seen in traumatic psychoneuroses, and to this extent present no evidences of a specific neurotropic action. However, two factors are clearly in evidence, the author believes, to wit: psychogenic and neurotoxic.

Serjesky, in his paper, deals largely with the last-named factor. He concludes that the gases are incidentally nerve poisons, and that this toxic action is especially in evidence when an hereditary neuropathic taint furnishes a favorable soil. He enumerates the following nervous symptoms: Headache, vertigo, mental and physical weariness, retardation of all neuropsychic processes, impaired memory and attention, etc., not unlike the symptom picture of cerebral arteriosclerosis in its earlier stages. Certain patients complain of tinnitus aurium. Both simple neurasthenia and hystero-neurasthenia are represented in the material. The evidence of a somatic factor seems indirect, based on certain analogies between the sequelæ of gassing and those of carbon monoxide poisoning. It is also possible to isolate a purely exogenous type in those without predisposition, and an endogenous type in which the neuropathic substratum is in evidence.

The most elaborate study by far is that of Lenorsky on the action of the poison gas on the vegetative nervous system. He finds that vagotonus may be present in one or another stage of the disease, and that in certain cases there is an increase in the tonus of the sympathetic. Mixed forms are encountered, and a certain amount of dissociation.

LETTERS FROM AN M. M. R. C.

If I were asked by the Surgeon General's Office at Washington, D. C., what the results were of mature deliberation after my two months of intensive training, I would without hesitation give the following criticism: Assistant instructors taken from the rank of officers of the Medical Reserve Corps are very weak reeds to lean upon. I have in previous letters suggested that not all of the instructors of the regular medical corps were quite adapted to their tasks. Apparently the fundamental and most important teaching in the Medical Officers' Reserve Camp is the knowledge of the drill manual and second in importance a practical method of acquiring proficiency in the paper work that is required by the service for its continuation along the lines now laid down.

If the army intends to teach a bunch of "rookies" how to drill it puts the detachment in charge of a non-commissioned officer, a sergeant. The latter individual may be a little rough in his mannerism, but he does know how to teach men how to drill. He will accomplish results in a short order of time that the ordinary commissioned officer would strive ages to accomplish. The doctors have to be taught how to drill. Why would not this be more thoroughly accomplished by a sergeant that knows the game from A to Z than a regular medical man who only knows it at best by snatches? Now when you come to take away the regular army doctor as instructor and in his place put another doctor as assistant instructor who has had only indifferent instruction himself, a state of affairs is created that is far from satisfactory from the standpoint of the manual of drill. Few assistant instructors agree on how certain formations should be accomplished. It is bad discipline for the private officer doctor in the ranks to have a command given and find that it was either a command impossible to give and have carried out under the condition or else this faulty command was allowed and its impropriety passed upon as being all right. There are certain orders that a column formation

can not carry out until this column is rearranged to permit its accomplishment.

The question is often asked by the inexperienced "What is the necessity of a doctor knowing how to drill?" The answer is this: the army doctor will sooner or later have a detachment of enlisted men under him. They will be men of the hospital corps. These men are trained to move together only under orders, and if their commander does not know the proper commands and how to execute them himself he will be of no use in his position. These orders not only pertain to marching formation but to the carrying of litters and pitching tent. The sanitation of the camp will come under his responsibility and also its policing as far as the medical quarters are concerned. By police duty is meant street cleaning. Every morning in camp a squad of thirty or forty men is sent out with a medical officer and it's for him to see that everything is cleaned up. He will take this detachment out at seven o'clock in the morning and will go over the section of the camp he is responsible for with a fine-tooth comb. Scraps of paper, burnt matches, cigarettes and cigar butts will be cleaned up by his detachment. Manure in the company streets, straggling sticks of wood, newspapers, and tin cans will all be eliminated, destroyed, or placed in proper receptacles. Ditches and sewers that are not draining properly will come under the care of this detachment. When they start off a few will provide themselves with brooms. There will be a few shovels in the lot and several burlap bags to hold the trash. Needless to say if this were not done every day a camp would soon become an object lesson in filth.

So much for the necessity of knowing how to give orders to your men. Now to come to the practical application of drilling as seen in the medical officers' training camps. As soon as a doctor arrives at one of these camps he is assigned to whatever company is comparatively new and where there is room for him. Each company consists of about a hundred men and they will occupy two barracks. Each company has a captain over them—usually an old man of the Medical Reserve Corps. By old, I mean one who has had about two months' experience in an officers' camp. He is the one who is going to take charge of all drilling instruction. There is little or no affiliation between different companies in the Medical Officers' Reserve Corps. Each company messes alone, has its own latrine and bath house, and drills alone. This makes it perfectly possible for a faulty drill master to bring up his entire flock of a hundred so that they will not be the wiser of their mistakes till they come among others. The only time that any of these men meet on the same grounds is during some grand parade which is but momentary and each company is only engrossed in acquitting its own duty well. Each company has its own individual lecture hour and as much clannishness is evidenced in social intercourse as between the regular army instructor and the assistant instructor from the Reserve Corps. The regular army instructor wears a white band around his hat so that he may not be confused with the assistant who wears a blue band. It is by these shades of differences that all army life is regulated.

A second fundamental criticism with suggestion that might well be made to those in authority, is that there should be a sufficient quantity of the regulation blank forms for the different kinds of paper work required by the medical department of the army, and part of the training course would include the proper making out of these papers. In actual army life most of these papers are made out by the sergeant of the detachment and the officer has only to sign them. So long as the officer is the responsible party it is absolutely necessary for him to know whether these papers are made out properly or not. He can gain this information only by practical experience. At the present time only the theory is taught. Each company should be shown how to make up its daily sick book, hospital records, muster roll, pay roll, requisition of supplies, and the many other set forms of conducting the business of the army. In this matter as in the drill, each company would accomplish more in a shorter space of time if they were under the tutelage of an experienced sergeant than they now receive at the hand of an assistant instructor who knows little or nothing about the practical end of the paper work. Continuing on this same line of criticism, it would seem to me better if the classes in French were taught by a regular teacher—there must be plenty in the country—rather than by volunteer French scholars taken from their own company.

One of the most frequent causes of discontent among the senior officers of the Medical Reserve Corps is the uncertainty as to their future movements and assignments when their course of instruction is completed. Barracks should be swept clean of old men before the new ones enter. It certainly gets on the nerves of the former to have a new bunch come into the barrack and start at the beginning again. Some wait one and two months expecting a governmental assignment of post daily. The work that was formerly pleasant and entered into with zest becomes irksome and they are apt to perform it indifferently. This situation is as bad for the new men as it is for the old. All the men should be put on some active form of duty and responsibility, if only temporary, till their final orders come from Washington.

Reconstruction Hospitals.—Surgeon General Gorgas announces that sites have been selected for orthopedic war hospitals in nineteen cities of the country. These institutions will be for the care and training of crippled soldiers who may be injured in the European war. Orthopedic base hospitals will be established near the front, where early treatment of ankylosed and injured joints will be given, and the hospitals to be established in this country will be more especially for the industrial training than for the surgical treatment of the crippled. The men will be reeducated to their former trades when possible, or will be taught new trades, to which, because of the nature of their mutilations, they may be better adapted. Workshops will be provided at the hospitals and arrangements will also be made with outside industries whereby more elaborate methods of training may be carried on. An employment bureau will be established to place men so trained. There will be accommodation at first for 500 men at each hospital, but provision will be made for enlarging their

capacity to 1000. The following are the cities where these hospitals will be located: Boston, New York, Philadelphia, Baltimore, Washington, Buffalo, Cincinnati, Chicago, St. Paul, Seattle, San Francisco, Los Angeles, Denver, Kansas City, St. Louis, Memphis, Richmond, Atlanta and New Orleans. Those in Boston, New York, Washington, and Chicago will probably be constructed first.

Gas Defense Service.—The Army Medical Department has been charged by the Secretary of War with the duty of supplying gas masks and other appliances for the protection of the United States troops against poisonous gases used in warfare. The Surgeon General has pointed out the needs of that service for a competent enlisted personnel. About fifty men are wanted immediately in mechanics, pipe-fitting, carpentry, blacksmithing, and chemistry. Those who are found qualified will be enlisted in the Sanitary Corps for the duration of the war. The following officers of the Medical Reserve Corps have been relieved from duty at the training camp at Fort Riley, Kansas, and ordered to report to the commanding officer at Fort Sill, Okla., for a course of instruction in gas defense: Captains, Felix E. Ashcroft, August A. Gossow, Rutherford B. Irones, Nevin D. Ponitus, Chelsea C. Pratt, Fred E. Sprague, John S. Sweeney, and Henry C. Woltman; First Lieutenants, William M. Bane, Carl L. Barnes, Bret Bates, Francis S. Furman, and Daniel Grant.

Red Cross Standardizes Dressings.—The American Red Cross has sent out five hundred thousand copies of a new manual giving instructions in the preparation of surgical dressings. The manual was prepared by Dr. John A. Hartwell of New York and a committee of surgeons, nurses, and lay workers. The directions are based on the most recent hospital experience both in this country and in the war zone. These standard dressings are now needed in large quantities, and many chapters are increasing their output by using power machines for cutting materials.

Special Red Cross Commission for Belgium.—A special department has been formed by the American Red Cross Commission to France to direct the relief work in Belgium. Dr. Ernest P. Bicknell, formerly director general of Civilian Relief of the American Red Cross, and now deputy commissioner to Europe, is to have charge of the work in Belgium, assisted by the Rev. John Van Schaick of Washington, D. C. Major Murphy recently made a tour of inspection behind the Belgian lines and laid out a program of relief to include financial assistance to the Belgian hospitals and for the care of between five and six thousand Belgian children in cooperation with the Rockefeller Foundation. The work is to include reconstruction and rehabilitation of villages recovered from the Germans.

Gifts to Red Cross.—The parishioners of St. George's Church, New York, have presented the Red Cross with an ambulance which is to be sent to France at once. Efforts are now being made to interest the Protestant Episcopal churches in the diocese of New York in a fund with which to send army kitchen trailers to France. Madame Alma Gluck announces that she will donate not less than $25,000 of the profits of her next season's concert tour to the Red Cross.

The Association of Military Dental Surgeons has sent out letters for the purpose of arousing interest in their work and increasing the membership of the organization. It is desired to have every dental surgeon and ex-dental surgeon of the army, navy, or National Guard become a member of this organization. The association now publishes a quarterly bulletin with dento-military news. At present it is contemplated to have at least 1,000 members in the Dental Reserve Corps. Dr. John D. Millikin is president of the association, which has its headquarters at 323 Geary Street, San Francisco, where applications for membership may be sent.

American Physicians to Aid French Civilians.—The American Red Cross is making arrangements to install an American physician in every village of appreciable size within the zone of the American army. The work is being done under the direction of American army surgeons. An effort will be made to better conditions among the French civil population and also to make certain that the American zone is in the best possible sanitary condition. In most instances Red Cross nurses will also be distributed among such villages. It has been found in many cases that the only doctors living in a town have been taken into the army, leaving the health of the community in the hands of old women.

Courts Bar "Golden Cross."—The "Golden Cross" organized to aid soldiers injured in the American army, navy, and aeronautical service has been refused a charter of incorporation by the Supreme Court on the ground that the proposed sphere of activities is properly and adequately covered by the Red Cross. A previous petition for incorporation was denied in July on the ground that the order proposed to maintain a hospital and give medical treatment and for this purpose approval of the State Board of Charities was required. The recent petition explained that this hospital was to be only a convalescent home for those discharged from medical treatment who needed rest and recreation. It is now stated that the new order proposes to devote its attention to the aeronautical branch of the service and that the plan has the sanction of various aeronautical associations.

Medical and Surgical History of the War.—Surgeon General Gorgas has established a board to collect material for the medical and surgical history of American participation in the European War. This board is composed of Col. C. C. McCulloch, librarian of the Army Medical Library; Major F. H. Garrison, assistant librarian in direct charge of work on the history, and Capt. John S. Fulton, secretary of the Maryland State Board of Health, who will have charge of the statistical work.

French Hospital of New York Honored.—Justin Godart, Under Secretary for the Army Medical Service of France, recently visited the place where the French Hospital of New York has conducted a military hospital of 250 beds since early in 1916, and bestowed medals of honor upon Dr. John Irwin and Dr. Thomas Savage who have served since the hospital started. Other medals were presented to a number of the nurses. M. Godart expressed regret that he was unable to bestow the decoration of the Legion of Honor on Major Culler, the head physician, until the consent of the United States Government could be obtained.

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THE REHABILITATION OF THE CRIPPLED SOLDIER.

ONE of the most serious problems of the war in Europe has been how best to deal with disabled soldiers. The question was taken up first in Germany and France, but perhaps the most thorough methods of handling the matter have been devised in Canada. When an invalided soldier is brought back, his case must be completely and closely investigated and classified, in order that each case may be treated strictly on its merits. That such a scheme may be carried out properly, institutions of the nature of convalescent hospitals are required, for it is obviously impossible that an ordinary medical board could adequately fulfill this function; its members may not represent the various specialties, nor do they have time or opportunity for prolonged observation nor the equipment and facilities for undertaking such examinations. In Canada institutions of this kind have been and are being dotted about the country. A federal commission known as the Military Hospitals Commission was formed in Canada, the main object of which was to establish convalescent homes and training classes throughout the Dominion.

However, of our Allies France took the lead in designing schemes for rehabilitating the mutilés de la guerre and as Mr. Douglas C. McMurtrie has pointed out in No. 17 of the "Columbia War Papers," dealing with the war cripple, it was Edouard Herriot, mayor of Lyons, who undertook the organization in that city of a municipal training school for those incapacitated by war. In Great Britain, previous to this war, there existed the Incorporated Soldiers' and Sailors' Help Society, organized after the South African war to maintain workshops for disabled veterans, and this society has largely extended its activities. Up to a comparatively recent date, the British Central War Pensions Committee was responsible for the organization and management of the various measures initiated for the benefit of those disabled by war. Now the work has devolved upon the Ministry of Pensions. Italy and Russia also in the early months of the war inaugurated methods for caring for their cripples. In Great Britain the country has been divided up into areas for purposes of collective administration, and a scheme has been formulated for a Central Bureau for organizing the work of rehabilitation and reeducation of the discharged cripple.

The Paris Conference, according to an editorial in the *Lancet* of July 21, 1917, indicated definitely and authoritatively what the obligations of a country at war are toward its disabled soldiers. The recommendations made at this conference with regard to the restoration of function of such men may be summarized as follows: The earlier evacuation of the wounded man into an institute of physiotherapy; the provision of a sufficient number of well-equipped institutes with competent trained personnel; the attachment of an orthopedic surgeon to each field ambulance; the earliest possible application of medical gymnastics. The other resolutions dealt more particularly with the treatment of abiding disabilities by reeducation. A notable phase of this branch of the subject was that which suggested that a common policy towards the war cripple should be followed by the Allied nations.

But before going into the question of reeducation it may be as well to discuss briefly that of artificial limbs. Unless suitable artificial limbs are provided, it will be difficult, in many instances impossible, to reeducate or train vocationally the disabled soldier successfully. It must be decided among other things as to the type of limb to be used, the standardization of its parts, and whether in supplying limbs for the upper extremities the patient should be furnished with different kinds of limbs for different purposes, or with one limb with different attachments. So far as limbs for the lower extremities are concerned it is not so much ingenious ones which are required, but ones adapted to withstand the uses to which the lower extremities of a workingman are likely to be put.

Assuming then that the discharged cripple has been provided with appropriate substitutes for his lost limbs and, moreover, taught how to use them properly, he is, physically at least, in a position to receive vocational training and reeducation. In fact, it is high time that his social and economic rehabilitation should commence. In training a disabled man to be of use to his country and to preserve his independence and self-respect, his condition of mind and outlook on life must be taken into account. He is, generally, not only disabled in body, but sick in mind. His war experiences and the time spent in hospitals and in convalescent homes have tended to sap his energy and will power. Therefore, treatment must be adjusted to his condition. It must be impressed upon his mind that idleness will but accentuate the state of mind and body which his abnormal experiences have brought about, and that the best remedy is work. He must be shown that the loss of a leg or an arm is no insuperable obstacle to his future economic activity. The potentialities which exist in reeducation and vocational training must be made widely known to the disabled man. A move in this direction has been made in Great Britain recently by the

publication of a monthly journal entitled *Recalled to Life*. The avowed object of the journal is the diffusion of information among those concerned with the welfare of disabled soldiers and sailors, with regard to the means by which they may be restored.

In accordance with such views, and for the purpose of combating idleness and laxity in institutions established for training disabled soldiers, well termed curative workshops, these, as McMurtrie rightly insists, should be under military control. It goes without saying that the mind of the crippled man should be set at rest in regard to the care of those dependent upon him and his own future. When he is convinced that his family is provided for and that, by rendering himself an efficient worker he will not lose his pension, in the large majority of cases, with awakening health, he will have his initiative reawakened, his ambition stimulated, and he will quickly realize his responsibilities towards his country and himself. Furthermore, working in the company of numbers of other men, his spirit of emulation will be aroused, and the probability is that when he leaves the institution after undergoing a thorough training he will go out into the world an efficient workman who will be able to fight the battle of life almost as well equipped as his sound brother.

As noted in another column, Surgeon General Gorgas is alive to the necessity of reeducation of the crippled soldier and has already begun the organization of nineteen "reconstruction hospitals" of 500 to 1,000 beds each in the larger cities of the country.

THE VALUE OF THE X-RAY EXAMINATION IN CHOLELITHIASIS.

ROENTGENOLOGISTS, like specialists in some other lines, occasionally seem to be carried away by their enthusiasm and make categorical statements that are hardly warranted by the published experiences of other equally competent observers. The immediate occasion for this remark is furnished by the perusal of the initial sentence of James T. Case's article under the above caption in the *Annals of Surgery* for July, 1917, where he says: "One may be very sure of a clinical diagnosis of gallstones, but, as a matter of fact, he cannot be positive that gallstones are present unless he has seen them clearly in a roentgenogram." One may take issue with the writer of the above sentence for two reasons: First, because one often can be absolutely positive of the presence of gallstones from the clinical history and physical examination without radiography; and, second, because one cannot always be positive that gallstones are present when they are apparently shown on an x-ray plate. Practically all experienced surgeons have had many cases in which the positive preoperative diagnosis of gallstones could be and was made without resorting to radiography —this diagnosis being verified at operation; and these same surgeons have also been among the unfortunate victims of the radiographer's imaginative interpretation of shadows in the gall-bladder region, and have been much chagrined in cases of cholecystitis in not being able to deliver the expected souvenir of the operation in the shape of a bottle of gallstones, usually so highly prized by the patient for exhibition purposes.

Now, how much dependence can be placed upon radiography in the diagnosis of gallstones? Case states that from the radiographic standpoint cases of cholelithiasis fall under three heads: (1) Those where the gallstones consist entirely, or almost entirely, of pure cholesterin, and are therefore invisible to the Roentgen ray except in a few rare instances. (2) Those cases in which the large lime content of gallstones renders it almost impossible to overlook them, even during the most careless examination. Such stones, he says, can easily be made out fluoroscopically. (3) Those cases in which the lime content of the stone is relatively low and the stone can be made out only by means of the most careful technique. Taking the cases as they come the author concludes "that it is definitely possible to show gallstones in approximately 50 per cent. of the positive cases." He also states that Pfahler is convinced that gallstones can be found in about 50 per cent. of the cases. Case also credits Cole with finding gallstones in 20 out of 500 consecutive gastrointestinal examinations; but upon reading Cole's article, which was entitled: "The Roentgenographic Diagnosis of Gallstones and Cholecystitis," we find that, excluding all in which any doubt could be entertained, there was but five cases instead of twenty in which the preoperative radiographic diagnosis of gallstones could be considered as absolutely verified.

Turning to other sources of information, we find that George and Leonard seem to be the extremists in claiming value for the Roentgen diagnosis of gallstones, since they feel that 85 to 90 per cent. can be shown; while Caldwell seems to be perhaps the most conservative. The latter (*American Journal of Roentgenology*, 1915) says: "If we only make enough plates and make them well enough, we can obtain suspicious shadows in the gall-bladder region of any normal individual. The interpretation of gallstone plates, therefore, becomes a matter involving not only skill and judgment but temperament as well. In no other field of Roentgen diagnosis is the personal equation of the observer more important. This, I believe, is the best explanation of why some observers report as high as 85 per cent. and others as low as 5 per cent. of successes in these examinations." Carman, in his book entitled: "The Roentgen Diagnosis of Diseases of the Alimentary Canal," apparently leans more to the attitude of Caldwell than to that of the extremists; for he says: "Our (the Mayo Clinic's) own figures do not compare favorably with the larger percentages quoted above, notwithstanding the fact that abundant material has been at our disposal. Many of

the cases gave typical histories, but even in these, although extraordinary efforts were made, we have been able to obtain diagnostic shadows in only a small minority. The difficulty has been, not to find shadows, for these were often present, but to find shadows that seemed definite and characteristic."

Taking into consideration all of the above statements, it would appear that roentgenology has a definite corroborative value in the diagnosis of gall-bladder disease (cholecystitis, with or without gallstones) not only directly, by sometimes showing characteristic gallstone shadows, but also indirectly, as emphasized by Cole, through the demonstration of adhesions, etc.; but that so far as the positive detection of gallstones is concerned its value appears to be greatly overestimated by some authors. Even if a full clinical history is not furnished to the radiographer, the mere request for a study of the gall-bladder region implies the surgeon's suspicion at least of gall-bladder trouble; and the observer, perhaps subconsciously influenced thereby, is apt to report a hazy shadow as probably due to gallstones when he would not care to attempt a positive identification of the same shadow under other circumstances. The mere fact that so many guesses, hazarded under clinical conditions pointing perhaps almost indubitably to gall-bladder disease, are borne out at operation has undoubtedly led to an exaggerated conception, in some quarters at least, of the efficacy of the *x*-ray in the detection of gallstones. When the shadows are clear and characteristic the roentgen diagnosis of gallstones is generally reliable; but hazy, suspicious shadows should be considered only as a possible addition to the many bits of evidence which, taken together, point to the gall-bladder as the seat of a pathological process. We should also remember that cholecystitis is the disease and that gallstones are, as Carman says, incidental. This has been well shown at the Mayo Clinic, where 30 to 35 per cent. of the several thousands of diseased gall-bladders operated upon contained no stones.

Finally, since even the most radical admit the liability of error in the interpretation of shadows in the gall-bladder region, we would call attention to the suggestion recently made by several surgeons in this city to give a preoperative diagnosis of cholecystitis in frank gall-bladder cases, rarely making positive statements as to the finding of gallstones even in cases where the radiographer reports their presence. Under this plan it is explained to the patient that there is an inflammatory condition of the gall-bladder and that it is immaterial, so far as operative indications go, whether gallstones have yet been formed or not; hence there is less chance for dissatisfaction or distrust if, as is so often the case, stones are not found when a pathological gall-bladder is removed or drained. The wisdom of following this plan has been demonstrated so conclusively that it should be generally adopted.

THE DETECTION OF SEMEN.

Leaving out of the question the identification of bloodstains and the differentiation between human and animal blood, there is hardly a subject in the medicolegal branch of our profession which is so spectacular and upon which so much may hinge as upon the detection of semen. Cases of rape, criminal assault, seduction, and the like, present so many distressing features; and the punishment of a heinous crime or the delivery of an innocent person from a horrible accusation may rest so largely upon the testimony of the physician that the utmost care and technical knowledge are demanded before a positive opinion can be given. Then, too, the punishment, varying from the stern severity of the law to the atavistic violence of the mob, is so great for sexual crime, the history of medical jurisprudence is so replete with instances of plots against innocent persons, that the physician must be doubly careful in his examination.

The finding of semen in or about the sexual organs of the female in a case of alleged rape has a positive value, but its absence has no negative value. Neither *immissio penis* or *emissio seminis* are necessary to make a case of rape. However, the presence of semen in the vagina, about the vulva, or on the underclothing of the female, is presumptive evidence of a strong kind. The search should, moreover, be extended to articles in the immediate vicinity of the alleged assault—the bedclothing, the floor, ground, etc. If the victim of the assault be dead, the search should be extended into the uterus and tubes. There are a number of cases on record where motile spermatozoa have been found hours, days, and even weeks after coitus. They may even retain their vitality for several days after the death of the female.

In an article in the *Journal of Laboratory and Clinical Medicine* for December, 1916, Dr. Victor C. Vaughan has called attention to some features of this problem. Considerable stress has been laid, he says, in some quarters upon the contour, color, and odor of stains upon white cloth, it being held that these purely physical characteristics are enough to distinguish them as seminal stains. Vaughan deplores the tendency to jump at such a conclusion, especially in view of the great importance of the subject; the only evidence worthy of the name, he says, is the finding of spermatozoa. If these be not found the report must be negative.

The method he favors of examining such stains is briefly this: A part of the stain is rubbed up with physiological salt solution and allowed to stand a couple of hours. A milky fluid is thus formed, which can be examined directly under the microscope. If the stain be very old the salt solution should be rendered feebly alkaline with ammonia. A positive conclusion should not be based upon what appear to be the detached heads of spermatozoa, as granules of several sorts may be mistaken for these. Only complete cells, with head and tail, should be called spermatozoa.

Vaughan also describes other tests for semen and spermatozoa, notably the Florence method of preparing crystals from semen, but he believes that the only method which should be depended upon when the life or liberty of a human being is at stake is the actual detection of spermatozoa in the suspected fluid. This opinion will undoubtedly be concurred in by the profession. If expert medical testimony has fallen into some disrepute, one of the causes must be sought in the tendency to give a positive opinion on evidence of too tenuous a nature. Strict adherence to principles such as those laid down by Vaughan will protect us from many a pitfall.

Antiphones.

The literature of this subject is extremely small in proportion to its importance and the attempts that are constantly being made to obtund the hearing temporarily by mechanical devices. Instrument makers sell rubber antiphones which are relatively expensive and are not guaranteed to produce any definite results. Plastic substances, such as cotton tampons coated with vaseline, and plugs of chewing gum coated with lint to prevent adhesion are familarly known. People who employ these devices may complain that the desired effect is obtained only at the expense of disagreeable entotic noises. One of the recognized uses of antiphones is in patients about to go on the operating table, in the aim of diminishing peripheral irritation and of preventing the overhearing of chance remarks by the bystanders. In noisy neighborhoods and surroundings antiphones would be a boon to all who do mental labor. The war in Europe has made aural obtunders an absolute necessity, but the aim here is somewhat different, as the main desire is to prevent destructive changes in the ears when these are exposed to shell concussion, etc. In *La Presse Médicale* for August 6 we find a reference to a new type of antiphone which is extremely simple. It appears to be of the protective rather than the simple antiphone type—an empty gelatine capsule of the desired size which is warmed, oiled, and insinuated into the meatus. The complete cutting off of sounds is not desirable, for the soldier must be able to hear words of command, whistles, etc. A satisfactory antiphone for a student can only be secured through the compression of the protected ears by a spring. The external meatus should first be occluded with cotton, and a pad without should close the tragus. A C-shaped spring could be made to press firmly against the pads with the view of shutting out all sound for a relatively brief period. Such an "ear truss" may have been patented or extemporized in the past, but in the extant literature of the subject nothing of this kind is mentioned.

Abortive Cerebrospinal Meningitis.

While in theory there should be mild and abortive forms of this affection, cases in practice seem to be rare and dubious. We have silent cases, but these are none the less grave in type. A recently reported case of abortive meningitis is deemed worthy of an abstract in the *Journal de médecine et de chirurgie pratiques* for August 10. The case in question, reported by Rendu, was relatively silent. There was absence even of a meningeal reaction—no stiff neck, no lumbalgia, no Kernig sign, no fever. There were, in fact, but four symptoms, none of which was decisive, to wit, herpes facialis, slow pulse, brief headache, and vomiting. The former, which could have had no febrile causal factor in this case, is common enough in epidemic cerebrospinal meningitis. The slowing in the pulse is common in intracranial mischief. For the first night of the attack only there were headache and vomiting. The association of these four symptoms with lassitude comprised all the spontaneous objective phenomena. Spinal puncture was made and the pulse at once assumed its normal frequency. Although the abstract does not so state, we are led to believe that a positive diagnosis was made from the punctate. A puzzling feature in this case was the appearance of the meningitis soon after antityphoid inoculation. This might have been sufficient to cause the autoinfection of a simple carrier of the meningococcus.

News of the Week.

The Mayo Foundation Becomes Property of University of Minnesota.—The Board of Regents of the University of Minnesota has ratified by unanimous vote the permanent agreement making the Mayo Foundation at Rochester the absolute property of the University of Minnesota. The fund consists in securities totaling $1,650,345, which is to be used perpetually for higher medical education, research, and investigation. The expenses of the foundation will be paid by Dr. Charles H. and William J. Mayo until a fund of $2,000,000 has been accumulated. Thereafter the income from the fund will maintain it. The foundation has been affiliated with the university for two years as a trial. Under the final agreement the headquarters of the foundation can be moved from Rochester to any other point in the State after twenty-eight years. Ten per cent. of the yearly income will be expended outside of the State, and another 10 per cent. used to investigate epidemics inside and outside of the State. It has been announced that one of the Mayo brothers will go to France next year with the recruits and that they will take turns until the end of the war.

Hunger Increases Belgian Death Rate.—Recent reports from Belgium state that during the last four months the mortality in the industrial centers of Belgium and Northern France have increased from 15 to 65 per cent. per one thousand population. It is affirmed that this is largely the result of undernutrition. The Commission for Relief in Belgium has been unable to obtain ships to carry relief supplies, and cargoes of grain awaiting shipment in American ports have so deteriorated as to be unfit for food.

Infantile Paralysis Up-State.—Eleven cases diagnosed as infantile paralysis have been reported in Colton, St. Lawrence County. The schools are closed and children are barred from churches. There have been no deaths from the disease reported thus far.

Senior Military Medical Association.—This is the title of an association of Philadelphia medical

men who are beyond the age limit for admission to the Medical Reserve Corps, but who wish to serve their country in some way. The purpose is to band together men who are still capable of performing part time medical work, especially at or near the member's residence. "It is felt that members of the association can act as consultants in general and special physical conditions of recruits and conscripted men; also, in matters of sanitation and hygiene, and in making general physical examinations and mental and special examinations and in working in local hospitals or established places or cantonments where the sick or injured men may be sent; or those where fitness may be brought about in men medically rejected from admission to the service; also in performing any other work they may be capable of by the direction of the Government." The membership is not confined to Philadelphia residents, but includes physicians living in New Jersey, Pennsylvania, Delaware, and Maryland. The secretary is Dr. Alexis Dupont Smith, 5926 Greene Street, Germantown, Pa.

Contagious Disease Hospital for the Bronx.—Plans for a four story hospital for contagious diseases to be erected at Seton Avenue and East Two Hundred and Thirty-third Street, Bronx, have been filed. The new hospital will accommodate 1,000 patients. The building is to have glass partitions separating the wards and observation rooms.

Drug Sellers Sentenced.—The campaign against the traffic in habit-forming drugs was marked a few days since by the conviction of five offenders, three men and two boys. The three men were sentenced to prison for two years each and the boys were sent to the Elmira Reformatory for terms of thirteen and eighteen months.

Scarcity of Pure Zinc Oxide.—Examinations made by the Bureau of Chemistry of the United States Department of Agriculture show that there is very little zinc oxide on the market in the United States that complies with the standards of the U. S. Pharmacopeia. Nearly all the samples analyzed contained an excessive amount of lead. The samples were labeled "Not U. S. P.—Containing Small Quantities of Lead." This will be more likely to come to the attention of druggists than to that of physicians. The attention of physicians is therefore called to this fact so that they may protect themselves and their patients from possible injury when the pure article is required by calling for the U. S. P. article on their prescriptions.

Examination for Superintendent of Tuberculosis Hospital.—The Civil Service Commission of the State of New York announces that a competitive examination will be held on October 6, 1917, for the position of superintendent of the Iola Sanatorium for the Treatment of Tuberculosis, Monroe County. The position is open only to men, and carries a salary of $4,00 a year. Applicants must be graduates of an incorporated medical college, licensed physicians of New York State, and must have had at least five years in the actual practice of medicine. Applications must be filed with the Civil Service Commission, at Albany, not later than September 30, 1917.

Increase in Birth Registration Area.—The latest States to be admitted to the Registration Area for Births are Maryland, Virginia, and Kentucky. The Registration Area was established in 1915 and was then composed of ten States and the District of Columbia. It represented only 10 per cent. of the territorial extent of the United States, but contained 31 per cent. of the country's population. For this area the Bureau of Census has recently issued its first annual report. The war has brought a recognition of the need of complete birth registration as never before. The age of the soldier must be known. Since war was declared tests for the completeness of birth registration have been made by special agents of the Census Bureau in Virginia and Kentucky, and both States secured a rating of over 90 per cent., which represents the degree of completeness requisite for admission to the area.

Two Colleges Open Doors to Women.—Harvard University announces that it will hereafter admit women to the classes in its medical department. An announcement by Columbia University to the same effect was made some time ago.

The Association of Military Surgeons will hold its annual meeting at the Training Camp at Fort Benjamin Harrison, Indiana, October 8, 9, and 10. There will be much of interest to all physicians in the exhibition of the work of training going on in this camp, of the organization and field work of regimental detachments, ambulance companies, field hospitals, and evacuation hospitals. Those bringing their own blankets and cots or mattresses can be accommodated in camp at a cost of $1 per day.

The American Public Health Association will hold its annual meeting in Washington on October 17-20. The discussions will deal largely with problems of sanitation in relation to war.

Obituary Notes. — Dr. WILLIAM AUGUSTUS SCHNECKER, a graduate of the College of Physicians and Surgeons, in 1899, died at his home in New York City, on September 13, aged 40 years.

Dr. ABNER J. P. JULIAN, a graduate of the University of Maryland School of Medicine, in 1883, and a practitioner of Lake City, Fla., died August 25, aged 58 years.

Dr. ZACHARIAH TAYLOR MARTIN, a graduate of the Cincinnati College of Medicine and Surgery, in 1881, formerly superintendent of the Missouri Hospital for the Insane, and more recently a member of the staff of the Pettey-Wallace Sanitarium, Memphis, Tenn., died suddenly of asthma, on August 26, aged 70 years.

Dr. DAVID ST. JOHN, a graduate of Bellevue Hospital Medical College, in 1875, a practising physician of Hackensack, N. J., died at Berne, N. Y., August 14, aged 67 years.

Dr. JOHN L. OVERHOLT, a graduate of the Charity Hospital Medical College, New Orleans, in 1887, died suddenly of heart disease in his office at Columbus Junction, Ia., on September 1, aged 50 years.

Dr. FRANK CORNWALL, a graduate of the Eclectic Medical College, Cincinnati, Ohio, in 1869, died at his home in San Francisco, August 31, aged 71 years.

Dr. CHARLES G. PRATT, a graduate of the University of Michigan, in 1901, died of Bright's disease at his home in Sparta, Mich., August 31, aged 41 years.

Dr. WILLIAM P. BOUTON, a graduate of the Louisville School of Medicine, died at Lebanon, Tenn., September 3, aged 69 years.

Obituary.

LEWIS ATTERBURY STIMSON, M.D., LL.D., F.A.C.S.

NEW YORK

Dr. Lewis A. Stimson died suddenly at his summer home in Shinnecock Hills, L. I., on Monday of this week. He was born at Paterson, N. J., in August, 1844. He was graduated from Yale College in 1863, and immediately entered the Union Army, in which he served as captain until the end of the Civil War. After a period of European travel and study he returned to this country and entered the Bellevue Hospital Medical College, from which he was graduated M.D. in 1874. He was professor of physiology, 1883-5, of anatomy, 1885-9, and of surgery, 1889-98, in the New York University Medical College, and in 1898 was called to the chair of surgery in the Cornell Medical College in New York City. He was one of the regents of the University of the State of New York from 1893 to 1904. He was consulting surgeon to the New York and Bellevue Hospitals. Dr. Stimson was the author of a work on "Operative Surgery," published in 1900, and of the well-known and popular "Treatise on Fractures and Dislocations," the eighth edition of which was published this year, and had also contributed largely to general literature. He was an enthusiastic yachtsman, and not many years ago sailed his own boat in a race across the Atlantic. He was a member of the American Surgical Association, the New York Academy of Medicine, and the Medical Societies of the State and County of New York.

Correspondence.

"RESEARCH WORK INTERRUPTED."

To the Editor of the Medical Record:

Sir:—The impression which the letter with the above caption from Dr. Paul Luttinger, published in the September 8th issue of the Medical Record, is designed to give, and certainly would give to the readers, is that his dismissal from the Department of Health was due to opinions expressed by him as to the effects of alcohol, following his studies carried on in the Research Laboratory, under the auspices of Dr. William H. Park.

Dr. Luttinger was dismissed from the Department of Health after a hearing before the Board of Promotions, consisting of the Directors of the Departmental Bureaus, who recommended his dismissal because of insubordination and disobedience to direct orders issued to him. This insubordination and disobedience had no relation whatsoever either in time or in matter with the studies on alcohol which Dr. Luttinger had at a previous date made and reported upon to Dr. Park. The Board of Health passed upon the charges against Dr. Luttinger, and agreed unanimously that Dr. Luttinger's behavior to the assistant and acting directors of the Bureau of Laboratories, and his insolent disregard of orders given to him, merited his immediate dismissal from the department, and they so voted.

Some months ago, Dr. Luttinger was assigned by Dr. Park, at my request, to review the literature and make original experiments to control, verify, or controvert the published reports as to the effect of alcohol in modifying the resistance of warm blooded animals to infection. Dr. Luttinger was allowed the same freedom and facilities in carrying on his research that is allowed to all research workers in our laboratories. His preliminary report, as presented, was so superficial and incomplete that Dr. Park and I thought further studies should be made before presenting any statement in published form.

For the credit of the Research Laboratory of the Department of Health of this city, and to correct the impression which Dr. Luttinger's letter could not fail to create if unanswered, I request the publication of this letter in the next issue of the Medical Record.

H. Emerson, M.D.,
Commissioner.

Department of Health,
City of New York.

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 6, 1917.

1. Address. The Newer Methods of Diagnostic Technique. Frederick T. Lord.
2. A Review of the Literature of the Last Nine Years on the Nephritis of Infancy and Childhood. Lewis Webb Hill.
3. The Diagnosis of Focal Sepsis. J. M. Anders.
4. Bruck's Sero-Chemical Test for Syphilis: A Report of 400 Cases Compared with the Wassermann Reaction. Curtis E. Smith and H. C. Solomon.
5. Paresis or Dementia Precox? Harold I. Gosline.
6. Further Observations on Shock at the Front. W. T. Porter.

4. Bruck's Sero-Chemical Test for Syphilis: A Report of 400 Cases Compared with the Wassermann.—Curtis E. Smith and H. C. Solomon say that they commenced these experiments with a great deal of skepticism and were very much surprised at the results obtained, and that whatever the final status of the test a great deal of interest attached to the fact that this simple chemical reaction does pick out certain differences in the blood sera, and that apparently a large number of syphilitic sera differ in their percentage composition from the majority of non-syphilitic sera. The writers describe the modifications of Bruck's technique which they have found most satisfactory, and which eliminate certain errors likely to occur in the original method. In 101 of these 405 cases there were definite clinical manifestations of syphilis, in which the Wassermann and Bruck tests agreed positively in 74 or 75 per cent. The two tests agreed negatively in twelve instances, and were at variance in fifteen. In the group which showed syphilis of the nervous system they had sixty-four cases of clinically certain general paresis, of which the Wassermann and Bruck tests agreed in fifty-four instances, or practically 85 per cent. In other forms of central nervous system involvement the agreement was 100 per cent. in the fifteen cases tested. In the cases with no apparent involvement of the nervous system the agreement was somewhat less, being 76 per cent. This may be in keeping with the fact that the Wassermann test was not so strongly positive in these cases. The advantages of the test are: (1) the short time required to do the test, (2) the limited amount of apparatus necessary, and (3) the simplicity of the technique. The disadvantages of the test seem, for the most part, to be bound up in the personal variations that are apt to occur. We are here dealing, most probably, with a quantitative chemical difference in the protein content of syphilitic and non-syphilitic sera, the nature of which is not understood by us. It is our hope that this may be brought to light in the near future in the field of chemistry.

6. Further Observations on Shock at the Front.—W. T. Porter has in previous communications described his investigations which showed that blood pressure of soldiers on active duty in the trenches was not increased and that it was not lowered under habitual bombardment. In a second communication the writer recorded

the discovery that shock is caused by fat embolism, and he later showed that the low blood pressures of shock were raised 15, 20, and even 30 mm. of mercury by increasing the aspiration of the thorax. From further investigations it now appears that increased respiration from the administration of carbon dioxide is of advantage in shock. In his experience it has not failed to raise blood pressure even in profound shock. In his observations made at Vautin the head of the wounded man was placed in a wooden box, the length, breadth, and height of which were approximately 33 cm. The end for the neck was in two pieces, in which the neck fitted as in a guillotine. Cotton was placed between the edges of the openings and the skin. A hole about 2 cm. in diameter was made in each of the two sides of the box. Cotton was placed in these holes to regulate the amount of carbon dioxide and air. The carbon dioxide entered the box by one of these holes. Enough gas was used to double the respiration. The writer believes it would be of advantage to use carbon dioxide during operations. Great care should be taken to discontinue the carbon dioxide respiration very gradually.

New York Medical Journal.

September 8, 1917.

1. The Treatment of Paresis. Britton D. Evans and Frederick H. Thorne.
2. The Imperfect Sight of the Normal Eye. William H. Bates.
3. Psychotherapy and the Drama. Smith Ely Jelliffe.
4. Drugless Healing Cults. J. Madison Taylor.
5. Prostatic Hypertrophy with Tabes. Ernest M. Watson.
6. A Plea for the Early Diagnosis of Pulmonary Tuberculosis. S. A. Silk.
7. Diagnosis of Early and Late Gastric Cancer. Harris Weinstein.
8. A New Group of Symptoms in Terminal Gastric Catarrh. Roy Upham.

1. The Treatment of Paresis.—Britton D. Evans and Frederick H. Thorne have, during the past two and one-half years, treated twenty-three patients intraspinously with salvarsan, neosalvarsan, and albuminate of mercury. Fifteen of these cases were reported one year ago but at that time sufficient time had not elapsed to permit of a definite conclusion in regard to the therapeutic value of these agents. The smallest number of injections given to one patient was three and the largest number was twenty. The Wassermann reaction was temporarily reduced to negative with the blood serum of one patient and the cerebrospinal fluid of three. Three patients showed some mental and physical improvement; ten died, four during the course of treatment, and six several months after the treatments were discontinued. Ten are living and are markedly demented. From the results in this series of cases it would seem that the intraspinous method of treating paretic dementia has little or no therapeutic value. As a rule considerably more reaction was observed following the treatments with mercurialized serum than with the salvarsanized serum.

2. The Imperfect Sight of the Normal Eye.—William H. Bates states that after thirty years of study of the refraction of the eye under different conditions he is convinced that the normal eye, contrary to the general belief, has imperfect sight most of the time. Of 20,000 school children studied by him more than one-half had normal eyes with perfect sight. Not one of them had perfect sight in each eye every day. The sight of many of them might be good in the morning and imperfect in the afternoon, while many with imperfect sight in the morning would have perfect sight in the afternoon. The amount and degree of imperfect sight varied within wide limits from one-third of the normal to one-tenth or less. The duration of the imperfect sight of the normal eye was also variable. Under some conditions the imperfect sight in the classroom might continue only a few minutes or less; under other conditions the imperfect sight might last for days or weeks or longer. There is but one cause of functional imperfect sight and that is strain or effort to see. Strong light and noise are frequently causes of defective vision of the normal eye. Eye training with the aid of the Snellen card at ten feet or farther is very successful in correcting and in preventing the imperfect sight of the normal eye. With training the vision always improves and becomes better than that of the average normal eye. On the author's recommendation more than 20,000 school children have practised eye training daily with the aid of the Snellen test card. The results were of great practical importance. The vision was always improved when the teachers used the method properly. Because the sight was always improved myopia was prevented. Many children wearing glasses to benefit imperfect sight, pain and fatigue of the eyes, and headaches were relieved so completely that they were able to discard their glasses and obtained more perfect sight and a greater relief than the glasses had afforded. Artists, bookkeepers, lawyers, physicians, writers, mechanics, and others found their efficiency increase many times with the aid of eye training. The good results obtained justify the use of the method in all schools, the army, the navy, the merchant marine, on the railroads, and in short by every body who desires or needs continuous perfect sight.

Journal of the American Medical Association.

September 8, 1917.

1. The Nonspecific Character of Vaccine Therapy. Joseph L. Miller.
2. Arthritis and Foreign Protein; Chronic Rheumatism Relieved by Intravenous Injections. Henry Bascom Thomas.
3. The Role of Hepatic Tissues in the Acute Anaphylactic Shock. W. H. Manwaring and Harold E. Crowe.
4. Familial Head Nystagmus and Four Generations Associated with Ocular Nystagmus. N. S. Yawger.
5. Fatal Superficial Burns and the Suprarenals: Note on the Occurrence of Suprarenal Lesions in Uncomplicated Fatal Cases of Extensive Superficial Burns. H. G. Weiskotten.
6. The Cause and Prevention of Hernia. Marsh Pitzman.
7. Value of Blood Pressure Determinations in the Practice of Obstetrics. J. Morris Slemmons.
8. Diverticulitis of the Large Intestine. William J. Mayo.
9. A Simple Method of Agglutination of the Meningococci. Ruth Tunnicliff.
10. The Treatment of Deformities of the Spine Caused by Poliomyelitis: A Report of Eight Cases in Which Fusion Operations Were Performed. Russell A. Hibbs.
11. Report of an Outbreak of Diphtheritic Wound Infection Among Returned Soldiers. J. G. Fitzgerald and D. E. Robertson.
12. Conical Cornea, or Anterior Myopia. Edward Jackson.
13. A New Operative Method for the Relief of Advanced Cases of Keratoconus, with Report of Two Cases. Meyer Wiener.
14. Pulmonary Edema in Pneumonia, and Its Treatment. W. A. Bastedo.
15. Vertigo as a Symptom of Primary Disease of the Labyrinth. George E. Shambaugh.
16. Aural Vertigo Occurring in Suppurative Disease of the Middle Ear. Philip D. Kerrison.
17. Vertigo Due to Intracranial Disease. T. H. Welsenburg.
18. Value of Barnay Tests in the Diagnosis of Vertigo, from Whatever Cause. Isaac Jones.
19. Acute Ascending Toxic (or Degenerative) Myelitis: Report of a Case with Necropsy Findings. Julius R Globus.

1. The Nonspecific Character of Vaccine Therapy.—Joseph Miller reviews certain experimental work which goes to show that the results obtained from the use of vaccines have been due not to the specific character of the vaccines, but to the foreign protein. He describes his observations with reference to the application of foreign protein therapy to the acute, subacute, and chronic arthritides, and states that during the last year and a half they have treated 175 cases at the Cook County Hospital, including streptococcus and Neisserian types. They have used the typhoid vaccine almost exclusively as foreign protein, and in a few cases proteose and chicken serum; the latter were used in a sufficient number of cases to show that the results were apparently the same as with the typhoid vaccine. In a series of ninety-three cases of acute arthritides, in which quite complete records were kept, eighty were greatly benefited or relieved of their pain and soreness by one to four injections given daily. Six showed only moderate improvement, and seven were not benefited, although receiving repeated treatments. Thirty-three of the acute arthritides patients had been under active salicylate treatment before receiving the foreign proteins without benefit. All but four of these were promptly relieved, at least temporarily by the typhoid vaccine. Eighteen patients with subacute arthritis received the treatment. Fourteen of these were definitely benefited. Recurrences here were common, but in conjunction with the protein an effort was made to clear up any foci of infection. Twenty-eight patients with chronic arthritis received the treatment. In these definite temporary improvement was quite frequently observed. The results

of the whole series were sufficiently suggestive to warrant the continuance of the treatment in selected cases. The chief difficulty in this form was therapy in the violent reaction. It has been the writer's experience that when the injection was not followed by a chill, although there might be a marked leucocytosis, no definite beneficial results have been obtained.

7. Value of Blood Pressure Determinations in the Practice of Obstetrics.—J. Morris Slemmons. (See MEDICAL RECORD, June 9, 1917, p. 1016.)

8. Diverticulitis of the Large Intestine.—William J. Mayo. (See MEDICAL RECORD, June 16, 1917, p. 1063.)

11. Report of an Outbreak of Diphtheritic Wound Infection Among Returned Soldiers.—J. G. Fitzgerald and D. E. Robertson, who are in charge of the Military Hospital in Toronto, state that, having found several cases of wound infection which revealed the presence of *B. diphtheriæ*, they commenced a thorough investigation of all infected wounds, stumps or other, in returned men of the Canadian Expeditionary Force who were in the hospital or were out-patients of any of the military convalescent hospitals. Between May 20 and June 7, 1917, sixty-seven men with suppurating wounds, chiefly amputation wounds, were swabbed. Of this number, thirty-two were found to be suffering with *B. diphtheriæ* infection. The source of the infection could not be definitely traced, though it seemed that at least a part of it had come from overseas. However, the possibility of such an infection being spread by a carrier is suggested. Of the men with wounds infected with the *B. diphtheriæ*, six at least had what looked like diphtheritic membranes, and clinically they somewhat suggested diphtheria because of toxic symptoms, but there was not a single instance of infection of the mouth, nose, or throat. The wounds in which the infection was due to the *B. diphtheriæ* invariably began to clear up when antitoxin was administered. Such cases showed no improvement when treated with acid solution of hypochlorite.

14. Pulmonary Edema in Pneumonia and Its Treatment.—W. A. Bastedo, after discussing the etiology of pulmonary edema, states that our therapeutic aim must be to lessen the production and increase the removal of fluid. Both objects are to be accomplished by improvement of the pulmonary circulation and by attention to the contributory factors. In all cases, therefore, cardiac failure is to be treated. In addition, therapeutic consideration may be required for respiratory insufficiency, acidosis, deficient oxidation, and abdominal distention. The treatment of cardiac failure is by digitalis, not by nitroglycerin. Venesection is one of the most reliable procedures in the pulmonary edema of pneumonia, as it not only has the effect of lessening venous congestion, but by lessening the alkalinity of the blood will counteract a tendency to acidosis. To stimulate the respiratory insufficiency the writer finds that the three drugs of most value are atropine, caffeine, and strychnine. Further treatment for respiratory insufficiency may be oxygen inhalations, artificial respiration, the removal of mechanical impediments to breathing, and counterirritation. Lowering the head-end of the bed has been practised with benefit in edema of the lungs from pilocarpine and anesthetics. It is possible that some change of posture in pneumonia may favor the emptying of the lungs. The administration of sodium bicarbonate to counteract acidosis should not be given either by rectum or intravenously, but by the mouth. If giving it by the mouth is not feasible, it may be given intravenously in hypertonic 10 per cent. solution in amounts of 400 c.c. In the writer's experience this has been well borne.

The Lancet.

August 18, 1917.

1. The Immediate Effect of Cigarette Smoking on Healthy Men and on Cases of "Soldier's Heart." John Parkinson and Hilmar Koefod.
2. Horseshoe Kidney by Union of the Upper Poles, Diagnosed Prior to Operation. With Calculus in Lower Pole on Left Side. David Newman.
3. A Case of Claustraphobia. W. H. R. Rivers.
4. Perforations of the Stomach and Duodenum. James Taylor.
5. The Problem of Tuberculosis. H. Hyslop Thomson.

1. The Immediate Effect of Smoking on Healthy Men and on Cases of "Soldier's Heart".—John Parkinson and Hilmar Koefod say that in this war, as in wars of the past, many soldiers prove inefficient because they become unduly breathless on the exertion that military service entails. The same individuals often complain of precordial pain, palpitation, giddiness, and exhaustion. Some of these cases present the signs of valvular disease of the heart and are discharged from the army, yet in the majority of soldiers in whom these symptoms are found no abnormal physical signs are found. To find out whether excessive cigarette smoking is one of the potent causes of this condition they have made observations in which attention was directed to the effect of smoking on the (1) pulse, respiration, and blood pressure, and on (2) reaction to exertion. Thirty smokers were observed, of whom twenty were cases of soldier's heart, and ten were healthy soldiers. Each subject smoked either four or five cigarettes during a period of forty minutes. A demonstrable effect was recorded in seventeen of the twenty subjects; the three unaffected were non-inhalers. Nine of the ten controls, all inhalers, were influenced in the same fashion, though not to the same degree. The average pulse rate among the patients during the smoking was nine beats higher than before smoking; in the healthy controls it was six higher. Initial slowing of the heart was never observed, nor any irregularity referrable to smoking. The rate of inspiration in the patients was unaffected; in the controls it was slightly reduced. The average systolic blood pressure was raised by 5 to 10 mm. of mercury and the systolic by 5 mm., both in patients and controls. These effects appeared within five minutes; with the first cigarette they almost reached the maximum, and this was maintained throughout the smoking period. A simple exertion test was performed before smoking and repeated on its cessation. In the patients the pulse rate maintained a higher level throughout the test after smoking, and half of them were more breathless, both subjectively and objectively. In two patients precordial pain was induced by smoking, apart from the exertion. But in the controls the pulse rate curve during exertion was much the same after smoking as before, and breathlessness was induced in two only. These observations show that in health the smoking of a single cigarette by an habitual smoker usually raises the pulse rate and blood pressure perceptibly; and these effects are a little more pronounced in cases of "soldier's heart". Moreover, the smoking of a few cigarettes can render healthy men more breathless on exertion, and manifestly does so in a large proportion of these cases. Excessive cigarette smoking is not the essential cause in most cases of soldier's heart; but in the opinion of the writers it is an important contributory factor in the breathlessness and precordial pain of many of them.

4. Perforations of the Stomach and Duodenum.—James Taylor relates his experience with perforations of the stomach and duodenum in the central surgical military hospital of a large camp. The type of ulcer met with was usually the chronic variety with a great deal of induration around, and there was usually a definite history of gastric trouble over a long period. The condition in which one got these cases differed very little from that of civil practice. A collection of cases operated on by Mayo, Robson, Finney, Moynihan and Christy Wilson shows the following results: Total number, 486; recovered, 227; died, 259; percentage recoveries, 44.6. The results of the Edinburgh Surgeons, Caird, Stiles, Miles, and several others between 1910 and 1913 were as follows: Total number of cases, 80; total recoveries, 53; number of fatal cases, 27. Percentage death rate, 34.2. The writer had twenty cases, and of these five died, a death rate of 25 per cent. Rather more than one-half the cases were perforations of the stomach, and there were four deaths in the gastric series against one in the duodenal. The writer discusses the difference of opinion with reference to the advisibility of a primary gastroenterostomy. In his series primary gastroenterostomy was done in six of the cases. These were all recoveries, and they ran altogether a happier course than the ones in which it was not done. It might be said that the operation was done in the cases that were not very ill and in which the prognosis was more favorable in any case. In this series this was usually so, but not always. In cases of ulcer on the lesser curvature or anywhere away from the pylorus suture cannot give rise to additional trouble,

and as improvement after gastroenterostomy is only expected in one-third of the cases of simple ulceration it does not seem advisable in cases that have perforated to prolong the operation for such a doubtful chance of improvement. The case in this series operated on longest after perforation was over forty-eight hours, that with recovery twenty-seven hours. While the life of most of these patients was saved, and most of them would be quite useful citizens afterward, few of them would be of much use to the army, although many, in fact most of them, returned to duty. Itis difficult to make these men fit to take the army diet. Among cases operated on for simple gastric or duodenal ulcer, and though they were greatly improved and seemed perfectly well while in the auxiliary hospitals, they relapsed a short time after their return to duty and the ordinary fare. On the other hand, officers, who have had a certain choice of food, have made perfect recoveries after operation, and have been able to return to full duty in a comparatively short time.

British Medical Journal.

August 18, 1917.

1. The Part Played by British Medical Women in the War. Miss Mary H. Frances Ivens.
2. The Alleged Perils of Uric Acid. J. B. Berkhart.
3. Acetozone as a General Surgical Antiseptic. G. Gore-Gillon and R. T. Hewlett.
4. The Bacteriological Examination of the Blood in Cases of Irritable Heart. Grace Briscoe and Lyn Dimond.
5. Traumatic Rupture of the Spleen. J. Lionel Stretton.
6. A Case of "Spontaneous" Rupture of the Spleen: Splenectomy; Recovery. W. Rankin.
7. The Early Treatment of Compound Fracture of the Femur Caused by Gunshot Wound. R. C. Dun.

3. Acetozone as a General Surgical Antiseptic.—G. Gore-Gillon and R. T. Hewlett have used benzoyl-acetyl-peroxide extensively in military hospitals since May, 1915, and find that it fulfills the conditions requisite for an ideal antiseptic; namely, great potency against all microorganisms, no deleterious effect on phagocytosis, is innocuous to the tissues, and has a stimulating effect on connective tissue cells. Its action is very rapid; unhealed amputation stumps heal very rapidly if put in a bath of this solution for half an hour daily, and dressed afterward with dressings of sterile lint or gauze soaked in the 10-grain solution; septic wounds which have resisted all other treatment for four or five months have healed up in three weeks by this method. The solution must be made by adding 5 to 7 grains to 1 pint sterile water at 112° F., left to stand for two hours, and should not be filtered. Or a 10-grain to 1 pint solution can be used with dressings or Carrel-Dakin tubes, etc. In very septic cases, swarming with anaërobes, etc., a 20-grain to 60-grain solution may be used. It should be made fresh every seven days, and the bottle shaken before using. Used in a 20-grain solution it is an efficient sterilizer of the skin. Professor Hewlett has made tests of the germicidal power of acetozone. His results show that it is a potent disinfectant. In saline mixtures it kills the staphylococcus in strengths of 1/600 in thirty minutes and in 1/24,000 in twenty-four hours. The addition of serum and broth reduce its germicidal power, but it is still effective in strengths of 1 in 437 and 1 in 1,744, respectively, with an exposure of twenty-four hours. With sporing mycoides in saline mixture it kills in strengths of 1 to 437 in one hour and 1 in 1,744 in twenty-four hours. With a mixed culture of sporing anaërobic bacilli grown from a septic wound, 1 in 290 killed in twenty-four hours. One in 290 is equivalent to 30 grains to the pint; 1 in 437 is equivalent to 20 grains to the pint, approximately.

6. A Case of "Spontaneous" Rupture of the Spleen: Splenectomy: Recovery.—W. Rankin reports this case both on account of the rarity of rupture of the spleen as an abdominal catastrophe in this part of the world, and so that medical officers may be reminded of the necessity of examining the spleen in patients that have served for a period abroad. The patient was admitted to the hospital with symptoms of an acute abdominal condition requiring immediate operation. At operation a very large spleen was removed, the capsule of which was torn and the surface covered with a firm clot. The bleeding had been very profuse. The parasite of malaria was present in great numbers. No crescents were found, and while the case looked like a malignant one, the opinion expressed was that the patient had a double infection of the tertian type. This patient had served in India, where he had attacks of malaria, but was never in the hospital and no blood examination was made. Later, while at Salonika, he had an attack of malaria and was in the hospital for five days, and attended for three weeks, taking quinine. He then had an operation for appendicitis and was invalided home. After recovering he noticed that any heavy work or activity gave him a feeling of discomfort in the stomach and after much exercise he vomited on several occasions. He had been uncomfortable for five days before the rutpure occurred, but had suffered no special trauma. The spleen after removal was about eight times the size of the normal organ and must have been much larger before it ruptured. The patient made a very good recovery.

La Presse Médicale.

August 9, 1917.

Left and Right Diastolic Murmurs in Aortic Insufficiency.—Trémolières, Caussade and Toupet refer to the classic teaching that for aortic sounds one listens at the inner angle of the second right costal interspace. Here one may overhear the soft and double diastolic murmurs which indicate respectively the existence of Corrigan's disease and Hodgson's disease. A few specialists have insisted that these murmurs are best heard to the left of the sternum, along its border and toward the ensiform cartilage. The authors have of late examined many soldiers with cardiopathies and are inclined to assent in part to the minority report as above stated, *i.e.* they found that for at least the first half of the adult period of life the left side of the sternum is a more dependable region for auscultation. Of 60 cases studied but 10 gave the best results at the classical site, while in 26 to the left of the sternum was the preferred location. But in 20 cases the murmurs were best heard directly over the sternum and in 9 others over the ensiform cartilage. It is evident that the results of auscultation must be backed up with other evidences which are readily forthcoming. Again the site of the murmur may give way in importance in part to the pitch and direction of propagation. The entire group of peripheral signs of aortic insufficiency is available, and the *x*-ray in these cases may give all the certainty of an autopsy find and besides almost does away with the need of auscultation and percussion, showing as it does the exact amount and kind of deformity of the heart. The authors attempt to account for the auscultatory confusion in these cases of aortic insufficiency. Much depends upon the lesion whether this is a pure hypertrophy of the left ventricle or a hypertrophy associated with dilatation. Upon the screen two very different heart shadows appear, and it is readily experienced that in the advanced case with dilatation the aortic sounds are heard most distinctly in the old classical location, *i.e.* to the right of the sternum and high up. Conversely in the recent lesion of the aorta in which there is simple hypertrophy of the left ventricle the aortic sounds are heard most clearly to the left of the sternum. This appears to the authors to be a very simple solution of a very complex problem. The old classical teaching was not wrong but simply incomplete. The period of incipient disease of the aorta coincides with the first half of adult life (military age), while the diseases understood in the classical teaching were doubtless advanced stages of the same type and hence more manifest at a more advanced period of life.

Correspondenz-Blatt für Schweizer Aerzte.

August 4, 1917.

Problems of Metabolism and Immunity in Dermatology.—Bloch refers to the return of the conception of diathesis in dermatology. Today it means a particular type of reaction toward certain insults. Many dermatoses occur by preference in those with the socalled exudative diathesis, but the latter has many clinical expressions and we wish something more tangible. Hence we may contrast with the more or less empirical exudative diathesis and its cutaneous expressions the correlation

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, Held March 27, 1917.

DR. GEORGE W. KOSMAK IN THE CHAIR.

Instrument for Making Internal Pelvic Measurements through the Rectum.—Dr. T. H. CHERRY made this presentation. He stated that there were many reasons why rectal examination should be employed during pregnancy. Chief among these was the fact that the genital canal was not contaminated by the examining fingers of the accoucheur. The simplicity of the examination and the fact that no sterilization of the genitals was necessary were also factors in favor of this method of examination. Furthermore, the hands of the obstetrician could be saved a considerable amount of trauma by the fact that it was not necessary for him to scrub his hands. Any number of examinations could be made on the patient with impunity without fear of contamination. In cases that were seen for the first time after labor had set in, the writer had been impressed with the fact that it was not an easy matter to ascertain that the pelvis was contracted or normal by the use of the rectal examination alone. He had, therefore, attempted to devise an instrument by which the internal pelvic measurements could be estimated through the rectum. It had been the writer's observation that, when making a rectal examination, if the promontory of the sacrum was reached with difficulty or not palpated, the internal conjugate was in all probability of sufficient length for the passage of an average sized fetus. The instrument which he had devised consisted of a straight bar, 13 cm. in length, with a rounded tip and graduated in centimeters. An upright bar, 4½ cm. in length, met the first bar at right angles and was attached to it by a sliding device that permitted it to be arrested at any point on the first bar and it could there be made fast by a set screw. The first long bar was inserted into the rectum alongside the index finger and placed on the promontory of the sacrum. The sliding bar was then moved so the tip could be easily placed under the symphysis pubis and when this was accomplished the screw was set and the distance could be read on the scale. This distance was the diagonal conjugate and was readily ascertained by measuring the distance between the tips of the upright and horizontal bars with an ordinary pelvimeter. From the diagonal conjugate it was easy to estimate the true conjugate by subtracting 1½ or 2 cm. To facilitate obtaining the diagonal conjugate there had already been measured on the upper surface of the horizontal bar the hypotenuse of each triangle at each centimeter mark, so that all that was necessary after the two fixed points of the promontory and symphysis had been obtained was to read the result upon the scale.

Hemorrhagic Abdominal Sinus.—Dr. JOHN W. WARREN reported this case. He stated that the patient, a woman twenty years of age, had been married sixteen months, during which time no pregnancies had occurred. Menstruation had been normal and the patient had always been perfectly normal until six months previously, when she developed severe abdominal pain, with fever, chills and vomiting. A left salpingo-oorphorectomy, a right partial salpingectomy, and some form of ventral suspension was performed. Both tubes contained pus. About 3 cm. of the right tube was left in order to give the patient a chance for subsequent pregnancy. The wound was drained by rubber tubes and packing for about six weeks, and more effective drainage was finally obtained by colotomy. During the patient's stay in the hospital blood was observed on the dressings at the time of menstruation. The patient was discharged with a small sinus on the right side about 4 cm. from the midline. At each menstruation following there was a moderate discharge of blood from this sinus. The uterus was found very free and movable in view of the extensive inflammatory process of recent date. The left fornix was free except for some resistance, and on the right side the ovary could be palpated. A small quantity of argyrol injected into the sinus soon appeared at the external os. A sound in the uterus and a probe in the sinus could be approximated, but no metallic click was obtained. Diagnosis was made of sinus leading into the uterine cavity. An operation was performed which consisted in dissecting out the sinus tract. It was found that the sinus tract was largely composed of the stump of the tube, and communicated directly with the cavity of the uterus. The remains of the tube, with its insertion into the corpus, was excised, and the sinus closed in a few days. A search of the literature failed to show a duplicate case. It was manifestly fair and right to leave a portion of healthy tube when possible and thereby to assure the patient that she had at least a chance of becoming pregnant, but where one unfortunately came upon acutely infected tubes, distended with pus, if they were to be removed at all, it would seem wiser to completely excise them together with a wedge from the horn of the uterus.

Dr. MEYER RABINOWITZ said that if the discharge from the abdominal sinus was bloody and its occurrence was simultaneous with the menstrual period, then one ought to conclude that there was a reverse flow from the uterus into this sinus, which at operation proved to be the proximal portion of the Fallopian tube. An occurrence of this nature was contrary to physiological laws and this case ought rather to be regarded as one of those anomalous conditions in which a bloody transudation did take place in the Fallopian tube during menstruation.

Dr. MICHELE CATURANI stated that he had had two cases in which bleeding through a sinus had occurred at the time of menstruation. He thought the bleeding might be due to general pelvic congestion occurring at this particular time.

Dr. WARNER, in closing, said that what he regarded as of prime importance in this case was that though one preferred to leave a piece of the tube where it was safe to do so, it had been a mistake to do so in the present instance. Where the blood came from he could not say.

Abdominal Pregnancy: Removal of the Sac: One Year after Spurious Labor.—Dr. MICHELE CATURANI reported this case. The patient was thirty-three years old. Menstruation began at the age of thirteen years and had been regular in type. She had been married thirteen years and her last child was eight years old. She had her last menstrual period Sept. 9, 1913. She never had any irregular bleeding, and never suffered any considerable pain. Her pregnancy appeared to be a normal one until July 2, 1914, when she was seized with abdominal pain and labor was supposed to have set in. The pains lasted four days and were accompanied by severe vomiting and fainting spells. With the appearance of genital bleeding the pains subsided. The menstrual periods returned with regularity and nothing worried the patient except the persistent and gradually diminishing enlargement of the abdomen. In July, 1915, she missed the menstrual period and consulted Dr. Caturani, who found a large cystic, tense mass on the left side of the pelvis and abdomen, well above the umbilicus, and closely connected with the uterus, but entirely distinct from it. The uterus showed early signs of pregnancy. He did not pay much attention to the previous history and did not recognize the real nature of the condition, and both before and during the operation he was more inclined to believe that he was dealing with a dermoid cyst. The operation performed on July 12, 1915, was a simple one. The cystic sac and left adnexa were removed. Upon opening the sac the true condition was revealed. A pint or more of dense, dark-colored fluid came out, and in the cavity appeared the remnants of a completely macerated fetus. The uterine pregnancy present at this time went undisturbed to term.

Pseudohermaphroditism: Testicle in Woman.—Dr. MICHELE CATURANI reported this case. This rather rare case was in an Italian, twenty-six years old, who had never menstruated. Since she was very young she had noticed the intermittent appearance of a swelling in the left inguinal region. At the time she presented herself to him she had been married six years and had never encountered any difficulties in sexual relations. Local examination showed the external genitals evidently feminine, but of pubescent type. The vagina ended in a cul-de-sac, in the center of which

the examining finger detected a slight projection (cervix) and a body not much greater in size than the cervix. There was no trace of ovaries on the left side. Deep palpation on the right side brought out a body the size of a large almond, which seemed to be situated high up in the pelvis, almost in the iliac fossa. In the left inguinal region the canal admitted the finger and under the slightest strain the patient forced out a mass which distinctly contained a solid round body. The general examination showed the woman to be feminine in type. The mental development was about normal. She displayed considerable astuteness. She had been continuously deceiving her husband and her sister simulating the normal occurrence of the menstrual periods and giving credit to the occurrence of several miscarriages. The patient reported the sexual impulse absent, though she passively submitted to coitus. Feminine pudor was apparently absent, judging from the way in which she submitted to photography. Operation was performed on June 24, 1914, with the purpose of repairing a hernia on the left side, reconstructing the weak inguinal canal, and ascertaining the conditions of the pelvic structures. Outside of the rudimentary body of the uterus and two folds stretching out from it, there was no trace of uterine appendages in the pelvis. High up in the pelvis, toward the sacroiliac synchrondrosis there was an ovoid body similar to the one removed with the hernial sac of the left side and which proved to be a testicle. The area of testicular tissue was 3.5 x 2 x 1.5 cm. It was enclosed in a firm, thick tunica albuginea. On section the tissue had the usual appearance of a gland testis with an unusual brownish tinge. The tissue was composed of irregular lobules of characteristic testicular tubules lined by three or four rows of well nourished cells, sometimes enclosing a lumen. There were no signs of spermatogenesis. No structures of rete or epidydymis were found.

Dr. THOMPSON T. SWEENEY said he would like to hear some embryologist explain the feminine development in Dr. Caturani's second case. The woman had only a bud of a uterus and the ovaries were absent. Under these conditions one would have expected her to tend toward the masculine type of body. Dr. Sweeney cited an instance of an individual coming under his observation at the Post-Graduate. They thought they were dealing with a simple case of hypospadias, but this person had a pouch for a vagina, an inch or an inch and a quarter in depth, and undescended testicles. She had a rudimentary penis and they advised operation on this, since she was engaged to be married, and to have told her that she was a male would have necessitated the reorganization of her entire life.

Dr. S. WIENER said that he had operated on a case in some respects more remarkable than either of the two cited. This patient, eighteen years of age, had presented herself to him because she had never menstruated and there was a swelling in both inguinal regions. The breasts were of well developed feminine type. The development of the external genitals was about that of a twelve-year-old girl. The vagina was about two inches in depth and presented a normal appearance, except for the absence of rugæ. A small solid body, like a rudimentary uterus, could be palpated in the vault of the vagina. In each inguinal region there was a round ovoid body. This, Dr. Wiener said, he took to be a double inguinal hernia of the ovary. He performed a double hernioplasty. The ovoid bodies looked so peculiar that he removed the right one for examination, the left one being replaced in the abdominal cavity. The specimen removed was examined by Dr. F. S. Mandlebaum, who pronounced it a testicle. The whole appearance of this individual was feminine; he did not feel justified in ruining her life by pronouncing her a male. He compromised by telling the mother that she might marry, but she would never have children.

Ovarian Pregnancy. — Dr. THOMPSON SWEENEY reported this case. The patient was twenty-six years of age and on Aug. 14, 1916, gave him a history of having been married more than a year, and during that time had taken no precautions against pregnancy. Her periods had been regular, the last appearing July 3, with moderate flow and no pain and lasting four days. On the morning of July 19, she was seized with sharp severe pains in the rectum and right iliac region, spreading to the whole lower abdomen. There was no nausea or faintness. On the morning of July 21 she again had pain which was more severe than before and lasting several hours, and there was some nausea and abdominal tenderness. On July 26 she awoke with much nausea and cramplike pains in the lower abdomen. She improved until Aug. 3, when she was confined to her bed for five days. Aug. 14 she stated that she had had no period since July 3. The uterus was forward and slightly soft. A tumor the size of a lemon was found just to the right of the right uterosacral ligament. Uterine pregnancy was ruled out and the diagnosis of extrauterine pregnancy made. Operation was performed on Aug. 16 and a slight congestion of the uterus was noted. There was some free blood in the peritoneal cavity. A large prolapsed ovary was found on the floor of the pelvis beside the right uterosacral ligament. There were no adhesions. The tube seemed normal and was not attached to the ovary. The blood came from a slight rupture of ovarian tissue, but the fetal sac was uninjured. The ovary was removed. The patient was discharged in good condition Aug. 30.

Dr. CATURANI said he had seen Dr. Sweeney's specimen and considered it one of the most interesting he had seen published. When one had pregnancy of the ovary the follicle could make a good substratum for the growth of the ovum. With the ovum imbedded in the follicle, the successive developing wall of lutein cells would take the place of decidua.

Dr. RABINOWITZ said he had looked at the photographs by Dr. Sweeney and to venture a diagnosis of ovarian pregnancy from a mere picture was rather difficult. The photograph and some facts in the report might as well correspond to a tubal abortion, in which the tube might appear normal and the ovary, as was stated, showed a mere rupture at one point. The photograph might, therefore, be that of a blood clot containing an ovum. The crucial diagnostic points in ovarian pregnancy were: (1) The maturation of an ovum in a Graafian follicle without the presence of decidua; (2) the ovum must be surrounded by a layer of corpus luteum cells. In this report these facts were lacking and not until such pathological proof was submitted could the diagnosis of ovarian pregnancy be made with certainty.

Dr. CATURANI said he might take exception to what Dr. Rabinowitz wanted him to say with reference to the decidua in ovarian pregnancy. One might have in the ovary as well as in the tube what might be called an attempt at the formation of decidua. This would possibly be furnished at the expense of inclosures of glandular tissue in the ovary. In all probability the function of decidua would possibly fall on the lutein cells, with the implantation of the ovum directly into the follicle. It had been well demonstrated that the ovary could take care of the ovum as well as the tube, but neither could do so as well as the uterus.

Chorioepithelioma Following a Hydatid Mole.—Dr. C. F. Jellinghaus reported this case and presented a specimen which was removed from a primipara, twenty-three years of age, who gave a history of a four months' pregnancy. A diagnosis of inevitable abortion had been made. The examination showed the uterus the size of a six months' pregnancy. The cervix admitted two fingers and the patient was having labor pains. Since the mole could be readily felt, the patient was allowed to deliver it; then she was curetted. After this she bled profusely. The hemoglobin at this time was 35 per cent. She remained in the hospital three weeks and there was no bleeding after the second week. She made favorable progress for three weeks when she was suddenly seized with a fainting spell and was found to be in a state of shock. She looked as though she had a ruptured ectopic pregnancy. She was in too poor a condition to undergo an operation at this time. The history of the patient elicited from the husband ruled out the possibility of an ectopic gestation. It seemed possible that a chorioepithelioma had ruptured into the abdomen. The hemoglobin at this time was 27 per cent. The examination showed a cystic mass on either side and chorioepithelioma was strongly suspected. There was no bleeding from the vagina at any time later than two weeks after the expulsion of the mole. Laparotomy was performed. For a few hours before the operation there was a little blood in the urine, and

on coughing the patient brought up a little blood. They felt that this was practically an inoperable case. She was not operated on earlier because of her extremely poor condition. A double ovarian cyst was removed and the patient died three days after operation. About thirty microscopical sections had been made and they all showed a great deal of necrosis and a few typical chorioepitheliomata. One of the cysts was a corpus luteum cyst. This brought up the question whether the pressure of the cyst on the corpus lutem was the original cause of the hydatid mole. Dr. Jellinghaus said there was one thing he wished to insist upon and that was that every woman who had an hydatid mole should be curetted again three weeks after the discharge of the mole. By that time there should be complete regeneration of the endometrium, at any rate no cystic villi should be present. If three weeks after the passing of the hydatid mole a curettage revealed further cystic villi, even if not a typical chorioepithelioma, he thought an hysterectomy was indicated.

Adenomyoma of the Ovary.—Dr. M. RABINOWITZ read this paper which he illustrated with lantern slides. He stated that in his studies of the pathogenesis of adenomyosalpingitis he had arrived at the conclusion that the glanular proliferation which took place in the Fallopian tubes was in the majority of cases due to inflammatory causes. He had now the opportunity of reporting a similar morphological occurence in the ovary, which was in his opinion also the result of infection. This patient, fifty-one years of age, gave a history of having begun to menstruate at the age of seventeen, menstruation being irregular, scanty in amount, and painless. One year ago her menses ceased altogether. She had been married twenty-three years, but had borne no children, though she had miscarried once in the third month. After this she had been curetted and as a result had a pelvic inflammation, which confined her to her bed for three weeks. About five months ago she had an attack of acute abdominal cramps, since which time her abdomen had been growing progressively larger. Palpation revealed the presence of a large, smooth, uniform cystic tumor, which occupied the entire abdomen; its upper limit seemed to be above the ensiform cartilage. Vaginal examination showed the cervix small, the uterine body normal in size and irregular in outline, on account of two small fibroids. The right fornix was occupied by a doughy tumor the size of a lemon, which was fixed in position, being adherent to the pelvic floor and to the side of the uterus. The left fornix was filled with part of the base of the cystic tumor, which filled the abdomen. An abdominal panhysterectomy was performed. The tumor proved to be an enormous cyst of the left ovary, extending upward to the undersurface of the diaphragm. It contained fifteen pints of dark, serosanguinous fluid. The right ovary was converted into a semi-solid tumor, measuring 4½ x 3¼ x 2 in., and intimately connected with the pelvic floor and the right lateral wall of the uterus. The left fallopian tube was elongated and thickened to the diameter of the little finger; it was stretched across to the antero-inferior surface of the cyst wall, and its fimbricated end was occluded and terminated in a cystic, club-shaped dilatation. The right Fallopian tube was also elongated, thickened, tortuous, bent upon itself, and adherent to the posterior surface of the ovary.

The pathological report showed that the large cyst was a cystoma serosum simplex partum papillare. The papillary growths were situated on the inner surface of the inferior wall. Running across the interior of the cyst cavity in its lower portion was a smooth, cordlike structure, a cross section of which presented the characteristic formations of adenomyoma. The fibroids in the uterus also showed adenomyomatous changes. The gland lumina were lined with a low or columnar epithelium; no cilia were to be noted anywhere. In some portions of the section a marked round celled infiltration was present immediately beneath the epithelial lining. The right ovary, semi-solid in consistency, presented an adenomatous proliferation. The areas in the ovary containing these glandular formations had a muscular stroma, which stood out in marked contrast to the connective tissue stroma of the ovary. The lumina of these glands contained old blood and detritus. The ovarian stroma proper showed everywhere evidences of a chronic cophritis. Both fallopian tubes presented the classical morphological changes of chronic suppurative salpingitis.

Analyzing the clinical data in this case the author concluded that they pointed to a genital system below par and that there were strong probabilities of a gonorrheal infection in her early married life. The pathological findings were those characteristic of a slow and insidious destructive process, so typical of the Neisserian organism. The multiplicity of pathological lesions produced by apparently the same cause gave rise to several queries, among which were the following: Why had the fallopian tubes failed to show adenomyatous changes as they did in other long standing chronic types of infection? Why had the right ovary responded differently from the left, undergoing a rather unique morphological change? From whence had the muscle tissue in the right ovary arisen in order to form an adenomyomatous structure? For this two theories might be advanced. One was that of von Recklinghausen, who ascribed all adenomatous changes to congenital displacements and in the case of the ovary it might arise from rests in the Wolffian ducts. The second theory, and the one to which the author was more inclined, was that of Chiary, namely, the inflammatory cause. In this case he thought they had sufficient data to justify this assumption. The right ovary was intimately adherent to the uterine wall; these adhesions were the result of previous inflammatory processes, and some of the uterine muscle fibers might have been carried along, forming "ausseltulpungen," which had been repeatedly observed in the Fallopian tubes, or the muscle tissue might have arisen from the hilus of the ovary, where the peritoneal reflection took place. Dr. Rabinowitz said he was cognizant of the fact that the above explanations did not answer all the questions satisfactorily, yet they were the only ones which he could adduce to bridge over the gaps in the morphopathology in the case presented. As to the rarity of the lesion in the right ovary he stated that he had failed to find a similar record. Phannenstiel stated that fibroadenomatous formations in the walls of ovarian cysts or in the solid portions of multilocular cysts were met with occasionally, but solid adenomas in ovaries which showed no cavity formations either macroscopically or microscopically were a very rare pathological occurrence. Other authorities were quoted showing the rarity of ovarian fibroadenomyomas.

Dr. S. WIENER said there did not seem to be any doubt that the pictures thrown on the screen and the sections under the microscope showed typical adenomyoma, but he wished to take exception to the terminology. Dr. Rabinowitz had called the tumor an adenomyoma of the ovary, and he stated that no such growth had previously been described. It seemed more probable that the adenomyoma had sprung from the ovarian ligament. The ovarian ligament contained smooth muscle tissue just as the round, broad, and uterosacral ligaments did. His idea was that the tumor had grown into the substance of the ovary, mechanically displacing normal ovarian stroma, with which the specimen showed it to be in contiguity. Should this be called an adenomyoma of the ovary?

Stated Meeting, Held May 22, 1917.

DR. GEORGE W. KOSMAK IN THE CHAIR.

Prenatal Care.—Dr. GEORGE W. KOSMAK said that as chairman of the section on obstetrics and gynecology he took pleasure in presenting the program for the evening's meeting. The subject was one that demanded the attention of the physician, the pathologist, the research worker, and that large class of the laity interested in welfare work. It was only recently that an effort had been made to influence the well-being of the child by attention directed to the mother during pregnancy. In the past we had been interested rather in gross developmental errors as shown by fetal monstrosities, and even this study had been marked by speculation rather than careful observation. There was much more to be studied in this prenatal field than gross malformations, and errors in the maternal organism might result in effects on the fetus that did not become evident in this way and might not manifest

themselves until later in life. It was interesting to remember that during the period of intrauterine life, which took up scarcely more than 1 per cent. of man's subsequent Biblical limitation of three-score years and ten, there were crowded a series of morphological changes and developments that were much in excess of anything that occurred subsequent to birth. This was well shown in the paper recently read before this section by Dr. Schumann of Philadelphia, in which he also called attention to the fact that within the short space of forty weeks the microscopical ovum united to the equally microscopical spermatozoon grew to an organism weighing eight or more pounds, with all its viscera and systems of viscera completely organized to maintain life, and further that in this period were laid down the potentialities for the indefinite continuation of the species. It must be evident to every one, therefore, that the relative importance of antenatal life should be regarded as of the greatest moment to the welfare of the race. There were numerous examples which showed the close interdependence of antenatal pathology to postnatal conditions, and it was necessary that more careful attention be accorded to this period than hitherto had been extended to it. The study of antenatal pathology and the diagnosis of antenatal disease was practically a virgin field owing to the fact that observations on pregnant women conducted in detailed fashion had not been a routine procedure. As far as antenatal therapeutics were concerned we were also treading on virgin ground. The importance of the subject of antenatal care was therefore evident, and it was only by calling attention to this need that we could hope to arouse and educate the profession as well as the public.

The Development of Prenatal Care in the Borough of Manhattan.—Dr. RALPH W. LOBENSTINE presented this contribution. He stated that comparatively few women realized either the need or the value to themselves and their offspring of careful oversight from week to week and month to month throughout the period of gestation. This was true not only of the ignorant, but largely so of the more educated and refined. Comparing the death rate due to childbirth in the United States with foreign countries, it had been shown that out of sixteen leading countries the United States stood fourteenth, our death rate in this field being surpassed only by Switzerland and Spain, while Sweden with a total death rate of six to 100,000 stood at the top. The effect upon the child of prenatal neglect was startling. In 1916 in New York City, 12,818 infants died under one year of age; of this number 6219, or 48.5 per cent., died under two months, largely of prenatal causes, including injuries at birth. A study of statistics bearing on the infant death rate shows that 50 per cent. of the deaths during the first year occurred from causes operative before birth. Much of this loss was directly due to the physical strain of too frequent childbearing and too short period of rest after labor. The strain not only affected the mother herself by lowering her vitality, but vitiated to a marked degree the normal development of the offspring. Impressed with the many difficulties surrounding the parturient, with the needless illness and the unnecessary loss of both maternal and infant life, Commissioner Emerson in the winter of 1915 appointed a small committee consisting of Dr. Edgar, Dr. Van Ingen and the speaker to make an analysis of obstetrical conditions in this borough. This small original committee had recently joined hands with Mr. J. H. Lawson of the New York Milk Committee and certain members of New York City Women's Clubs. What they were desirous of accomplishing was: (1) The extension of the efforts in the direction of prenatal work that had already been initiated. (2) The coordination of all the agencies participating in prenatal and child welfare work. (3) The improvement of obstetrical attention at the time of labor. The general situation seemed to offer some perplexing problems. In some sections of the borough there were no obstetrical facilities; in others institutions were too close together; some of these were good, some poor. Many agencies were found to be doing some form of prenatal work, but there was no real coordination. They had therefore begun to look at the needs of the obstetrical community from the standpoint not of the individual clinic nor of a particular society, but from the standpoint of communal interest. They had endeavored to work and plan under the guidance of the Department of Health and Public Charities. A study of the in-service and out-service of the various hospitals made it seem advisable that the city should be redistricted according to hospital facilities if widespread, and more thorough prenatal supervision was to be obtained. There was also no standard as to the quality of the prenatal work done. Dr. Lobenstine presented a map that was marked out in zones, these zones having been mapped so as to include in their boundaries a certain number of so-called health census areas. They had been arranged so as to cause no injury to any hospital service, although they would entail a certain amount of redistribution in each zone. An analysis of the agencies doing prenatal work or those that represented potential prenatal stations was made. There were 127 institutions visited that were doing work of this kind, and they were hoping to win the co-operation of these and to institute a general bureau in each district. In a measure the proper co-ordination of these various agencies was the crux of the whole situation. It was their intention to develop as many prenatal substations as seemed feasible, that was, stations where they would merely examine patients and give advice. They should like to have these stations not more than one and one-half miles apart and they hoped to have at these stations a physician in charge at least twice a week and a nurse on call daily. It was for this purpose that adequate funds would be needed. It should not be forgotten that hospitals reached only 30 per cent. of expectant mothers and that the other 70 per cent were cared for by private physicians and midwives. With such a broad plan in operation they hoped to obtain data sufficient to warrant a further study of such questions as: (1) A uniform birth certificate throughout the Registration Area of the United States. (2) An intensive study into the prenatal and natal causes of still-births. (3) It was high time for a national agitation for higher obstetrical standards and for a gradual elimination of the midwife, although as yet the latter seemed necessary. (4) In a city like New York there was a pressing need for more free maternity beds as well as of improved facilities for respectable obstetric patients in moderate circumstances. These were by no means all the difficulties awaiting solution, but they were among the more important that required investigation. "The State must realize that if it wanted citizens and healthy citizens, it must make it possible for men and women to have families by living a full life themselves and giving a full life to their children. At the present time this was not possible from the top to the bottom of the working class, unless the economic position of the working class family be improved." What was needed here was municipal not philanthropic action. Dr. Lobenstine also submitted a card containing advice for expectant mothers and a plan of the prenatal requirements of the Department of Charities that provided for the proper oversight of each patient.

Prenatal Care, An Opportunity for the Medical Profession.—Dr. A. B. EMMONS, 2d, of Boston read this paper by invitation. He exhibited charts showing the high infant mortality in the United States, the still-birth rate, and the maternal mortality, and stated that the statistics from the United States Children's Bureau as given by Dr. Meigs showed that more women died from childbirth than from any disease except tuberculosis. This mortality rate had been steadily rising; New York City alone among the large cities showed a decline. The mortality of the first month of life came to nearly 40 per cent. of the total to which it was reasonable to add the still-birth rate of about equal amount, though not included in the mortality tables. Reduced infant vitality must also be included in this picture of waste. This was estimated to be equal to eight times the number of deaths. Maternal morbidity would be admitted more readily to be a far larger proportion as compared with maternal mortality. Such was the sum of loss occurring during the time when the obstetricians of the country were responsible for their patients. Conservative estimates put the possible reduction under our present knowledge as one-half. It was the writer's opinion that a profession united in an effort to meet this problem would prevent much more. Lately the attention of thoughtful obstetricians had been turned to preventive measures, such as hygiene of pregnancy,

including the care of the teeth, diet and the whole field of metabolism. A fertile field for research lay open in the influence of pregnancy on the emotions and their relation to toxic conditions. The most important and instructive study of concrete conditions was the report of the Children's Bureau of conditions in Johnstown, Pa. Here it was brought out that family income below a certain scale immediately raised infant mortality. With this went the employment of pregnant women, the poor environment and maternal ignorance. The writer cited authorities showing the inadequate obstetrical care that women of little, and even those of moderate, means received. In Boston, intensive prenatal work was first done by Mrs. W. L. Putnam with a single nurse who visited cases registered for delivery at two maternity hospitals. The success of this experiment was so striking that it resulted in the Boston Lying-in Hospital organizing their own clinic and the Instructive District Nursing Association undertaking similar work throughout the City. The next step was that of establishing special prenatal clinics, one in connection with the Maverick Dispensary, a second in connection with the Peter Bent Brigham Hospital, and a third in connection with the Cambridge Neighborhood House. The obstetric care was given these patients in their homes by graduate physicians with obstetric training who worked under and were supervised by an obstetrician, and who received ten dollars per case. Organized prenatal and obstetric care was thus given independently of medical students, and was therefore available away from a medical teaching center. Davis in the *Boston Medical and Surgical Journal*, January 4, 1917, under the title "The Beneficial Results of Prenatal Work," gave figures and a chart of five wards in Boston. These were based on cases given prenatal care without baby hygiene afterwards. They were compared with other births in the same wards and showed that the saving of babies' lives up to the first year of life varied from 25 to 87 per cent. in the different wards. The method was simple. The patient came to the clinic, preferably when she suspected pregnancy. She was examined and measured and individual advice given before the nurse, who then visited her in her home every ten days. The patient revisited the clinic at intervals. After delivery she received postnatal nursing by these same nurses. The next step had just been started at one clinic, that of having a nurse present at the confinement. The Cambridge Nurse Association had just succeeded in doing this at a cost of two dollars a case, with strict rule that the nurse remain on the case only while the doctor was there. In conclusion, Dr. Emmons said that one of the most potent factors in the loss of life from child-bearing was lack of concentrated and constructive effort on the part of the medical profession to give prenatal and obstetrical care to mothers. The duty of correcting present conditions lay with the obstetrician; to him was open the opportunity to lead.

Maternal Mortality from Childbirth in the United States and Its Relation to Prenatal Care.—Dr. GRACE L. MEIGS, Division of Hygiene, Children's Bureau, United States Department of Labor, Washington, D. C., presented this contribution. She said that the questions which they had been trying to answer were these: What was the death rate from childbirth (including under this term all the complications of pregnancy and labor) in the United States, and how did it compare with that of important foreign countries; was this death rate falling? Did particular factors as nationality, race, rural or urban conditions affect this death rate? There were many difficulties encountered in such a study of vital statistics which made it necessary that statements based on the figures must be accepted with reservation. It was evident that we could accept all figures of the number of deaths and the death rates from childbirth and particularly from puerperal septicemia as being substantially truthful as far as they went, but as giving a gross underestimate of actual conditions. On the other hand, statements comparing the death rates for different years and for different countries were open to question and should be accepted with reserve, as representing the only information now available. The available figures gave no evidence of a decrease in the death rate from childbirth in the part of the United States for which they had records, during the twenty-three years from 1890 to 1913, or during the 13 years from 1900 to 1913, periods which marked an enormous decline in the death rates of certain preventable diseases such as typhoid, diphtheria and tuberculosis, and that of fifteen important countries studied only two had death rates from childbirth higher than the Registration Area of the United States, while one country, Sweden, had a death rate less than half that of this area of the United States. It was a significant fact that childbirth even now in this country was a greater hazard to women of childbearing age than any disease except tuberculosis. The death rate from childbirth was not much less than that of typhoid fever. The figures demonstrated that the whole question of the better protection of women during pregnancy and at confinement was a question of public health protection of the greatest possible importance. It was surely a question which had never received its proper measure of interest from the public or from the medical profession in general. These figures could not be cited as an arraignment of the physicians of this country, though it was undoubtedly true that many women lost their lives because of the lack of training of physicians. The fundamental reason why women in the United States failed to receive their just share of benefit from the discoveries of Holmes, of Semmelweis, of Pasteur, of Lister, and of the great modern obstetricians, was because childbirth was still shrouded by a mist of prejudice, ignorance, and fatalism. Women did not know what sort of protection during pregnancy and at childbirth they needed and had a right to demand. Most women did not seek care as a matter of course early in pregnancy; most families thought an expenditure of money for this purpose unnecessary. In a democratic country all work for public health protection must depend on the support given it by popular interest and understanding. This like all problems of public health protection was fundamentally one of education. The whole subject of childbirth must be removed from the realm of the mysterious and unknown into its true place as a subject about which women had a right to know. It was a question of making our simple knowledge on this question *common knowledge*, of bringing it about that the grandmother or neighbor should advise the young expectant mother to have her urine examined just as automatically as she now advised herb teas of unholy composition. The fundamental problem of providing means for the proper prenatal and obstetrical care of all the mothers of a community was, in the speaker's opinion, the same everywhere. The demand for better care on the part of those interested—women and their husbands—was essential. Beyond this the question of the methods by which this care could be provided was an extremely complicated one compared with which the protection of the health of babies was very simple. Every type of community would have its special problem to solve. Dr. Meigs stated that the Children's Bureau had been making studies during the past year of the kind of prenatal and obstetrical care which women had in different types of communities, in large cities, rural districts, and in various parts of the country. This study had been carried on in Baltimore during the past year and when it was completed would furnish information relating to about 12,000 women who bore children in that city during the year 1915. Letters had come to them from isolated rural districts showing extreme hardship and neglect at the time of child-birth but manifestly could not apply to rural districts in all parts of the country. Investigations in certain other rural districts showed that most mothers had medical care at the time of confinement, but adequate prenatal care was uncommon. Only three out of 50 women had a urinalysis; in only one case had pelvic measurements been made. Yet in a number of these cases pregnancy was not normal; four of the 50 babies were delivered with forceps. None of the 50 mothers had any trained nursing care before or after confinement, yet this particular investigation covered a prosperous and progressive community. Another rural district in the same State showed very different conditions. Physicians were rarely called in confinement cases which were attended usually by farmer's wives, who had acquired more or less experience. They were, however, all without training and charged no fee for their services. Their patients sometimes made them a present of

two or three dollars for their help. No one could make a living by doing this work exclusively in that region. Dr. Meigs also described conditions in a Southern State where in an inaccessible township few women had the care of a physician during confinement. Many of these women had no medical attention not only because of inaccessibility of a physician but because they were unable to pay a doctor's fee. The colored midwives charged two or three dollars for care at confinement, and two dollars a week for nursing services. It would always take a greater push of conviction and public opinion to secure proper prenatal care in the country than in the city. Efforts to secure such care in a rural district had not been made except to a very limited extent in this country. A health nursing service supported by the county would seem to be the logical first step in providing proper prenatal and obstetrical care in rural districts. Through such a service instruction in prenatal care could be given, urinalyses could be made, and cases with symptoms of complications would be found and persuaded to seek medical advice. All mothers could be urged to see a physician at least once as early as possible in pregnancy. A county maternity hospital, even though only a cottage hospital, or beds for maternity cases in a general hospital, would form a part of the plan. Provision for skilled attendance for all women with access to especially skilled assistance for complicated cases would be of course the all important part of the plan. How this could be worked out in inaccessible districts would be the hardest part of the development of such a county unit.

Dr. J. Clifton Edgar said they were not entirely without prenatal clinics in New York. Three hospital services with which he was connected maintained prenatal clinics and were carrying on prenatal work. These were the Obstetrical Service of Bellevue Hospital, the School for Midwives, and the Manhattan Maternity. Although the followup system was as yet imperfect it was gradually being improved. He presented a statistical review of 519 still births that had occurred at the Manhattan Maternity from April 1, 1905, to October 1, 1916. A detailed analysis of the data presented led him to deplore the absence of the routine employment of the Wassermann test in pregnant women. The great lesson which this study taught was the need of antenatal observations and care of the patients. It was difficult to persuade the patients of the upper classes that such care was imperative; it was often impossible to convince the tenement house patient. In this series there were 24 eclampsias and 19 toxemias. These were mostly preventable. In addition there were a number of protracted labors, precipitate labors, and dystocia cases that might have been avoided. All of the syphilitic cases that might have been averted by early treatment of the mother. It was by no means unlikely that at least 100 babies might have been saved, and even this unseemly high mortality might be too small a computation. One of the most hopeless problems confronting them was the elimination of prematurity as a condition resulting in still-birth. Of their 69 cases of prematurity, 23, or one-third, had prematurity alone as the condition of still birth. The tenement house woman was especially prone to abortion and premature labor. This could not be charged up to physical or psychical shock. External injury or shock played little part as a causative factor. Nor could the cause be laid to overwork or physical strain such as the tenement house woman was greatly exposed to. The real underlying cause of prematurity among tenement house women, and this held true to a lesser extent only among the upper classes as well, was the too early getting about after confinement. The prevention of subinvolution in the tenement house woman who insisted on returning to her daily task within a few weeks after confinement, at the moment, appeared entirely hopeless. Allowance must be made for an unborn tendency to fetal death, such as was seen in still births under the most favorable conditions; nearly 5 per cent. of still births were thus explained. These constituted an irreducible minimum which must be taken into consideration in the attempt to reduce infant mortality from still births. The keynote to the further reduction of still birth mortality among the so-called upper classes as well as the tenement population would read "Better general obstetrical care with special reference to prenatal observation."

Dr. J. M. Slemmons of New Haven, Conn., said that the broad question which they had really come to discuss was the better practice of obstetrics. Into the problem various factors entered and it was highly important that they should recognize prenatal care to be one of them. When prenatal care was satisfactorily carried out four things were accomplished: There was a lower death rate among the infants, a lower death rate among the mothers, a larger percentage of healthy children born and the mothers were discharged with fewer gynecological complaints. As Dr. Emmons had pointed out the woman who had been given prenatal care was more likely to receive proper care at the time of confinement, and this of itself justified carrying out all the principles of prenatal care emphasized here tonight. Dr. Slemmons said he was not at all skeptical as to the value of prenatal care; of all the funds given him for running the Department of Obstetrics and Gynecology of the Yale Medical School, 20 per cent. went into prenatal work and the care of patients at the time of labor. They found that it cost approximately fifteen dollars per case to visit these women preliminarily and give them proper care at the time of confinement. The question was where these funds were to come from. They might be given by individual philanthropists or as State appropriations, or perhaps from both sources. At all events they had the problem of where the necessary funds were to come from. However, they could assure donors who would consider devoting their time and money to this work that the returns would be very high. The physician has no higher duty than encouraging individuals to help with this work, the adequate supervision of women during pregnancy, labor, and the subsequent period of convalescence.

Dr. H. M. Larson exhibited charts showing the infant death rate in New York City from 1911 to 1916. During this period the infant death rate had run from 135 per 1,000 births in 1911 to 93.1 for 1916. These charts demonstrated that the milk stations had accomplished definite results, but the milk station had not yet found the infant under one month of age, the period during which the infant mortality was the highest, totalling the number of deaths of infants over one month and under one year. So far as the reduction of the number of deaths among infants under one month was concerned we were practically at a standstill. The members of the New York Milk Commission realized that something must be done for the expectant mother and that in order to care for the infants under one or two months it was necessary to do something for the expectant mother. They had therefore started the experiment of carrying on prenatal nursing of expectant mothers in connection with the work of the milk stations in nine districts. They had also introduced the idea of prenatal care in the health centers. Comparing the supervised cases with the unsupervised cases in the Borough of Manhattan, they found a reduction in the number of still births of 22 per cent. and a reduction in the number of deaths of infants under one month of 28 per cent. in favor of the supervised cases. Out of 3,145 women who received prenatal care there were but five deaths, a maternal death rate of 1.5 as compared with the maternal death rate of New York as a whole of 4.9. Dr. Larson told of the work of the committee appointed by Dr. Emerson to investigate the problem of giving prenatal care to all the people. On studying the problem they had investigated the hospital and dispensary facilities. They found that while hospital service extended from one end of Manhattan to the other there were no restrictions whatsoever as to districts. It seemed that the problem with which they were dealing was very similar to that presented by tuberculosis. That problem was met by districting the city and starting tuberculosis clinics. It seemed that the same principle might be applied to the problem of prenatal care. Dr. Larson presented charts illustrating the way in which the city might be districted following the so-called "Sanitary Areas." Following these same boundaries in a plan for prenatal care would offer the advantage that one could always have the statistics of the Department of Health for comparison and guidance. In their study they had also taken into consideration the location of the hospitals in connection with these sanitary areas and their facilities for obstetrical service. They had found it possible to work out a zoning plan,

but that would require some intensive study to get the most satisfactory arrangement and to see that no hospital suffered. Their organization alone was unequal to coping with the situation; the only way they could succeed was by cooperation. If they could get the different hospitals, dispensaries, milk stations, diet kitchens, Straus stations, and other agencies that had nursing facilities to work together they might be able to work out a plan for prenatal care.

Dr. JOHN O. POLAK described some of the difficulties that he had encountered in attempting to give prenatal care in a clinic started in connection with the Long Island Hospital. He stated that three years ago they had started a clinic and had had 3200 women under their care and followed them to confinement. There was but one death in this series and there had not been a single case of toxemia of pregnancy that had been permitted to go into eclampsia. In order to get into closer touch with the women they not only had an antenatal clinic but a post partum clinic as well. These latter were of great interest. The women came back two or three times and looked upon this clinic as their advisory board. They appreciated the extreme care they were receiving and were willing to allow themselves to be used for clinical teaching. Another thing that had impressed them very much was how little care the public took in this work. Notwithstanding speaking at a number of women's clubs they had been able to stimulate almost no interest in the work, at least so far as financial support was concerned. The public had not been aroused out of the belief that pregnancy and labor was an absolutely normal process. They had been trying to teach that it was not a normal process unless properly cared for under present social conditions; pregnancy was not normal in this country where the blending of races made it more and more abnormal every day. The capacity of hospitals available for maternity cases was still very inadequate.

Dr. HAVEN EMERSON said there was no Section of the Academy which had not been called upon to make some contribution to public health work, and the duty of the obstetrician in this direction had been pointed out very clearly. While it was very certain that the city could not go into obstetrical work, yet he could not agree with what had been said of the hopelessness of the situation when we looked at the uncared for cases and the premature births. It seemed quite possible that they might expect a little help from the city. The city contributed money for the burial of the dead why should it not contribute to the expense of being born, if the cost of being born was only fifteen dollars as Dr. Slemmons said it was in New Haven. But the city could not do these things until the public asked for them. The only way to get these things was through publicity; the Department must wait until certain groups of citizens made known the need and backed it up. It was unbecoming for the Health Department to keep prodding a group of specialists who should take the lead to initiate a program of curative obstetrics. The contribution of the Health Department to this work lay in teaching the value of this service, in directing people to competent practitioners of medicine, and in cases in which a physician was not available to put them in the hands of some one who knew how to be surgically clean; that was one real contribution the Health Department made in its supervision of midwives. Dr. Emerson said he did not believe the hospitals would be unwilling to make the individual sacrifices that might be necessary to such a districting of the city as had been suggested. Voluntary maternity insurance offered another way of meeting the need for better obstetrical care. He thought there had been no greater contribution to a constructive program for public health work than that presented here this evening and he hoped the Section would make itself a committee of the whole and do what might be necessary to further the plans presented. The plan to reach 100 per cent. of obstetrical cases was interesting. The first intensive step in this direction had been made in Manhattan; this was because the social conception of preventive medicine had been developed to a greater extent than in other boroughs.

Dr. JAMES W. MARKOE said the question of obstetrics in New York City was one in which he had been interested for many years. In the teaching of clinical obstetrics he had been almost a pioneer. At the time he had been called upon to organize the work of the Sloane Maternity, obstetrics belonged to the province of general medicine; it was not a specialty and there was but one private clinic teaching obstetrics in the city at that time. After seeing the out-door work in the Boston Lying-in he proposed that the teaching of obstetrics should be augmented by adding to the work of the Sloane Maternity an out-door service modeled after the one he had seen. As this proposal was not accepted he decided to start an independent institution and in 1890 organized the Lying-In Hospital. In the beginning there were associated with him Dr. Lambert, Dr. Edgar, Dr. Flint and Dr. Painter. It had at all times been very difficult to secure money to carry on their work. Dr. Markoe stated that at the time this work was started the cases that came to them came mostly from midwives and were frequently brought in desperate condition. He recalled one instance in which the woman was dead and the child left in with one leg pulled off, and another instance in which two loops of the intestine were pulled down and cut off. These conditions had entirely changed. The percentage of such desperate cases was now small. Doctors were doing much better than they did and midwives had learned to send those cases into the hospital. It was not fair to deprecate the care given obstetrical cases in New York, as it was as far advanced as any other city in the United States in this respect. This question of prenatal care was a question of money and of money only. They now had about 7000 cases a year and the mortality and morbidity were not high. He was sure their educational work among doctors and nurses had given good results. He thought they were also doing a good work in educating the people, and if they could get them to save their pennies and invest in maternity insurance it would be a step in the right direction. He conducted a postnatal clinic every Sunday morning and the patients liked it so well that they asked if they might not come back for information and examination. If the city could be so divided into districts that each lying-in hospital would be able to care for the cases in its particular district it might prove an excellent plan.

Dr. EMMONS of Boston, in closing, said that he wished to say one thing that he thought would be of interest and that was that Dr. Meigs had shown that the maternal mortality had been actually rising, whereas such diseases as typhoid fever, tuberculosis, pneumonia, and diphtheria were still showing a falling mortality. New York was the only large city in this country which had reversed that process and was showing an improvement in the maternal mortality. In 1905 New York showed a maternal mortality per 100,000 of population of 20.3; in 1913 of 14.1; while Boston in 1905 showed a maternal mortality of 14.1 and in 1913, 20.6.

Colloidal Tin in Medicine.—Bruhlet and Michaux have been using intramuscular injections of colloidal tin for furunculosis. In certain cases only the results are surprisingly good.—*La Presse Médicale.*

Exchange of Tuberculous Prisoners.—Through the officers of the respective national branches of the Red Cross the tuberculous soldier prisoners of Italy and Austria-Hungary have recently been exchanged.—*La Riforma Medica.*

Traumatic Periosteoma.—Rocher reports nine cases of this lesion, which is sometimes seen in a small way after a contusion of the shinbone. These are due to the congenital impact of bullets on the bones and are not to be confounded with exuberant callus after fracture or bony formations in the muscles and tendons. They do not undergo involution and persist as osteomas, which may require excision.—*Bull. et Mém. Soc. de Chirurgie.*

The Alkaloid of the Peony. — Holste examined the seeds of the peony for the presence of an alleged alkaloidal base. This occurs as an amorphous, yellowish powder, very hygroscopic, and soluble in water. In laboratory animals tested it increased intestinal peristalsis, produced uterine contractions and constriction of the renal arteries, increased the coagulability of the blood, etc. The alkaloid would appear to be indicated in hemorrhages, especially of the uterus, lungs, and kidneys.—*El Siglo Médico.*

Therapeutic Hints.

Acne.—Edward H. Marsh states that the causes of acne make the treatment both local and general, and that no hard and fast rule can be made covering the internal treatment. Constipation must be corrected; anemia, if present, must be combated, and in general all stimulants, including tea, coffee, and cocoa must be prohibited and if hyperglycemia be found the carbohydrate intake must be decreased. In certain cases it may be protein metabolism that is at fault and must be corrected. If much pustulation be present fresh brewer's yeast given a tablespoonful twice daily internally will have a favorable action. He has found that vaccines bring but little result except in the pustular types of this condition. Local treatment is absolutely indicated in all cases. Preliminary to the use of medicinal applications, the affected parts must be scrubbed with water as hot as can be borne, and Ivory soap; where the skin is thick and greasy, tincture of green soap may be used, and in some of the more sluggish types a sulphur and sand soap is of value. After the use of soap and water the soap is to be rinsed off with hot water then to be followed with an application of cold water for five minutes. The more acutely inflamed the condition the milder the medicinal application. The time-honored calamine lotion may be then used:

℞ Calaminæ precipitatæ.
Zinci oxidi, aa.....℥j.
Aquæ calcis.....℥iv.

The application most often used is:

℞ Potassii sulphuretæ.....℥j.
Aquæ .....℥ij.
℞ Zinci sulphatis.....℥j.
Aquæ .....℥ij.
M. et adde sulphuris precipitati.....℥j.

Ointments may be used in place of lotions and the change is often beneficial. The following ointment answers the purpose:

℞ Acidi salicylici.....gr. x.
Resorcinolis .....gr. xv.
Sulphuris precipitati .....gr. xx.
Petrolati, q. s. ad.....℥j.

If the skin begins to scale from the use of any of the above a mild cream may be used instead for a day or two. Surgical treatment may be needed weekly by expressing comedones by means of the curette-shaped comedo extractor. Pustules should be opened with an ophthalmologist's cataract knife, while curettage of the deeper pustules is of great benefit but necessitates confinement of the patient for a few days following the procedure. Scar formation may occur from deep-seated lesions and the treatment of acne is necessarily a prolonged one.—*Medical Times.*

Southern Treatment of Malaria.—George H. Walter considers that in the treatment of malaria as in all acute febrile conditions the alimentary tract must be cleansed, the kidneys flushed, the liver stimulated and quinine pushed to physiological effect. Calomel in relatively large doses—three to eight grains a dose in ordinary cases and twenty, thirty, or even to fifty grains a dose in the pernicious forms. These doses are followed in about three hours by a saline laxative. Often it may be necessary to inject ¼ grain of morphine fifteen to twenty minutes before giving the dose of calomel in order to quiet the stomach for retention of the drug. If nausea is not allayed cloths wrung out of hot water may be applied over the stomach and a cold wet cloth placed around the neck. If temperature is high, the body may be sponged freely with tepid water. Follow this with the defervescent compound, a dose every fifteen to twenty minutes, for four or five doses, or give a small dose, ⅛ grain of pilocarpine, repeating in one hour if not sweating.

If the pulse is bad, nitroglycerin, 1/100 grain hypodermically gives the best results. If the pulse is weak add strychnine. To flush the kidneys give citrate or acetate of potassium, five to ten grains of either (or less) every three hours in plenty of water. If the first dose of the laxative saline does not work quickly, in three hours, a second dose must be given. Should this not prove effective in two hours, administer an enema of salt solution. The best laxative salt is one which effervesces, as effervescent combination of epsom salt, lithium carbonate and colchicine, or citrate of magnesia, one-third of a bottle every hour is more easily retained on the irritable stomach. As soon as the temperature is reduced and the eliminative organs working freely —all danger of congestion passed—quinine bisulphate, five grains every half hour or hour, must be given for three or four doses until the ears begin to ring—physiological limit reached. After six or eight hours give ten grains more in two doses an hour apart. After twelve hours give fifteen grains more, in three doses an hour apart. Thereafter, five or ten grains night and morning for three days. In a malarial district give five grains night and morning on the sixth and seventh days of the week for three weeks. If the patient is comatose or if the stomach is too irritable to retain quinine by mouth, give from three to six grains hypodermically, and repeat as indicated until the stomach is able to retain the quinine. The quinine-urea hydrochloride comes in tablets and is quite soluble. The injection may cause some local inflammation, so care must be taken. Warburg's tincture, one dram three times a day, and an iron tonic containing arsenic and strychnine, taken for a week or two following cessation of the fever, gives excellent results, according to Walter. So also does cacodylate of soda at this stage.

In the hemorrhagic form of malaria (hematuria) emetine one to two grain doses hypodermically to be repeated in from four to six hours has remarkable effect. When the sufferers are left with a torpid liver as a result of malaria, podophyllin, phosphate of soda and corresponding remedies are useful.—*Clinical Medicine.*

Hypodermic Treatment of Malaria.—B. F. Terry states that the hypodermic injection of quinine and urea hydrochloride for this condition produces much better results than when quinine is given by mouth as there is so often a coagulated condition of the stomach and bowels and therefore little or no absorption of medicine from these organs; consequently whenever quinine has failed to prevent a chill, the blame may be laid to the nonaction of the stomach. As in the above he gives first a real calomel purge—that is, from ten to 100 grains as the urgency of the case demands, and then the quinine hypodermically.—*Clinical Medicine.*

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CERTAIN TECHNICAL REFINEMENTS IN METHODS OF INTRAVENOUS INJECTION.

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THE administration of salvarsan does not ordinarily appeal to practitioners as an affair of special technical detail, and, as ordinarily performed, it probably does not answer to that description. It was, therefore, with considerable interest that I heard one of the speakers at the recent meeting of the Public Health Administration Section of the American Public Health Association comment on the effect which multiple punctures, incisions, infiltrated arms, and other accompaniments of an unsuccessful and amateurish intravenous technique have on patients for whose treatment repeated salvarsan injections constitute a desideratum from both the

FIG. 1.—Correct positions of operator, nurse and patient. Schreiber needle technic (original salvarsan).

medical and social standpoints. I, myself, have been impressed from time to time with the undesirableness from the technical standpoint alone of committing to the care of inexperienced internes, house physicians, and practitioners, the salvarsan therapy of syphilis. Even the poor can scarcely be expected to submit with good grace to repeated barbarities offered in the name of medicine. In easy cases almost any technique suffices. But in difficult cases, to give injection after injection into a single available vein concealed below a cushion of fat, without resorting to incision to reach it, becomes a technical accomplishment of no small magnitude.

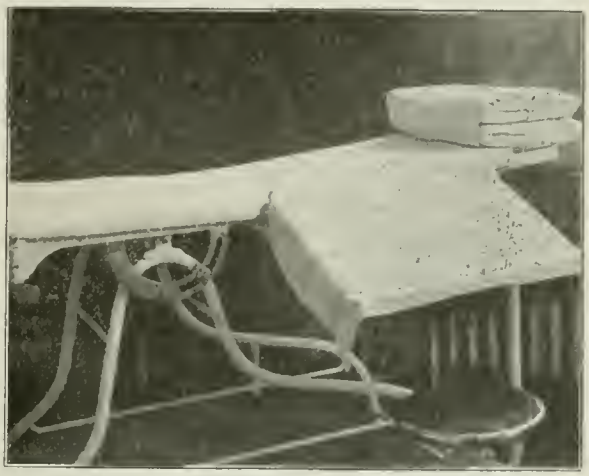


FIG. 2.—Bedside table used as a very satisfactory rest for the arm.

On my own service there has been gradually worked out a technique which, in our hands at least, has greatly reduced the percentage of technical error. The requirements of this service from the standpoint of technical ability are high, since the clientele consists of pay patients of at least average intelligence, and with quite definite conceptions of the type of service they should receive from a specialist. About four thousand injections of salvarsan are now being given yearly, which makes the pressure of the work such that the technique must be, not only smooth, but rapid, and yet free from slapdash and short-cuts for the sake of speed. The technique here described seems to have the advantage that it can be rapidly acquired by a relatively inexperienced operator, and while it is definite, it is reasonably elastic and adaptable to the variety of conditions met in intravenous work. Injections are given by the Chief and the first assistant, although other medical members of the staff may witness the procedure and learn the method on occasional easy arms. It is its applicability to difficult cases which seems to justify the description. The general principles governing this part of the work are as follows:

No salvarsan is given to ambulatory patients. Each must remain under observation in the hospital

for at least twenty-four hours. From 60 to 80 per cent. of our injections have been of original salvarsan or arsenobenzol, and the balance of neosalvarsan. Strict asepsis is part of the operating room technique, and the reagents used in the preparation of the drug conform to the original Ehrlich criteria or standard modifications.

Water redistilled from Pyrex and Jena glass and boiled, is used in all injections. Neosalvarsan is given by the Ravaut method, slightly modified, each decigram of salvarsan being dissolved in 1 c.c. of water, and the dose administered with a Luer syringe. Salvarsan is administered by gravity flow, a concentrated solution containing from 4 to 8 doses being prepared (0.6 gm. in 25 c.c. of the water), and diluted after neutralization and before using, so that 0.6 gm. of the drug is contained in 100 c.c. of the solution. A single graduated container is used, which is suspended from a standard where it is kept throughout the morning's work. The tubing of the container is filled before beginning with distilled water to exclude air, but this water is allowed to escape before the first injection is given, so that only salvarsan enters the veins. The glass-

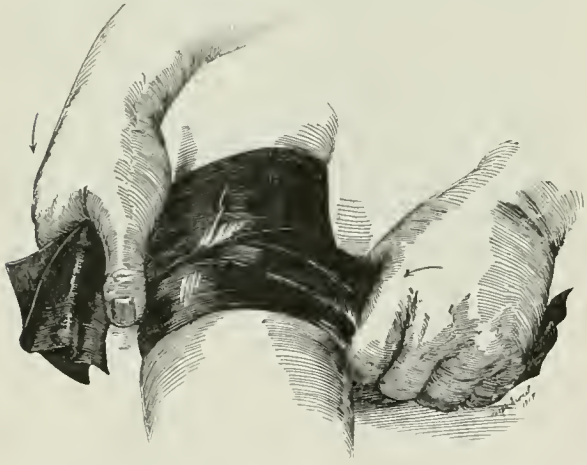
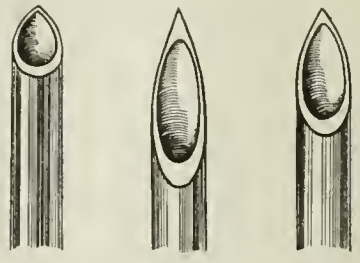


Fig. 3.—Correct appilcation of the band tourniquet to the left arm (Esmarch bandage). The nurse stands at the patient's left shoulder. The tourniquet is pressed downward by the hands, instead of exerting traction.

ware is boiled in distilled water. The needles and the salvarsan ampules are sterilized in 95 per cent. phenol followed by alcohol, and the needles are rinsed in redistilled boiled water, in order to avoid the use of disinfectants containing metallic salts, such as bichlorid. Gloves are sterilized by boiling and are put on dry.

The indications and contraindications for the use of salvarsan and neosalvarsan need not be discussed in a technical paper, further than to say that in my experience the effort to reduce the technical difficulties of the administration of original salvarsan by the use of concentrated solutions as recommended by Brayton (*Jour. Am. Med. Assn.*, 1916, lxvi, 1921-1922) has not been entirely satisfactory for general use. It is valuable when one or two injections must be given unaided, but with the assistance of even an amateur or an office girl it is unnecessary. Even with the most careful neutralization, the drug seems to be distinctly irritating, and its injection, epecially if the solution is at all hot, may cause collapse. The injection must be made very slowly indeed in large veins, and in small veins there may be intense pain and subsequent thrombosis without subcutaneous infiltration. The method seems to be unsuitable on this account precisely where the technical difficulties are greatest—in wrist and hand veins, and where only one or two unsatisfactory veins are available



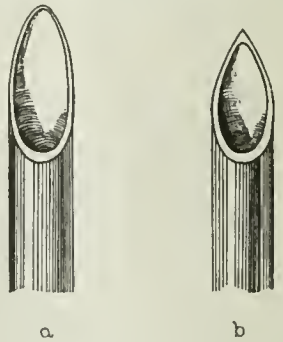
a b c

Fig. 4.—Three types of needle point: (*a*) too short, (*b*) too long, (*c*) correct.

for a series of injections. The technique to be described has been used on my service in administering amounts of solution up to 100 c.c. with a large Luer syringe, so that concentrated solutions have been discarded entirely in the case of original salvarsan, and there seems to be no difficulty in meeting the indication both in children and adults.

The duties of a nurse or assistant are confined to unsterile manipulations to which even the inexperienced may be easily trained. These manipulations consist in preparing the patient, managing the tourniquet, releasing and closing the tube-clamp in the case of original salvarsan, and pressing a sterile sponge over the point where the needle enters the vein, at the time the needle is withdrawn and then bandaging the arm. The only manipulation calling for any skill is the application of the tourniquet. The preparation of the patient includes the following:

A light breakfast is eaten(tea and toast); the temperature, pulse and respiration are taken before the patient enters the operating room. The left arm, preferably, is prepared with tincture of iodine, which is then partly washed off with alcohol, so that the color does not conceal difficult veins and so that dermatitis may not ensue. In very difficult arms an alcohol compress may be used after soap and water cleansing. The arm and shoulder should be



a b

Fig. 5.—(*a*) Rounded needle tip, with cutting edge, which makes an incision in the vein instead of a puncture. Less desirable than (*b*), the pointed needle, which inflicts less trauma and diminishes the possibility of leakage.

bare and the neck uncovered since the slightest constriction may hold the drug in the vein and favor thrombosis. A marked constriction concealed by the shirt sleeve may cause a leakage around the large needle.

One of the seemingly trivial elements in the giving of an injection, but one which should be rated very high, is the confidence and cooperation of the patient. Operating under a general anesthetic, or under a local anesthetic, one seldom realizes the

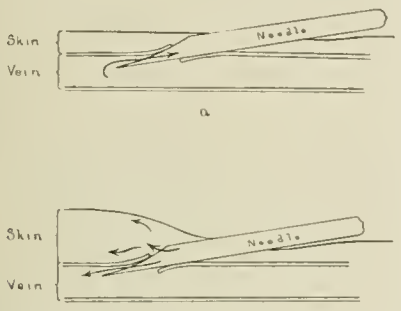


Fig. 6.—Illustrating the effect of partial puncture of a vein, with a long-bevel needle; (*a*) return of blood has been without completely entering the vein; (*b*) infiltration of the subcutaneous tissue even after a return of blood has been secured, as soon as injection is begun.

psychic effect on the operator of a nervous or distrustful patient. Panic may seize even the fairly experienced if the goal is not reached on the first attempt; the tense attitude, the shrinking away, the sounds of remonstrance and disapproval from the patient are only too efficient in bringing beads of sweat to the operator's forehead and in damaging the fine movements of the hands on which his success depends. To stop to cool off may only make matters worse, and to fail entirely is to damage his nerve in subsequent work more seriously than is realized. For these reasons I insist that the atmosphere of the operating room shall be as carefully prepared as that of a social salon. The new, nervous patient having already met the chief and his first assistant is relieved of anxiety as to who is to treat him. He, or more often, she, is met with smiles, addressed by name, and treated as a friend from the moment she enters the office and the operating room. She finds herself on the table in a current of casual conversation, good humor, and friendliness which relieves her anxiety. Other patients to whom she may have spoken have conceded that it doesn't hurt. We do not use large needles without preparing for them by local anesthesia, in which we can use the finest hypodermic needle. I am firmly convinced that anoci-association, which after all is simply a putting of one's self in the patient's place, is an essential ingredient of a technic which is to work day in and day out without a hitch. Patients who have never been either hurt or scared approach one with the calm-inducing lack of fear with which animals that have never seen a man disarm their human enemies.

Lighting.—The operating room should, if possible, be so arranged that the arm is cross-lighted rather than longitudinally or from above, since with the latter illumination especially, the elevation of the skin caused by the vein casts no shadow and is correspondingly difficult to see. Light containing much yellow or green, whether from walls, artificial lighting or shades, may conceal an otherwise visible vein.

Patient.—The patient lies on the table, arm extended at full length at right angles to the body and resting with the palm of the hand on the slanting bedside table which I have adapted to this purpose (Figs. 1 and 2). This is a strategic position for the administration of an intravenous injection. The patient is at rest. The full arm is extended for a survey of the situation. The carotid and jugular pulsation, the larynx and conjunctiva, and the upper thorax are all in the line of vision, so that the operator himself can follow every change heralding an acute reaction—the acceleration in pulse, the slight uneasiness, the gulp, the sudden catch in the breath, the flush beginning at the clavicle and running upward, and the engorgement of the conjunctiva. It is impossible for him, without willful neglect, to continue an injection until he discovers, as he rises and secures a full view of the face at the end of it, that the patient is rapidly becoming livid and pulseless.

Tourniquet.—It is my practice to use a soft band tourniquet, made by folding double a three-inch rubber Esmarch bandage. Thirty inches is an average length. It is used unsterile by the nurse or assistant, who should be taught the following points:

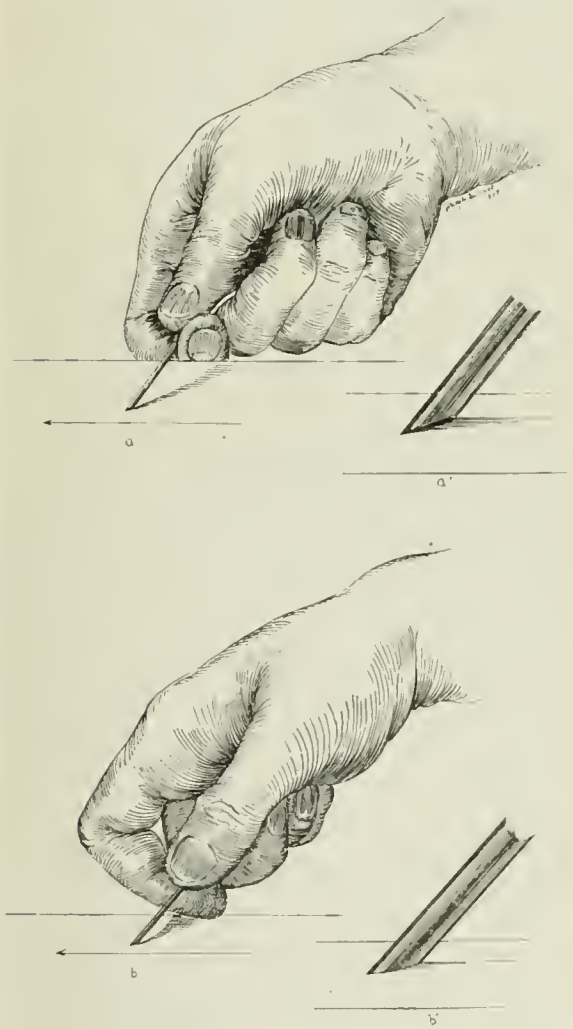


Fig. 7.—Retouching a needle on an oilstone to secure the pointed tip illustrated in Fig. 5. (*a'*) (*b'*) Viewed from the side. The strokes are made in only one direction—away from the operator.

1. To apply it flat, wrapping and not twisting it around the arm. The two ends pass each other on the flat, so that the effect is that of a cuff rather than a cord (Fig. 3). This minimizes the discomfort to the patient, and promotes the maximum of

surface compression with the least compression of the deeper arterial supply. It also prevents the escape of the vein to be injected under the crossing of the two ends, which occasionally results in the imperfect distention of difficult veins.

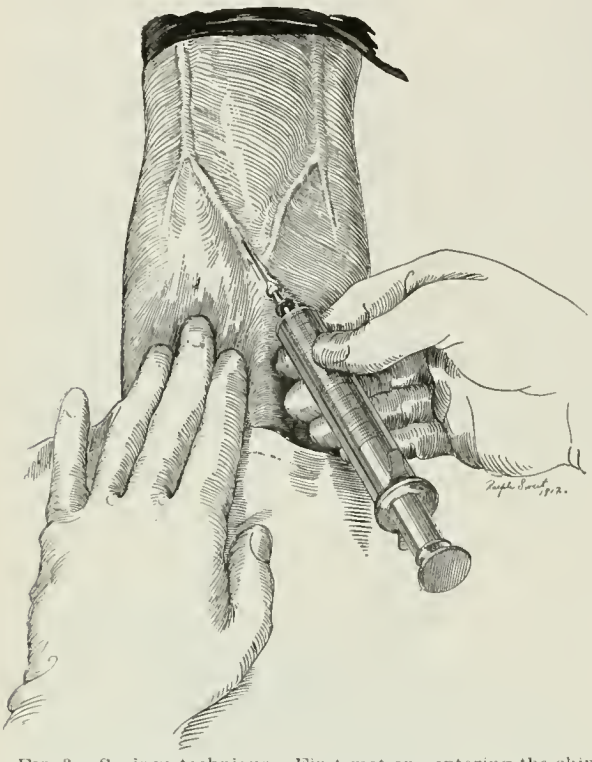


FIG. 8.—Syringe technique. First motion, entering the skin, showing the tension exerted by the left hand to fix the vein and the pressure with the right for the purpose of steadying the syringe. The needle point is visible under the skin, directly over the vein.

2. Two hands should be used in holding the tourniquet, and the release should be without twist or jar, and without unsterilizing the field.

3. The skin should not be pulled aside or twisted on the arm in applying, since the effect is to flatten the vein and render it less palpable and visible.

The Vein.—Certain seemingly obvious details are easily overlooked. A survey of the situation before rather than after an attempt at puncture is essential. In the difficult arm, I am inclined to rate palpation above inspection, and for that purpose, a single finger should be trained to the acme of tactile acuteness by constant practice. The ball of the middle finger of the left hand is especially serviceable because it has not been rendered insensitive by the trauma to which the other fingers are subject. Cross stroking with this trained finger will detect a deep vein where nothing is visible. By light palpatory downward pressure, its caliber and fixation may be estimated. Thrombosis from a previous injection not infrequently is to be detected before entry only by palpation, since the vein may remain of the same caliber at the site of thrombosis as in the normal portion. A vein which is not sclerotic and yet rolls sharply under the finger is very apt to be thrombosed.

A variety of devices can be employed to distend difficult veins in addition to the customary clinching of the fist. The most easily available is the slapping of the skin over and around the vein with the flats of the fingers producing a temporary paralysis of the vein wall. This is of so much assistance that I employ it as a routine, since a well-distended vein is better fixed than one less distended. A sharply slanting support sometimes assists in securing an effect. Hot applications are of great value in difficult cases, but are time-consuming unless the patient has been told to soak his arm before coming to the operating room. This method is also useful in distending small scalp veins.*

The angle of the vein should be carefully estimated and the depth considered before a puncture is made, especially when the needle is to be advanced well beyond the point of puncture as in the technic here described. Veins in obese women which show as faint bluish patches at the flexure are apt to be more superficial than one is led to expect, and are likely to be transfixed by over-energetic or jerky operators. The fixation of veins in the connective tissue is a more important factor at times than their caliber, and the thickness and toughness of the skin over a vein is equally important. For example, it is often easier to enter a small well-fixed superficial vein at the flexure of the elbow

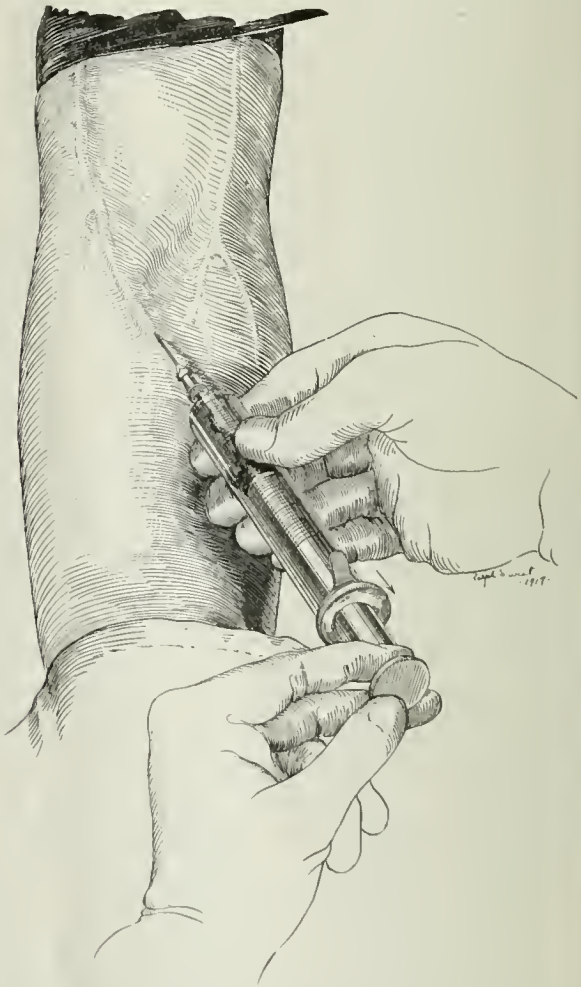


FIG. 9.—Syringe technique. Needle has been advanced, and return flow tested by pulling on piston. A stream of blood should shoot across the fluid if a proper entry has been made. The right hand maintains its pressure.

*My attention has been called by Dr. Jay Frank Schamberg to the value of daily gymnastics in developing previously small arm veins.

than to enter a vein three times the size at the condyle or in the tough loose skin of the radial side of the wrist. The most difficult vein in my experience is the sclerotic vein of the sun-tanned old man, which has lost its fixation through atrophy of the

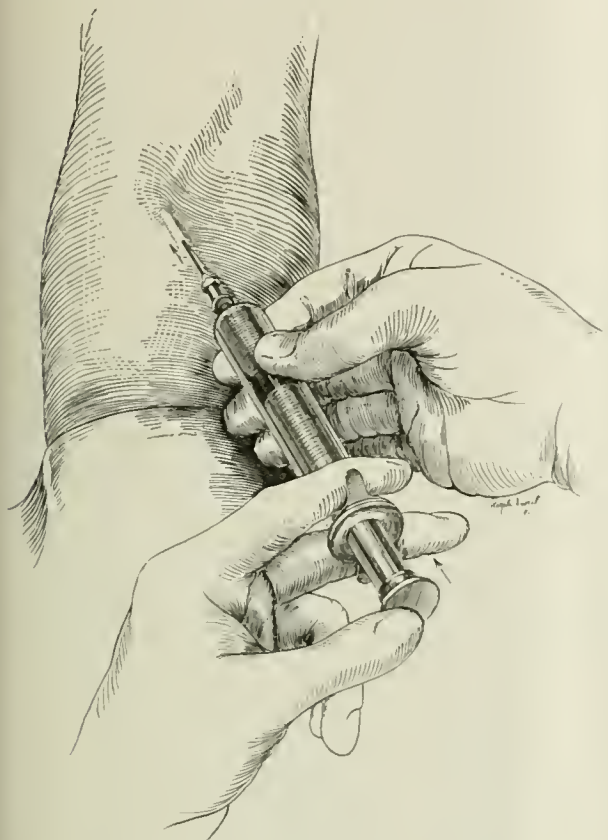


Fig. 10.—Syringe technique. Injection

connective tissue. Veins on the back of the hand sometimes tempt an operator to his sorrow although on occasion they are valuable. The more movable the vein and the tougher the skin, the smaller the needle that should be employed. The point of entry on a vein should be as near the operator and as far from the heart as possible since hemorrhage from a mispuncture may be controlled with a finger, while a second puncture may be made farther up a vein if it is the only one available. The risk of thrombosis is thus diminished by avoiding the passage of an irritating solution over a point of trauma.

Needles.—Close attention should be given to the type and care of needles. In general, I may say that in my experience a series of failures in the hands of a reasonably competent operator is most often attributable to a dull needle, despite the shop maxim that a "poor workman always blames his tools." An improperly sharpened or dull needle jerks, strips the vein, tears holes, or transfixes.

In Figs. 4 and 5 are indicated what seem to me essential points in the needle to be used for intravenous work. The bevel of the majority of needles when first purchased is too long, and by incorrect sharpening they soon tend to become too short. The long blade-like point of the flat-beveled needle is an unknown quantity once it has passed out of sight and is too often embedded in the far side of the vein wall before it seems fairly through the skin. Then follows unexplained leakage and futile efforts to retrieve the lost advantage or to advance the needle farther up the vein. If injection is begun because a good flow of blood has been obtained with a long bevel needle, an infiltration is apt to occur, the mechanism of which is explained by Fig. 6. Flat bevel needles are more easily shut off against the top of the vein than shorter bevels and confuse the operator into thinking he has failed. The ease with which a long blade-like point enters the skin makes it very attractive to the novice and often betrays him into difficulties. The defect of the short bevel, which strips the vein without entering it, or tears a hole, is obvious.

The desirable and undesirable type of needle point is illustrated in Fig. 5 and the method of honing a needle on an oil stone to obtain it is shown in Fig. 7. Most needles on resharpening lose the point put on them in manufacturing, and develop at the hands of the average sharpener what is fallaciously supposed to be a cutting edge instead of a point. This inflicts greater trauma on the vein, makes a larger opening for subsequent leakage and does not "take hold" as well as a needle whose mode of action is to puncture rather than cut.

The gold needle has largely displaced the steel needle in our work and the care of the needle is greatly simplified by doing away with rusting. Tempered gold needles are cheaper than platinum and retain their points reasonably well. They do not leave the brownish tattoo stain in the skin that even a slightly corroded steel needle will leave. For routine syringe technic the 1 1-2-inch gold Luer needle, 20-gauge, attaching directly to the syringe, is satisfactory. The steel hypodermic needle, 22- or 24-gauge, is very useful when a very minute and delicate vein at the wrist or on the forehead, is to

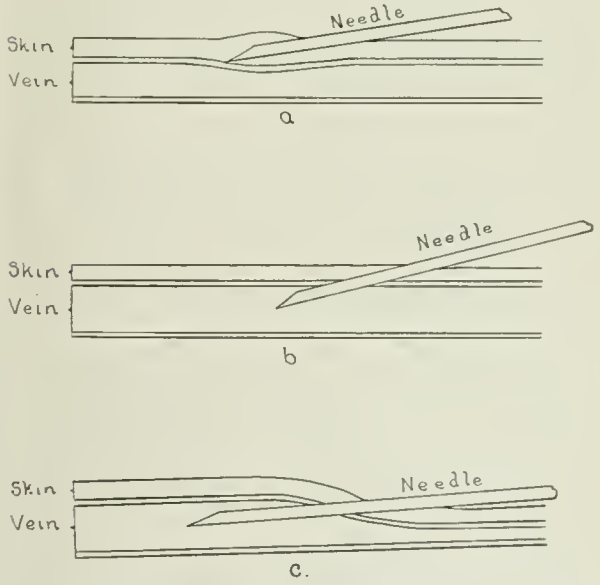


Fig. 11.—Sagittal sections showing the successive positions of the needle in the technic illustrated in Figs. 8, 9, and 10; (*a*) entering the skin above the vein; (*b*) angle for entering the vein; (*c*) advancing the needle after entering.

be entered. It should not be resharpened, should be sterilized in phenol and alcohol, should not be used more than three or four times, and should not be more than 1-2 inch in length, otherwise it may be difficult to secure enough return of blood to

demonstrate that the vein has been entered. Through such a needle on a large Luer syringe I have given 50 c.c. of fluid.

For the injection of the larger amounts of fluid by gravity our preference is for the Schreiber

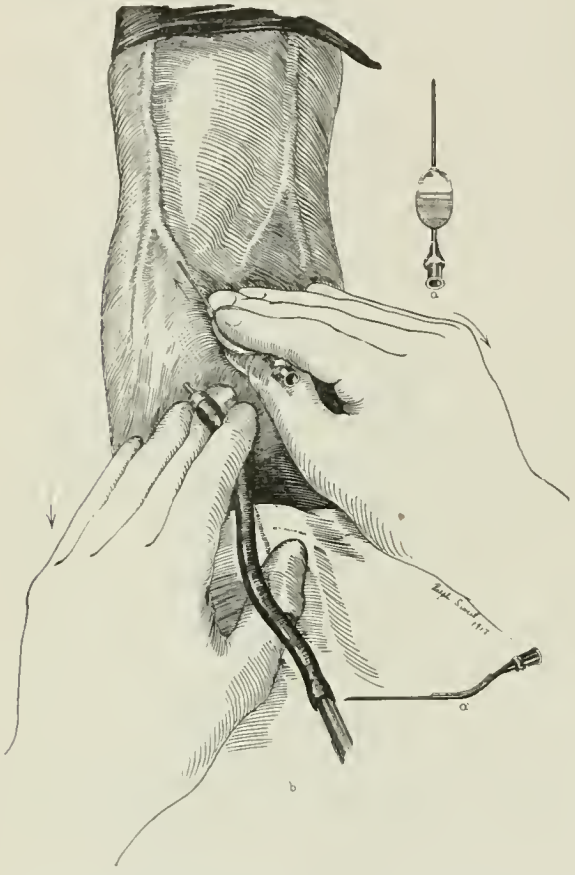


Fig. 12.—(*a*) Front view; (*a'*) side view, Schreiber needle; (*b*) Schreiber needle technique. First motion needle entering skin. Tension exerted by the last three fingers of both hands. The needle is steadied against the tip of the middle finger, and the entry made by depressing the knuckles rather than by advancing the hand.

needle (Fig. 12) in 17- or 18-gauge. Gold needles of that type may be obtained on order and those in use on my service, while bending rather easily, have given satisfaction.

The advantage of the ordinary filter pump or aspirator for the cleaning of needles with water, alcohol, and ether by suction deserve special mention, when much of this work is being done.

The Syringe Technique.—For this technique the needle is attached directly to the syringe since this does away with the uncertain grip of the fingers on a slippery needle while doing what should be an exact operation. The barrel of a syringe is so much more controllable than a needle that it is now our practice to introduce smaller needles for the gravity method, by a syringe, which is then detached. The needle is always entered bevel up. Four details are essential to the technic. First, the syringe is held flat on the palmar surface of the four fingers of the right hand, which form a broad bed upon which the syringe is firmly held with the thumb. Second, the movements of the hand and syringe are controlled and the jerk and the unsteadiness can be entirely prevented by firm pressure with the back of the fingers of the syringe-hand on the patient's arm. Third, tension on the skin with the left hand as shown in Fig. 8 fixes the vein and prevents heaping of the tissues ahead of the needle, with stripping of the vein and a jerky puncture. Fourth, two separate movements, one to enter the skin and one to enter the vein are essential. The two-movement entry prevents the jerk and over-reaching which is apt to follow the attempt to pierce a soft tissue lying behind a tough one.

The application of these principles is illustrated in Figs. 8, 9, 10 and 11. The needle should be used with the bevel toward the graduations of the syringe so that the dosage can be watched. Entry is made directly over the vein and the first movement carries the slightly inclined needle 1-4 inch into the skin over the vein wall, where it is visible as an elongated wheal and may be palpated in difficult arms or deep veins. Downward pressure with the whole right hand, syringe and needle, now dimples the top of the vein and a very slightly increased slant carries the needle through the wall with a barely perceptible advance. The pressure of the syringe-hand on the arm is now increased enough to bring the needle practically horizontal and it is then advanced half its length up to the vein and remains stationary. The tension on the skin with the left hand is released as the needle is advanced. The broad base by which the hand controlling the syringe rests on the arm, effectively prevents "creeping up" during the injection, with possible puncture of the far side of the vein. The running

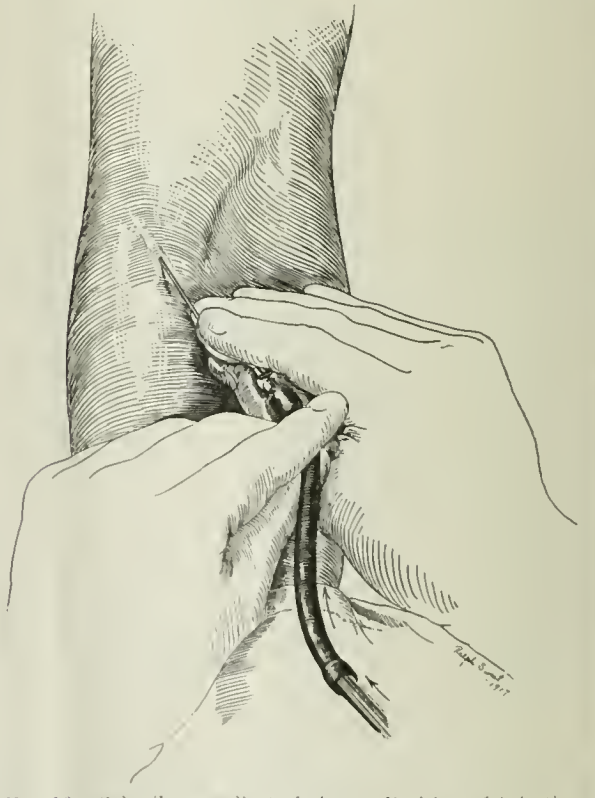


Fig. 13.—Schreiber needle technique. Position of injection. As injection is completed the tubing is compressed just back of the shoulder and the needle withdrawn as a sponge is pressed over the point, without disconnecting.

of the needle above the site of trauma is, to my mind, instrumental in reducing the likelihood of thrombosis.

With the needle in its final position, the operator pulls back on the piston with the left hand (Fig. 9).

If a successful entry has been made, a spurt of blood shoots across the clear fluid in the syringe, and the injection may be begun. If this test is applied *invariably* before the piston is advanced, and repeated once or twice during a difficult injection, the percentage of infiltrates with the syringe technique can be reduced almost to the vanishing point.

The Schreiber Technic.—I have previously called attention to the value of local anesthesia in the introduction of large needles into veins, and further experience has only convinced me the more completely that this detail is essential to the giving of an intravenous injection of original salvarsan *secundum artem.* One minim of a 2 per cent. solution of cocaine seems to be devoid of danger and acts so quickly that it causes no delay. The introduction of the needle then becomes an exact procedure rather than a haphazard stab. The patient does not disturb the procedure by shrinking away or wincing. His confidence in the operator is not subject to test. The same principles are used as in the case of the syringe technic. The Schreiber needle is held like a pen (Fig. 12), however, since it is then steadied by two fingers instead of one, and since the position of the hand seems to be more natural after the needle is entered, and must be maintained for a longer time. Pressure on the arm with the right hand and tension on the skin with the left are again essential. In doing this final step, the needle should not be held rigidly. The right hand should relax and the needle be guided by thumb and forefinger rather than forced up the vein. The needle should be run up the vein as in the case of the syringe technic. The movements of the needle in entering suggest those of vertical penmanship, and are accomplished by depressing the knuckles, keeping the wrist fixed, rather than by moving the hand. The needle is introduced detached, and after a free flow of blood is secured the adapter is inserted by the left hand and the injection begun (Fig. 13). The needle should not be released or the right hand moved in difficult veins after the beginning of the injection. There should be a tell-tale in the tube near the needle to show the presence of air, although it is surprising what large amounts may enter a vein without ill effect.

A summary of rules of thumb is appended to be applied seriatim if with either technic a free flow of blood through a needle after introduction or a free flow of fluid into the vein cannot be obtained.

1. Depress the point of the needle without advancing. The bevel may be shut off against the top of the vein.

2. Palpate the point with the free hand. It is easily recognized if it is still above the vein.

3. In using a syringe, twist the piston in the barrel, pulling backward. It may be stuck.

4. Slowly withdraw the point, if it cannot be felt above the vein, lifting up as you do so. If it has entered the opposite wall it usually comes away with a palpable snap. Then quickly advance again, pressing down hard against the arm with the back of the syringe hand and lifting the point, to flatten the angle of the needle to the vein.

5. If the above procedure fails twice, withdraw the needle until the point is just short of the skin puncture, and advance again after repalpating the vein. This is a last resort.

6. If the fifth procedure fails on one or two trials, withdraw the needle entirely and do not reintroduce it until you are satisfied as to its point, and that it is not plugged. Pressure on the vein for five minutes with elevation of the arm while this is being done will often enable you to use the same vein again.

7. Make no comments audible to the patient regarding the condition of your needle.

8. Never try to inject through a hematoma. Use another vein or stop.

9. Never inject and ask if it hurts, if you have the slightest reason to suspect that it will. To inject a little to find whether you are in the vein or not is absolutely inexcusable.

10. Make every effort to have one puncture suffice, using the needle in various directions through the same puncture.

In withdrawing Schreiber needles from veins the aspiration of blood back into the tube by lowering the container, or washing the needle out with salt solution from a separate cylinder are unnecessary. Pressure made by the nurse over the needle as it is withdrawn, and the shutting off of the stream just back of the adapter and not higher up the tube, will prevent any leakage. After injection the needle can be rinsed by drawing distilled water through it or the elastic recoil of the rubber tube will cause some of the solution to spurt through it when the compressing finger is released. It goes without saying that needles and solution should be fresh when used on clean patients or suspects, and that patients in florid stages should be treated last.

The administration of intravenous medication to small children can be accomplished with ease as a rule through the external jugular vein, or through the anterior auricular or the more prominent scalp veins in heredosyphilitic babies. We have thus far found this technic applicable to all cases and have had no occasion to attempt an injection into the superior longitudinal sinus through the anterior fontanelle. In all work with small children, fine steel hypodermic needles should be used.

ADENOMYOMA OF THE RECTUM.*

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WHILE both the benign and the malignant growths of the bowel, originating in the mucosa, have long been observed and thoroughly studied, as yet comparatively few observations have been made upon tumors occurring in the muscular coats.

In 1910, Descoudres[1] reported from the literature 80 cases of myoma of the intestinal tract, sixteen of which were in the rectum. These tumors are either internal, projecting into the bowel lumen, or external, growing away from it. He reported only twelve of the external variety. They are very large and their diagnosis is difficult. In the case of Descoudres the tumor was the size of a cocoanut, presented at the buttock and made sitting difficult.

Last year Cullen[2] reported fifteen cases of adenomyoma of the rectovaginal septum. Of these 5

*Presented at the nineteenth annual meeting of the American Proctologic Society, New York, June, 1917.

were his own, Stephens 5, Jessup 2, Lockyer 2, and Nadel 1. Recently Kellogg[3] has reported a case occurring in his own practice.

Adenomyoma of the rectovaginal septum is a tumor described only comparatively recently, all the

Fig. 1.—Radiogram after barium clysma; shows long sigmoid colon, but no growth.

cases being reported since 1909. This is a neoplasm developing in the triangular space between the cervix uteri in front, the rectum behind, and the peritoneum above. As the tumor grows it may extend upward, gluing the cervix to the rectum, backward into the rectum or laterally into the broad ligaments. An arbitrary classification of these tumors has been made, depending upon the direction of the extension of the growth. Naturally a tumor that belongs to one class this year, may, by its growth, at a later date belong to another class.

My interest in adenomyomata is due to the following case which appears to be unique:

Mrs. V., born in France, aged 37 years, married, and the mother of two healthy children, was referred to me in September, 1916, because of rectal hemorrhage and pain. Six years before she had "pulmonary tuberculosis which was cured in France." Menses are painful and the flow is gradually ceasing, no leucorrhea. Prior to three years ago she was always constipated. Then she had an attack of diarrhea lasting five months. Thereafter intermittent attacks occurred and during the past year stools have averaged 10 to 12 daily, containing fresh blood and mucus. During the past three years patient has had pain over the lower sacrum, aggravated at the menstrual period and with the diarrhea.

Physical examination showed a rather pale but well nourished woman of 5 ft. 5 in., weighing 142 lb., which is her average. Hemoglobin 85 per cent. Wassermann of the blood was negative. Uranalysis was normal. Chest and abdomen were negative. Rectal examination: Three and one-half inches up on the anterior rectal wall, just above the cervix uteri, the finger feels a hard, fixed, fairly tender mass, the limits of which cannot be clearly defined, and on which the overlying mucosa is not movable. The proctoscope shows a superficial ulceration the size of a quarter-dollar at the rectosigmoidal juncture which is red and clean and bleeds freely on contact. Elsewhere the rectum and sigmoid were normal. Vaginal examination: Uterus normal in size and position and movable. The lateral fornices were clear, but in the posterior fornix was felt the same hard, tender, slightly movable mass, the size of a guinea hen's egg, as was felt per rectum.

Operation, September 26, 1916: Gas and ether anesthesia. Trendelenburg position. Left rectus incision. The sigmoid flexure was very long, as indicated by the *x*-ray (Fig. 1), and contained an excess of yellow fat in its mesentery. No growths were felt in the liver or other abdominal organs. The tumor was located in the anterior wall of the sigmoid just above its juncture with the rectum and extended downward 2 in. onto the rectum, cervix uteri, and posterior vaginal wall. Lower third of sigmoid was mobilized, including a small portion of the posterior wall of the uterus and its cervix, and the superior hemorrhoidal artery was ligated. Then the abdominal wound was closed and in the lithotomy position the operation was completed by a typical Genu-Tuttle extirpation of the rectum, including the posterior vaginal fornix, 1½ x 2 in., which was involved in the tumor. The sphincter ani was preserved and the sigmoid sewed to the perianal skin, thus forming the new rectum. About 4 oz. of blood was lost, but shock was marked at the end of the operation. However, the patient responded promptly to one intravenous infusion. Bowels acted on the third day. Union of sigmoid and skin was primary except at one small space of ½ in. which soon granulated. Patient left the hospital three and one-half weeks after operation and is now well, having normal anal sensibility for bowel actions which now occur once or twice daily with normal control. Her weight is 146 lb., a gain of 4 lb. since operation. Vaginal and rectal examinations show no abnormalities.

The points of interest in this and similar tumors in this location center in their origin, diagnosis, prognosis, and method of treatment.

Origin.—W. J. Mayo[4] states that "As yet there has been no good explanation of the absence of myomas in the voluntary muscle and the frequency of these tumors in the involuntary muscles. The cause is undoubtedly connected with the primitive power of contraction of smooth muscle fibers and their ability to hypertrophy quickly in response to demand. In this connection it is well to remember that the round, broad, ovarian and uterosacral lig-

Fig. 2.—Photomicrograph of adenomyoma of the rectum; mucosa not ulcerated.

aments contain smooth muscle derived from the uterine wall and that myomas and adenomyomas (Cullen) may occur in these locations." The origin of adenomyomas is not always clear. Cullen and Jessup, on the basis of histological study, con-

clude that in most cases they originate from the uterine mucosa which with the smooth muscle has an inherent tendency to invade adjacent structures. Jessup[6] says, "The epithelial cells lining the glands are cylindrical and cilia can be demonstrated on the surface of some." Such findings would be conclusive proof of the source of the particular tumor in question. Lockyer[6] suggests that these tumors arise from the remains of Wolffian ducts. Stevens[7] says that some cases reveal no connection with the uterine mucosa and "consequently their origin cannot be ascertained." Some cases at least seem to be true neoplasms, developing from embryonic rests persisting from the fusion of Müller's ducts.

In my own case the tumor clinically was essentially an intestinal growth. No other tumor like it has been described so far as I can learn. Grossly, the tumor was incorporated in the intestinal wall and the main direction of growth was toward the bowel lumen, where it caused a pressure necrosis of the mucosa over an area the size of a quarter. After careful study of the gross tumor and microscopic sections (Figs. 2 and 3), Dr. James Ewing reports: "Your intestinal tumor is an adenomyoma

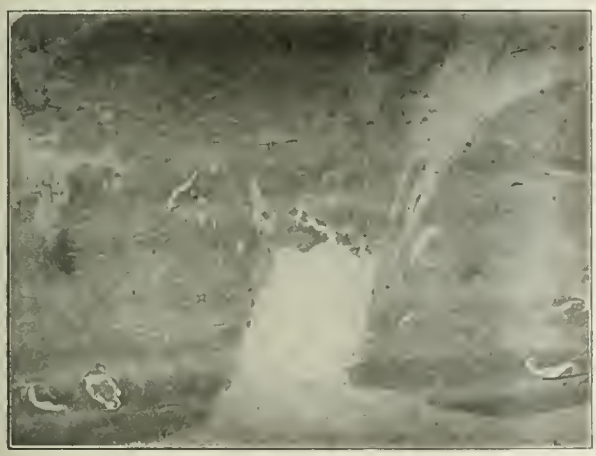

Fig. 3.—Photomicrograph of adenomyoma of the rectum; mucosa ulcerated.

and its close incorporation in the muscle coat of the rectum indicates that it belongs originally with the portion of muscle tissue. The most likely origin is from superfluous material derived from that portion of the lower gut which continues on in the embryo to the bladder and allantois, and which normally atrophies. Persistence of a portion of this segment would furnish a source of smooth muscle and intestinal epithelium. I do not think the tumor is of Müllerian origin."

Symptoms.—Naturally this variety of tumor might be latent for years. Later, varying with the stage of development and location of the growth, the symptoms would be: (*a*) Obstructive, when the bowel lumen is encroached upon. (*b*) Dysenteric—frequent stools containing blood—when pressure necrosis of the mucosa has occurred, or (*c*) Neuralgic—when sensitive nerves are compressed—evidenced especially by sacral and rectal pain.

Diagnosis.—Unless the examiner were on his guard, as a result of previous experience, it is doubtful if he would even consider adenomyoma. Certain tumors, notably adenocarcinoma and polyps, impart a characteristic feel to the examining finger. To recognize them promptly, however, one must have felt them many times. Likewise rectal adenomyoma has a peculiar feel which the examiner would not be apt to forget. Both of the cases of adenomyoma of the rectovaginal septum reported by Jessup had been pronounced inoperable "on account of the apparent involvement of the rectum by a malignant growth."

If sarcoma occurred in the rectum one would think of it. The so-called "rectal shelf" described by Bloomer and English writers, an implantation of a carcinoma in Douglas' sac, would be another possibility; to be recognized, however, by discovery of the primary growth elsewhere in the abdomen. In my case the sensation was that of an infiltrating malignant growth.

Prognosis.—Histologically adenomyoma is a benign tumor. Yet clinically, as in my case, it may become malignant from the severe symptoms—pain, bleeding, etc.—to which its extension gives rise. Moreover, actual malignant transformation may occur.

Treatment.—Surgical removal is the only curative therapy. The practical question is how it may be best accomplished. In view of the progressive nature of these growths, the longer their removal is postponed the more difficult it becomes. Early removal would, therefore, seem to be the procedure indicated, both to subject the patient to the least surgical risk and as a prophylaxis against malignancy. Of tumors of the colon, those at the recto-sigmoidal juncture are, from the standpoint of technique, most difficult for successful removal. Unless contraindicated by old age, marked debility or obesity, I believe that approach should always be made through the abdomen. Thus only can the extent of the growth be defined and metastases be recognized. In some cases the operation can be completed through the abdominal incision. If, however, a considerable portion of bowel must be sacrificed, the dangers of infection, peritonitis and fecal fistula are very grave. In such instances it is far safer, if the sigmoid is sufficiently long, to mobilize the portion of bowel containing the tumor, close the abdomen and complete the operation by the perineal route, doing a Genu-Tuttle or similar extirpation of the rectum, preserving the sphincter ani and forming a new rectum from the sigmoid, which is sewed to the anal margin.

As the number of cases of adenomyoma of the rectovaginal septum reported in recent years is comparatively large, and now my own case of adenomyoma of the rectum proper, it is a fair inference that many others have been missed or wrongly diagnosed either because the diagnosis has been made upon the gross appearance or the tumor has not been submitted to a careful and thorough microscopical examination, as Cullen found in a review of some of his specimens. We owe it to our patients to have every excised neoplasm thoroughly studied by a competent pathologist as the precise nature of the growth is full of significance for the ultimate prognosis.

REFERENCES.

1. Descoudres, F.: Des myomes du rectum, *Rev. de gynéc. et de chir. abd.*, 1910, Vol. XIV, No. 5.

2. Cullen, Thomas S.: Adenomyoma of the Rectovaginal Septum, *Jour. A. M. A.*, Vol. LXVII, August 5, 1916.

3. Kellogg, Foster S.: Adenomyoma of the Rectovaginal Septum, *Boston Med. & Surg. Jour.*, Vol. CLXXVI, No. 1, January 4, 1917.
4. Mayo, Wm. J.: Myomas of the Uterus, *Jour. A. M. A.*, Vol. LXVIII, No. 12, March 24, 1917.
5. Jessup, D. S. D.: Adenomyoma of the Rectovaginal Septum, *Jour. A. M. A.*, August 1, 1914.
6. Lockyer, Cuthbert: Proc. Roy, Soc. Med., Vol. VI, No. 4, January 2, 1913.
7. Stevens, T. G.: Adenomyoma of the Rectovaginal Septum, Proc. Roy. Soc. Med., 1916, Vol. IX, Obst. and Gyn. Section, p. 1.

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THE NON-SPECIFIC PROTEIN TREATMENT OF PSORIASIS.

A PRELIMINARY COMMUNICATION.

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The treatment of psoriasis as at present practised in the dermatological clinics gives striking evidence of the aphorism "Once a psoriatic, always a psoriatic," a conclusion which has become in fact almost an axiom in the practice of medicine. The conflicting character of the opinions regarding the value of a variety of therapeutic measures gives striking testimony to their limitations. Low protein diet, the administration of arsenic and thyroid extract are measures constitutional in character that have much testimony in their support, but have not proven universally effective. The application of chrysarobin and mercurial ointment is a favorite and widely accepted method of dealing with the skin lesions but can scarcely be considered as more than symptomatic treatment unless one accepts, as some do, an external causative agent in the disease. Nevertheless, they have much experience back of them, and, regardless of their inconvenience to the patient, have been found of service in relieving the disfiguring and annoying lesions of the disease. The

Fig. 1.—Case I, one week after beginning treatment.

proper treatment of psoriasis demands, however, a regime that remedies the fundamental fault, for it has long been recognized that the successful treatment of an attack offers little promise toward prevention in the future. It is the purpose of this paper to describe a therapeutic measure which has been applied successfully to a number of cases of well-developed psoriasis, and which seems to bear a logical relationship to its pathogenesis.

In a recent communication[1] Schamberg and Raiziss have reiterated and corroborated the conclusions voiced in two former papers;[2] namely, that the nitrogenous metabolism in psoriasis presents considerable deviation from that of normal individuals. They find in practically all cases studied a marked tendency to store up nitrogen in the body, while in certain severe cases they found the nitrogen elimination in the urine was depressed to the lowest level ever recorded either in normal or pathological conditions. They are warm advocates of the low protein diet. Even on an unusually low protein intake the psoriasis patient shows a capacity to retain nitrogen, and in comparison to eczema this nitrogen retention capacity is strikingly more marked in psoriasis. This retention is especially well marked during and after the outbreak of the eruption. One of the eczema patients showed a marked nitrogen retention somewhat similar to psoriasis, and it was in this case that low protein diet exerted a beneficial effect which, as they state, is gradual and progressive. Examination of the blood in both eczema and psoriasis showed no increase in the non-protein nitrogen, which fact speaks for a true tissue retention due to disturbed cellular metabolism and not to a renal disturbance.

Fig. 2.—Case 1, six weeks after beginning treatment.

These experiments of Schamberg and his coworkers are of great interest and fundamental importance as they point to a metabolic error that must be corrected by a constitutional agent or influence that will stimulate the body cells to deal normally with the protein intake. Low protein diet may be of service in relieving the condition as it brings to the functionally damaged cells a smaller amount of material that they are incapable of metabolizing in normal fashion and so less imperfectly metabolized nitrogen can accumulate in the organism. In somewhat the same manner the diabetic organism may be protected from partially oxydized carbohydrate

by reducing to a low figure the carbohydrate in the food. The normal organism rapidly adjusts itself to the nitrogen level in the food supply and continues in equilibrium while the psoriasis patient, as shown by Schamberg, stores nitrogen even on

FIG. 3.—Case 1, one week after beginning treatment.

a low nitrogen intake. Chittenden and his coworkers have shown that nitrogen equilibrium may be maintained at a lower level than was used by Schamberg, so there can scarcely be question that the psoriasis patient has a faulty mechanism for dealing with protein, and this is not a difficulty in absorbing the nitrogen, but is apparently a fault of cellular metabolism. The favorable results obtained by Walker in giving psoriasis patients thyroid extract may be due to the well-known stimulation to metabolism which this gland extract produces.

The therapeutic method described in this paper approaches the matter from another angle. It has been demonstrated, by so many investigators, that particular reference is unnecessary, that parenteral injection of a foreign protein stimulates the development of enzymes capable of splitting the particular antigen much as the digestive enzymes pepsin and trypsin do. There is, furthermore, much evidence that an antigen stimulates antibodies not in all respects specific. Certain of the methods used in experimental work show that some of the reactions produced by foreign protein injection are specific to a high degree, notably the anaphylactic reaction; others seem to be class reactions, and Hektoen has shown that the antibodies developed from bacterial proteins have class reactions. Clinical observations afford some substantiation of such ideas. It seemed possible to stimulate the capacity of the organism to deal with protein more effectively by giving subcutaneously injections of a comparatively non-toxic foreign protein. Such a method has been followed in the treatment of four cases of psoriasis, and while it is not possible to give as yet figures to show whether such treatment corrects the nitrogen retention, the clinical results are so striking as to warrant their publication.

The protein selected for this purpose was prepared from millet and alfalfa seed by the method recently described in this journal.[2] The method in question is a simple one: "Fifty grams of the seed meal are placed in a flask with a reflux condenser; 1000 c.c. of distilled water and 40 c.c. of 10 per cent. hydrochloric acid are added. The mixture is boiled for three hours and the coarser particles strained out through gauze. The filtrate is concentrated to 200 c.c. approximately and the excess of acid neutralized with 10 per cent. solution of sodium hydroxide. It will be found that an abundant precipitate of acid albumin forms when the extract is neutral to litmus. It is best to add sufficient sodium hydroxide to get a very faint alkaline reaction to litmus. A portion of the first precipitate formed will redissolve under these circumstances. The faintly alkaline solution is filtered and the filtrate concentrated to such a point that its nitrogen content is 0.3 per cent. as measured by a Kjeldahl determination. The concentration needed for this purpose varies somewhat in each case, but the final bulk of the standardized protein solution from this amount of material is

FIG. 4.—Case I, six weeks after beginning treatment.

about 100 c.c. If the reaction is very faintly alkaline the solution may readily be sterilized by boiling. The solution contains alkaline albumin, proteoses, and a small quantity of peptone. It is a most excellent culture medium for a variety of

organisms and ought to find extensive use in bacteriological laboratories for this purpose, but for therapeutic use the only safe way to preserve it is to seal the solution in small glass ampoules which are then sterilized by the discontinuous method."

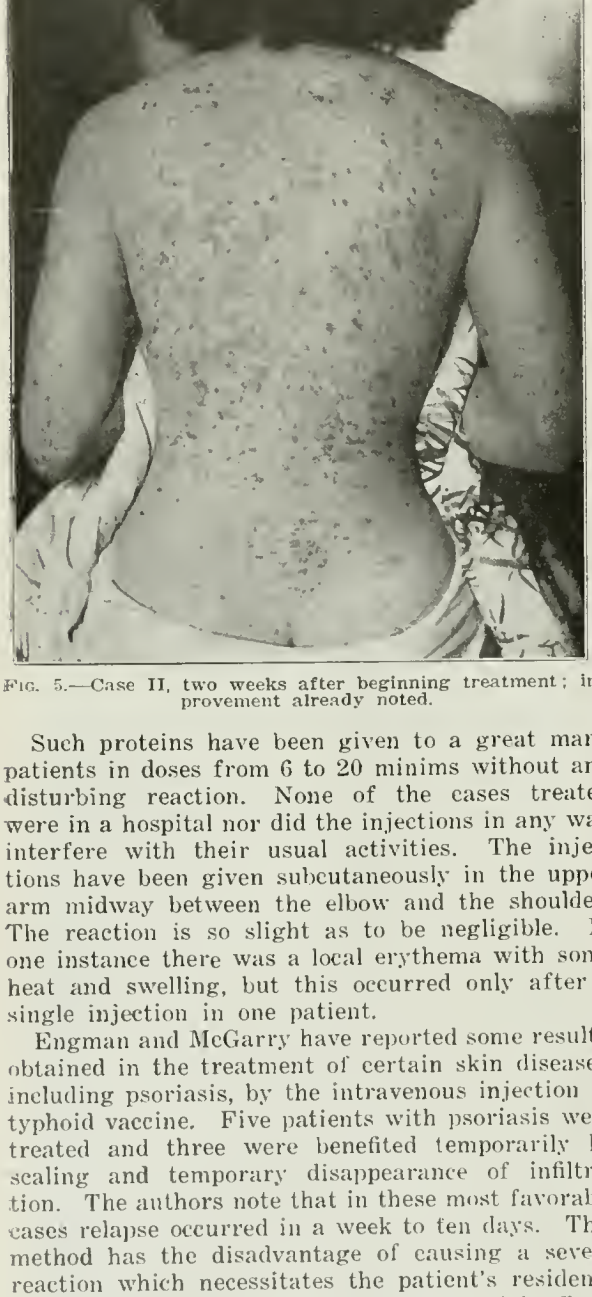

Fig. 5.—Case II, two weeks after beginning treatment; improvement already noted.

Such proteins have been given to a great many patients in doses from 6 to 20 minims without any disturbing reaction. None of the cases treated were in a hospital nor did the injections in any way interfere with their usual activities. The injections have been given subcutaneously in the upper arm midway between the elbow and the shoulder. The reaction is so slight as to be negligible. In one instance there was a local erythema with some heat and swelling, but this occurred only after a single injection in one patient.

Engman and McGarry have reported some results obtained in the treatment of certain skin diseases, including psoriasis, by the intravenous injection of typhoid vaccine. Five patients with psoriasis were treated and three were benefited temporarily by scaling and temporary disappearance of infiltration. The authors note that in these most favorable cases relapse occurred in a week to ten days. This method has the disadvantage of causing a severe reaction which necessitates the patient's residence in a hospital, and while certain beneficial effects were observed they did not compare in extent or character with those reported in this paper. The results herewith presented demonstrate that it is not necessary to use a highly toxic bacterial protein which seriously disturbs or inconveniences the patient, and it can hardly be argued that a long-continued intoxication with so virulent a poison as the typhoid organism is to be preferred to the comparatively non-toxic action of the proteins described.

Four patients have been treated by this method by the writer, and the details will be summarized.

Case I.—Mrs. S., age 45 years. First attack eighteen years ago. Recurrent attacks to date. Skin never free of lesions. Present exacerbation began in December, 1916. First seen March 12, 1917, when patient presented a condition of generalized psoriasis. Patient was in fair general condition with normal blood and urine, although somewhat over weight. Previous treatment had consisted of meat free diet and the application of chrysarobin and ammoniated mercury ointment.

Treatment began March 12 with a subcutaneous injection of 4 minims of the protein solution. Dosage was gradually increased up to 12 minims. For ten weeks injections were given three times weekly and for six weeks one injection weekly. The patient was on a general mixed diet during the treatment and was given a mixture of rhubarb and soda to keep the bowels open. The photographs show the condition of back and abdomen on March 17, five days after the first injection, and on April 24, six weeks after beginning injections. The improvement was a gradual one and was first noted in a fading of the inflammatory reaction about the base of the larger patches. The patient is now (July 23), four and one half months since treatment began, in fine condition.

This patient had been a psoriatic for many years with extensive large lesions scattered over the whole surface of the body and especially well marked on elbows, knees, and scalp.

Case II.—Miss M., age 19 years. First attacked in September, 1916, was a generalized psoriasis treated with chrysarobin ointment with only partial relief. March 1, 1917, marked exacerbation of condition, which was not favorably influenced by chrysarobin. Patient first seen by the writer April 10, 1917; when a condition of generalized psoriasis was presented, the thighs, legs, and scalp being also extensively involved. Treatment began April 10, with injection of 4 minims and continued triweekly until May 25, the dose being gradually increased to 12 minims. From May 25 to July 13 one injection was given weekly. Patient was given mixture of rhubarb and soda to keep bowels open.

Fig. 6.—Case II, nine weeks after beginning treatment.

but continued on a general mixed diet. It is worthy of note that this patient is very fond of meat and always ate freely of it twice daily and frequently three times daily throughout the treatment. The photographs show the progress in improvement observed on this patient, but it should be noted that the first photograph was taken two weeks after beginning treatment at a time when improvement had already begun. Again the first indication of betterment was seen in a diminution of the erythema about the scaly patches followed by falling of the scales.

This patient is now (July 20) a pink cheeked, clear skinned young woman, who has gained nineteen pounds during the treatment and is practically entirely free from psoriasis even in the scalp. The last lesions shown in the photograph of July 13 have entirely cleaned up.

Two other patients, one a young man of 27 years, with generalized psoriasis of five years standing, and the second a young girl 12 years of age with

FIG. 7.—Case II, after three months of treatment.

a psoriasis extending over five years and an acute exacerbation just beginning, have been treated in the same way with results similar in character to those already described. Since photographs of these patients are not available at present, their case histories are not given in detail.

Observations and Summary.—1. The subcutaneous injection of proteins prepared from millet and alfalfa seed has been found to produce a markedly beneficial effect upon the general condition and specific lesions in four cases of psoriasis. This is one hundred per cent. of the treated cases.

2. The injections have produced no disturbing reaction, either local or general, and have in no way interfered with the usual activities of the patient.

3. The improvement in the skin lesions begins in from two to five weeks after the injections are begun at a time when the larger injections have been reached.

4. The skin lesions have improved without modifying the diet and without the use of local applications.

5. It is not possible to make any predictions as to the permanency of relief afforded by this method. It seems possible, however, that when a good condition is once established, an occasional injection may be serviceable in preventing a new exacerbation.

6. The injections in no way interfere with the dietary or other forms of treatment that have been used in the past with reported good results. Possibly in stubborn cases a combination of these measures with protein injections may produce more prompt results.

The writer expresses her thanks to Drs. Norton and Bertine for referring the patients pictured in this article.

REFERENCES.

1. Schamberg and Raiziss: A Study of the Nitrogen Metabolism of Two Cases of Eczema. *Journal of Cutaneous Diseases*, Vol. XXXV, No. 3, March, 1917.

2. ——— Protein Metabolism in Psoriasis, *Journal of Cutaneous Diseases*, November, 1913; Summary of Research Studies in Psoriasis, *Journal American Medical Association*, 1914, Vol. LXIII, p. 729.

3. Beebe and Williams: Nonspecific Protein Treatment of Inoperable Cancer, MEDICAL RECORD, Vol. XCII, No. 3, p. 98.

4. Engman and McGarry: The Treatment of Certain Diseases of the Skin, *Journal American Medical Association*, Vol. LXVII, No. 24, p. 1741.

17 EAST 38TH STREET.

EPIDERMOID CARCINOMA OF A LARGE BRONCHUS WITH CAVITY FORMATION AND METASTASIS IN THE RADIUS.

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COLUMBUS, OHIO.
FROM THE LABORATORY OF PATHOLOGY OF THE OHIO STATE UNIVERSITY.

THE fact that since the recent report of four cases of primary carcinoma of the lung from this laboratory, Lambert has reported a series of four cases and in a personal communication mentions four others, and that we have chanced upon an additional case, would add emphasis to the statement that this condition is more frequent than statistics would indicate. Our experience would tend to prove that one of the main reasons for the lack of such cases in the literature is their evident confusion with the more chronic types of pulmonary tuberculosis. In each of the four cases previously reported by us, a diagnosis of tuberculosis had been made, and in the present case such diagnosis was held in abeyance only by the fact that there was an apparently primary tumor of the right radius. Ash has also called attention to such error following his experience in a hospital for advanced tuberculosis.

A thorough investigation of primary carcinomata of the lung tends to show that in the majority of cases such growths take their origin in the mucosa of the larger bronchi. Passler is quoted by Weller as stating that 87 per cent of all primary carcinomas of the lung are of bronchial origin, and

Weller, after imposing rather rigid requirements, cites 89 cases obtained from the literature in addition to the case that he reports personally. Scott and Forman, after the careful examination of many sections, report four cases fulfilling all of the standards set by Weller.

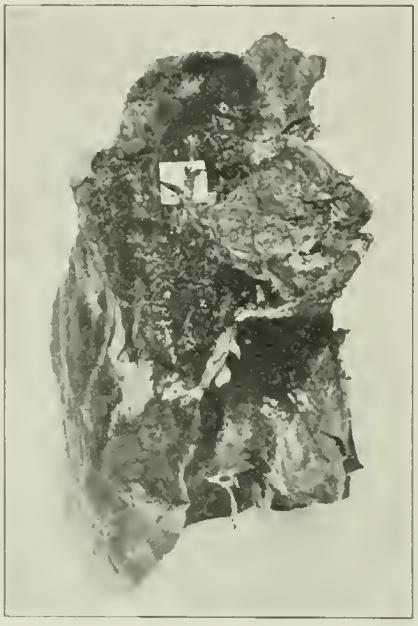

Fig. 1—Showing the cavity of the upper lobe with the stumps of bronchial tubes.

Weller, in discussing the histopathology of 57 of the cases cited by him, shows that 25 were epidermoid in type, 18 were composed of cylindrical cells, 10 of polymorphous cells, and other cases are described as round-celled, gland-celled, and cuboidal-celled. The portion of the tumor from which the sections for microscopic examination are taken may account for this variety of cell types for, as is stated elsewhere in this discussion, the cell structure of these tumors varies greatly in different portions, and as Weller remarks, "Probably most of the cases in the last four of the above groups might have been placed in one or the other of the first two." These statistics are borne out by those of Kurt Wolf, who states that fully 50 per cent of all bronchial carcinomas are of the epidermoid type.

The origin of the squamous epithelium composing these growths has created much discussion, and in his "Lehre von der Krebskrankheit" Jacob Wolff cites several theories advanced by authors who have investigated the subject. Wolf, Griffini, Watsuji, believe that the chronic inflammatory conditions accompanying tuberculosis play a very important role in producing metaplasia of the cylindrical cells of the bronchus into cells of the squamous type. Kurt Wolf offers a further suggestion that the irritation resulting from the rupture of a softened, pigmented bronchial node, which is apt to be tuberculous, into the branchus, may be a cause of the frequent development of the epidermoid cells in this locality. Silgert, Reiche, Passler and Ernst hold that such occurrences of squamous cells are due to embryonal rests or inclusions. While Paul Eicholtz explains their presence by the growth of the cylindrical cells whereby through mutual pressure they become flattened. Haythorn has demonstrated numerous metaplastic areas of this type in the anthracotic lung of a coal miner who died of pneumonia. Irritation, therefore, has been considered an important factor in the etiology of such metaplasia. The fact that the great majority of these epidermoid carcinomas occur in males leads to the opinion that occupation and habits of life which subject the individual to irritating vapors and fumes may play some part as a causative agent. The fact that the case of epidermoid carcinoma in our previous series occurred in a chemist who had spent years in a smelting works and was an excessive user of strong tobacco added to our belief in this suggestion. The present case, however, gives nothing to substantiate such a view, for the patient had always been employed as a building carpenter spending much of his time in the open air and there is no history of unusual irritation of any kind.

History: Patient, J. W., age 67, carpenter, nativity United States, admitted to Protestant Hospital, November 5, 1916, complaining of aching pain in right side of chest, cough, and a "feverish feeling." Mother died of pneumonia at the age of 80. Two brothers died of tuberculosis. Otherwise the history is unimportant. The cough, which was the chief symptom at the time of admission, was said by the patient to be of recent origin. A daughter, however, states that he had had a mild cough for a period of fifteen years, and that there had been a marked increase in its severity three months prior to his entrance into the hospital.

In July, 1915, the patient suffered a fracture of the right forearm near the wrist. This injury healed readily, but the part always remained weak. In May, 1916, he received a rather severe bruise to the upper part of the same forearm, and soon after this he noted a slight swelling of this portion of the arm. *X*-ray examination showed a distinct rarefaction of the upper portion of the radius and a diagnosis of osteomyelitis was made. The part continued to increase in size, however, until the patient was forced to seek medical aid and entered Grant Hospital, October 2, 1916. A second *x*-ray examination made at this time lead to a diagnosis of sarcoma of the radius and an amputation of the arm at the middle third of the humerus was made.

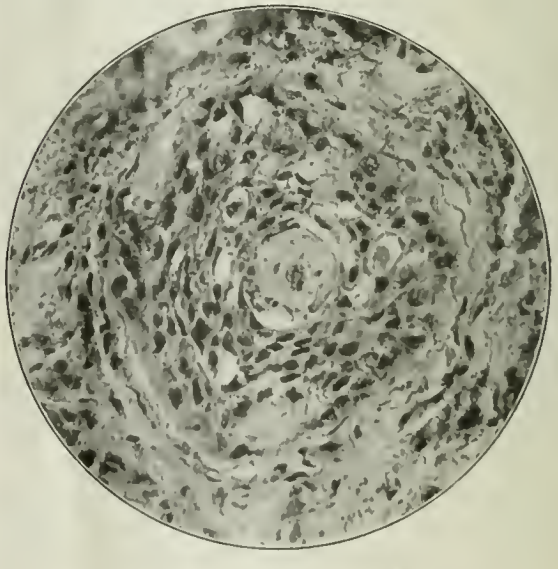

Fig. 2—A mass of epithelial cells, showing keratinization of its center.

The patient states that soon after the operation he "caught cold" and began to cough. He had no chill, but noted the development of an aching pain in the lower portion of the right side of his chest. After leaving the hospital he was about for only a few days when he was forced to return to bed because of weakness.

His cough had been persistent and was productive of large amounts of thick chocolate colored sputum. Repeated microscopical examination of the sputum failed to reveal tubercle bacilli, but showed numerous streptococci with pus cells and erythocytes. No fragments of lung or tumor tissue were encountered.

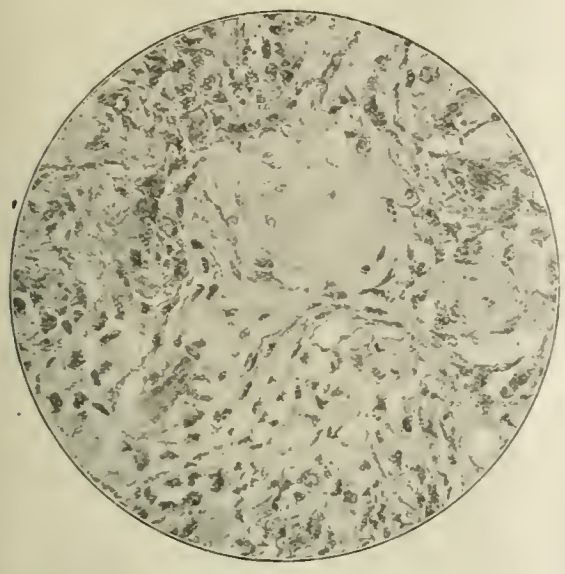

Fig. 3—A higher magnification of keratinized epithelial cells.

At the time of entrance into the Protestant Hospital, the patient presented the following physical findings:

Male, white, markedly emaciated and pale. The right arm amputated in middle third of humerus. The amputation stump is practically healed, but still shows a dark scab at the center of the wound. The pupils are sluggish, the teeth missing, the tongue thickly coated and tremulous, the heart sounds feeble. Cracked pot resonance and amphoric breath sounds are heard over the entire right upper lobe of the lung anteriorly and over the right supra spinus fossa. Tenderness on percussion is elicited over the second and third right interspaces anteriorly. Dullness and bronchial breathing are present over the entire right lower lobe. There are fine moist rales over both lungs and coarse moist rales over the right upper lobe. There is a distinct friction rub over the lower lobe of the right side. Four days after his entrance he suffered from a moderate pulmonary hemorrhage.

The blood pressure is systolic 95; diastolic 50. The blood count, hemoglobin 75 per cent., red cells 4,792,000, leucocytes 12,000, polynuclear 67 per cent., small lymphocytes 14.0 per cent., large lymphoctyes 8 per cent., large mononuclear 0.5 per cent., transitional 8.0 per cent., eosinophile 2 per cent., mast cells 0.5 per cent. The urine showed a trace of albumin, a few granular and hyaline casts, and a moderate number of leucocytes. The clinical diagnosis is bronchopneumonia with abscess, and possible metastatic sarcoma of the right lung.

The classical symptoms of primary carcinoma of the lung are cough, dyspnea, dull pain, hemoptysis, and cachexia. Adler in his monograph states that pain is the most common and constant as well as the earliest symptom of this disease. In the case under discussion these symptoms were more or less irregular in their manifestations. The cough which was rather pronounced in the later stages of the disease was indefinite during its earlier course. Dyspnea, which was a visible symptom during the last stages of the illness, was not present earlier and was never complained of by the patient. Pain in the chest was complained of only late in the disease and was then located in the lower portion of the thorax. Hemoptysis was not present and the cachexia was not marked until the disease was well advanced.

These somewhat irregular symptoms combined with the rather typical physical signs of extensive cavity formation and the presence of a bronchopneumonia, did not apparently warrant a diagnosis of carcinoma of the lung. In fact, tumor of the lung would have been entirely discarded had it not been for the supposed primary sarcoma of the radius. Weller has drawn attention to the fact that in cases of primary cancer of the lung with metastasis the metastatic growth may so dominate the clinical picture as to lead one astray in diagnosis.

Autopsy Abstract: Anatomical Diagnosis. Malignant tumor involving the upper lobe of the right lung with attachment to the inner surface of the first rib of the right side; metastatic nodules in both kidneys and both adrenals; necrosis and cavity formation in the upper lobe of the right lung; occlusion of the right bronchus by a mass of cellular and necrotic material; pleural adhesions over both lungs especially marked about the upper lobe of the right lung; increase in the pericardial fluid; bronchial pneumonia in the lower right lobe; fibrosis of the aortic valves; diffuse atheroma of the aorta; absence of the right arm from amputation.

Histological Diagnosis: Epidermoid carcinoma of the right bronchus.

Thoracic Cavity: Upon the removal of the sternum a firm mass of adhesions is encountered at the upper anterior portion of the right lung. In severing the tissues from the sternum, a cavity in the upper lobe of the right lung is exposed. This cavity measures 8 x 11 cm. and contains in its lower portion a mass of necrotic tissue which is attached by a fibrous strand to the anterior wall of the cavity. The inner walls of the cavity are rather well defined and are coated with a small quantity of necrotic material. The upper portion of the wall is firmly adherent to the inner surface of the upper two ribs, and upon separation it is found that there is a mass of pale firm tissue attached to the inner surface of the upper rib. This mass of tissue measures 6 x 3.5 x 1.5 cm. In the wall of the cavity there are several areas of thickening which seem to be composed of the same kind of tissue as that seen on the inner surface of the rib. The first of these thickened areas measure 3 x 4 cm. in diameter. The second measures 2 x 3 cm., and the third 1 x 1.5 cm. These areas are in the thickened pleura and bear a very intimate relation to the necrotic material lining the wall of the cavity.

The right pleural cavity contains 300 c.c. of turbid fluid and exhibits many adhesions over the middle and lower lobes of the lung in addition to those described for the upper lobe. There are also adhesions over most of the pleural surface of the left lung.

Lungs: Upon removal of the right lung, it is found that the cavity above mentioned occupies almost the entire upper lobe and that its inner wall is ragged and dark in color. The lower lobe of this lung is somewhat consolidated, and on cut section the surface is mottled, showing small grayish areas about the bronchial tubes. In the lower portion of the lobe, these areas fuse, and the condition resembles that of lobar pneumonia. The

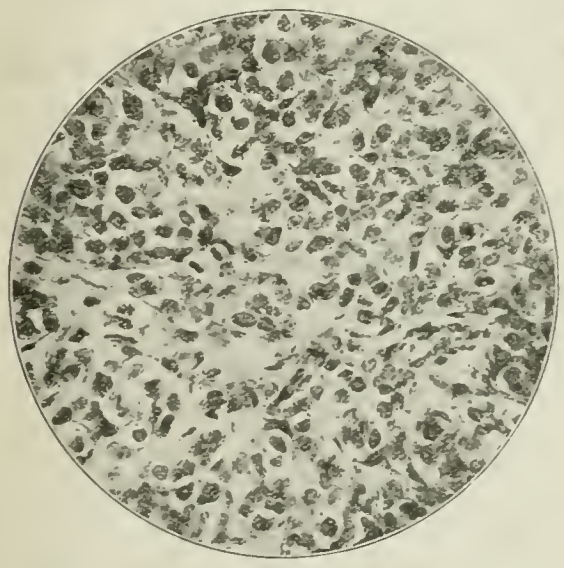

Fig. 4—Cell type seen in the metastatic nodule in the radius.

middle lobe of this lung presents an area of consolidation on its anterior margin which is chiefly due to edema.

The bronchial tube leading to this lung is almost entirely occluded by a mass of soft necrotic material similar to that seen within the cavity. The bronchial lymph glands at the root of this lung are greatly enlarged, one mass measuring 4 x 2.5 cm. in diameter. Their color is dark with grayish areas intermingled.

The left lung is large, its firmness is somewhat increased, and upon section a large quantity of frothy blood-tinged fluid escapes, indicating a rather general edema of this lung. The bronchial lymph nodes are not remarkable. The bronchial tubes contain a moderate amount of mucopurulent material. The mucous membrane is congested.

Histopathology: Sections taken from the thickened areas in the cavity wall and from the mass attached to the first rib show a distinct grouping of the cells, these groups are separated and surrounded by well developed bands of fibrous tissue. The cells are large, irregularly round, and have large deeply staining nuclei. In some of the cell masses a concentric arrangement can be seen and at their centers keratinization is well marked. Thus leaving, no doubt, as to their epithelial origin. In some of the sections, however, the cells have not fully differentiated and are seen as small, irregular, dark staining, spheroidal cells and, as were described by Scott and Forman, "they appear when taken by themselves not unlike those from certain sarcomas." The cell type found in the growth in the radius, correspond to those last described, being small, irregular cells without definite grouping and closely resembling in form and staining reaction the undifferentiated cells of sarcoma. In this connection Ewing's observation that "it is becoming more and more apparent that so-called sarcomas of the organs are in reality spindle-celled carcinomas" is of special interest. For in three of our previously reported cases the cells more remote from the bronchial tubes lost their differentiation almost completely and were seen as small round or spindle cells with dark staining nuclei and a scant indefinite protoplasm.

Discussion—The features of special interest in the present case are the extensive cavity formation and the unusual metastasis in the radius. It is usually stated that metastasis to the bones occurs most frequently in cases of carcinoma of the thyroid, mammary gland and prostate. Wolff quotes E. Fränkel as stating that 20 per cent. of all carcinomas of the prostate gland give rise to metastatic growths in the bones. Rodman believes that metastasis in the bones occurs very frequently following carcinoma of the breast, and cites the work of Herbert Snow showing that 9 of 12 unsuspected cases examined gave microscopic evidence of such metastasis. Hassler cited by Crotti reports 140 cases of thyroid carcinoma, 34, or 24.3 per cent., of which gave metastasis in bones.

Of the 498 cases of primary carcinoma of the lung reported at this time, exclusive of the case under discussion, 62, or 14 per cent, show metastasis in the bones, thus indicating that carcinoma of the lung stands well up in the list of those giving metastasis in the bones.

Fifty-eight of the cases in Adler's series are recorded as giving metastasis in the bones. In some the metastasis was multiple, in others single. In this series twenty-two of the secondary growths occurred in the sternum and ribs, twelve in the vertebræ, ten in the skull, three in the femur; the right humerus, the ilium, the shoulder joint, the finger, the clavicle and the "long bones" are each recorded as being involved once. Under the heading of "Metastasis to the Bones," five cases are recorded. Aside from these Wiczkowski reports a single instance of metastasis occurring in the ribs and vertebræ in his series of thirteen cases and Weller in his series of nineteen cases, not cited by Adler, reports a case in which secondary growths were found in right femur and in the vertebræ. Gilchrist mentions metastasis as occurring in the ribs in his case, and in one of the cases reported by Lambert metastasis occurred in "various bones (vertebræ and ribs especially)." In the remainder of those cases recorded since 1912, to which access is possible, no mention is made of metastasis to the skeletal system. A review of these recorded cases, therefore, indicates that metastasis to the bones of the arm is rare, the only ones mentioned being those of Adler's series in which a single case (Japa) showed metastasis in the right humerus and one other (Hinterstosser) in the third phalanx of the right ring finger.

The formation of cavities accompanying primary carcinoma of the lung takes place in a considerably lesser number of cases than does the metastasis to the bony structures, it being recorded in only thirty-four of Adler's series and in none of those since reported. In six of the cases described the cavities were small and multiple, in four others the tumor was complicated by tuberculosis, so that it is somewhat uncertain whether the cavity was due to the carcinoma or to the tuberculous process, thus leaving less than 5 per cent of the cases showing well defined and uncomplicated cavity formation.

Summary—It is becoming more and more apparent that carcinoma of the lung is not of infrequent occurrence. It, therefore, is to be borne in mind more constantly by the diagnostician.

Metastasis to the bones is present in 14 per cent of the reported cases of primary lung carcinoma.

Cavity formation is present less frequently (5 per cent), but is at times a complicating factor in diagnosis.

The microscopical examinations of tissues taken at a distance from the seat of origin or in the metastatic growth is apt to lead to an erroneous diagnosis.

Our sincere thanks are due to Dr. J. F. Baldwin for portions of the history and for the record of the amputation, to Dr. C. F. Bowen and Dr. H. J. Means for the x-ray photographs, and to Dr. E. R. Shilling for the use of microscopic slides from the growth in the radius.

BIBLIOGRAPHY.

Adler: Primary Malignant Growths of the Lungs, New York, 1913.

Ash: Pathology of Mistaken Diagnosis in a Hospital for Advanced Tuberculosis, *J. Am. Med. Assoc.*, Vol. LXIV, p. 11.

Crotti, A.: The Thyroid Gland (in press).

Ewing, Jas.: Pathological Aspects of Some Problems of Experimental Cancer Research.

Fränkel, E.: Cited by J. Wolff, Vol. II, p. 1034.

Haythorn: Metaplasia of Bronchial Epithelium, *J. Medical Research*, Vol. n. s. XXI, p. 523.

Lambert, R. A.: Four cases of Primary Carcinoma of the Lungs, Proceedings N. Y. Path. Soc., Vol. XV., No. 7.

Rodman: Diseases of the Breast, Philadelphia, 1908, p. 216.

Scott & Forman: Primary Carcinoma of the Lungs, Medical Record, Sept. 9, 1916.

Torok and Wittleshoffer: Cited by Rodman, Diseases of the Breast, p. 125.

Weller: Primary Carcinoma of the Larger Bronchi, *Arch. Int. Med.*, Vol. XI., p. 314.
Wolff, J.: Die Lehre von der Krebskrankheit, Vol. II., p. 823.
Von Wicskowski: Primary Lung Cancers, *Wiener klin. Wochenschrift*, Vol. XXVI, p. 1067.

710 PARK STREET.

PHYSICAL ATTITUDE AND VITAL EFFICIENCY.

BY SILAS WRIGHT GEIS, PH.D.,
NEW YORK.

THERE is only one way to increase vital efficiency by means of physical attitude, and that is to adopt an attitude that augments the normal, habitual capacity of the lungs; for the air that enters the lungs is the "steam" that generates bodily activity. Other things being equal, the more air a man's lungs can normally utilize during each respiration, the greater will be his physical effectiveness.

How are we to establish this Position of Maximum Vital Efficiency? Here are the directions, as they have been worked out in the writer's experience, during a period of over 15 years.

First—Raise the shoulders, straight upward and slightly backward, until they are perfectly square.

Second—Now draw the body straight upward to the greatest height you can make it attain. Do this by sheer will-power, without consciously using any local muscular force. Then there will be no strain. To put it another way: make yourself as tall as possible; or try to press the top of the head against an imaginary object just above it.

These two movements elongate the chest and maximize the capacity of the lungs in a vertical direction.

Third—In raising the body to its greatest height, it will be found that the backbone straightens out, corrects its tendency to curve outward, and assumes a slight inward curve. Accordingly, our next direction is to accentuate this forward curve of the spine, but only so far as is consistent with maintaining the attitude of extreme tallness above described. These two movements supplement and balance each other. By arching the backbone frontwards (making one's self slightly sway-backed) the capacity of the chest is maximized in a frontward-backward direction.

Fourth—Expand the lower ribs, at the two sides, in a lateral direction. Push them apart (outward) as far as you can by will-power, without consciously using local muscular force. Now, maintain them in this position, except in so far as it may be necessary to let them fall slightly inward during each expiration. In other words, let the sidewise movement of the lower part of the chest be from maximum to medium expansion; instead of being from medium to slight expansion, as is generally the case. This maximizes the capacity of the lungs in a sidewise direction.

For the sake of simplicity, we have described the Attitude of Maximum Vital Efficiency under four separate headings; but as a matter of fact, it is attained by a single impulse. The mind forms a picture of the attitude in its entirety; the will instructs the body to imitate this picture; and repetition of this process establishes the desired attitude as instinctive. This is rendered all the easier because each movement co-operates with the other three: the squaring of the shoulders and the arching of the backbone slightly forward assist in raising the body to its full height; and the maintenance of the body at its full height helps to keep the backbone and shoulders in place; whereas all these movements co-operate to put the lungs in a position where they expand themselves, along their horizontal diameters, with greatest ease.

The distinguishing feature of the attitude herein described is that it augments, to the utmost, all three dimensions of the chest, and maximizes the habitual capacity of the lungs—all without muscular strain. There is no interference with the instinctive process of breathing, but simply a fuller use made thereof. The results of this are soon realized in the shape of better physical welfare and endurance, along with their spiritual counterparts of greater buoyancy and will-power.

Reduced to its lowest terms, for teaching purposes, the Attitude of Maximum Vital Efficiency may be summarized as follows:

"Square your shoulders.

"Make yourself as tall as you can, and slightly sway-backed.

"Keep the lower ribs expanded at the sides."

YALE CLUB.

Medicolegal Notes.

Physical Examination of Suitor for Damages.—The Oklahoma Supreme Court holds that where the plaintiff in an action for damages for personal injuries exhibits a portion of his body to the jury and physicians called by him testify as to the nature and extent of his injuries, and the plaintiff offers to submit to an examination by any physician or board of physicians named by the court other than those in the employ of the defendant and who are shown to have been employed by the defendant, and who are to receive $25 per day for testifying in the case, it is not error for the court to refuse to require the plaintiff to submit to an examination by the physicians employed by the defendant.—Oklahoma Ky. Co. vs. Thomas, 164 Pac. 120.

Necessity to File Certificate to Practise.—The Iowa Supreme Court holds that the requirements of Code, Sections 2576, 2577, 2580, that, before engaging in the practice of medicine a certificate must be obtained and filed by such person attempting to practise medicine in the State are mandatory, and no one can engage in such practice until he has complied with all the statutory requirements. It is held that a physician who had failed to comply with Code Section 2577, requiring him to file a certificate for record in the office of the county recorder, could not maintain an action for the value of services rendered, though his failure was due to no intent to evade the law, but to a misapprehension induced by the clerk of the district court as to the proper office in which to file the certificate.—Lynch vs Kathmann, 163 N. W. 408.

Proof of Degree of Skill.—In an action of damages for alleged malpractice in treating an injury to the plaintiff's wrist, it is held that where doctors of equal skill and learning, being in no way impeached or discredited, disagreed as to the proper manner of treatment for the injury as alleged by the plaintiff and the advisability of an operation not performed by the defendant surgeon, the plaintiff cannot recover, because of failure of proof of negligence, since an award of damages would rest upon mere speculation and conjecture.—Dishman vs. Northern Pac. Beneficial Assn., Washington Supreme Court, 164 Pac. 943.

Military Medicine.

LETTERS FROM AN M. M. R. C.

THE consensus of opinion among the officers of the Medical Reserve Corps is that the regulation uniform is far from satisfactory. The so-called dress uniform is neither very smart nor is it comfortable. The standing collar is inclined to choke and the white collar or stock that is called for in regulations to be worn underneath is hardly ever visible and simply adds its discomfort to the rest. There is a general hope among officers that the style of roll collar adopted by the British officers, will be taken up over here and also the shoulder strap belt. Now that everyone has provided himself with the so-called regulation uniform (a gross misnomer as far as material, shade, and cut go) it would be the American psychological moment to have a new model service uniform called for. This would keep sweat shops and cloth factories running full blast, besides the manufacturers of trimmings and buttons. Nothing can ever be done with the old uniform. They will probably be seen for years to come on drivers of garbage trucks and other followers of lowly and arduous occupations. The regulation flannel shirt is supposed to be worn underneath. Beside the collar or stock, white cuffs are called for. It is not difficult to picture the disorganized and sloppy appearance of an officer if for any reason he removes his blouse. A regular army man is always recognized in civilian clothes. He both looks and feels unnatural. Detached cuffs probably seemed all right to the officers who helped design the present uniform. The subject seems too important to be entrusted to any except experts in what is serviceable, comfortable, and smart in the realm of tailordom. The regulation service cap runs the chauffeur to a very close finish. The service hat of felt is absolutely appropriate and suitable to our country. It is a hybrid between the cowboy headgear and the Mississippi gambler of steamboat fame. Of the entire equipment it is the only part that seems appropriate and satisfies all concerned in the wearing. The puttees that officers wear run through every gamut of the scale of putteedom. Short ones are seen, barely coming to the middle of the calf; long ones, so long that they wrinkle up at the heel of the shoe. The American has taken to his puttees in the same fashion as he does to his shotgun. He never bothers about the length of the stock. A man with short arms will use a gun whose stock is unusually long and *vice versa*, utterly regardless whether it fits. They make it do anyway. Many have never bought puttees before and are not expert in judging the quality of leather and the difference between imitation hog skin and real. After the first rain puttees assume all kinds of bizarre shapes—some disintegrate entirely, leaving so many separate leaves of pasteboard. It is a considerable shock to the ordinary practitioner to find that the price of a good pair of puttees will run at least ten dollars off his roll. He does not see the value as compared to his boots, that he is accustomed to paying five dollars for.

There are some odd duties befalling members of the medical officers' training camps that I have not mentioned. Foremost amongst them I must mention the "fly swatting" assignment of duty. Every day five or six officers are assigned to this occupation. They are presented with the ordinary fly swatter and for fifteen minutes after each meal their duty is to bring death and destruction to the flies in the dining hall. It is not unusual to notice a man who heretofore in public life has been known as a scientist or surgeon, mentally engrossed in the occupation. There is food for considerable in this vision of distinguished age engrossed in such lowly pastime. There has in other ways also been a metamorphosis in the character of the medical officers, past belief. Is it temporary or permanent? I have heard of girls breaking their betrothal engagement to men who have enlisted in the officers' training camps, finding them so completely changed in character at the end of their training course. I have heard of women who have discovered their husbands intolerably gloomy and morose since their return from camp. I have heard one wife say that she did not know her husband as the same man since he had cut off drinking his daily anteprandial cocktail. Will the end of this character change mean a flight of prodigious numbers to the divorce court? Seriously, most men, especially those of over forty years, are changed, both in looks and character. They have felt it and show it much more markedly than the young bloods. The majority of the elders have lost weight and their midgirth is considerably diminished. The expression about the faces is, if anything, more drawn and severe. The roots of their past life have been so completely torn asunder that their eyes look into the future without fear or illusion. The worst has happened and now they are ready for anything.

Another odd duty of camp life is to be made "office orderly." In this position you attach yourself to the headquarters or office of your company and cheerfully perform the duty of office boy to your commander, who may be twenty or thirty years your junior. You run errands and deliver messages, you clean out the office, empty the waste paper basket and a thousand other such little jobs. One wonders occasionally if it was not some hideous mistake or dream that you once were considered a surgeon of some renown. It is no dream as to what you are doing. You are playing the game for all it is worth. You are doing the work of office boy in the best manner that you can possibly do it and meanwhile you forget that you are still paying a competent stenographer and telephone operator in your home office to keep things going. This spirit governs all men in camp who have answered their country's call in the proper spirit.

The criticisms that occasionally crop out from this pen should not be taken as a reflection of an unfavorable angle of the whole. Taking all in all I do not see how the Department of the Surgeon General could have accomplished more than it has done in such a short space of time. There is nothing so perfect that flaws cannot be found in it. Admiring the whole, it is natural for one having the organization very near to heart to try by criticism to find the weak points and make it perfect. Past this it is not the author's intention of going. There is another side to the officers' service in training camp that I have purposely avoided. I could tell of clear starry nights, many men gathered in the company street listening to the words falling from

someone just returned from active surgical service on the firing line—all that he heard and saw with his own eyes—the subdued excitement at the feeling that we too may be there before long—even the locusts humming in the grove, while the midday lecture is on to the circling sea of faces in front, has its side of picturesque romance and poetry—the murmur of distant voices singing—the silence of the night that follows taps, with nothing but the stars above you, twinkling through your open tent. The stars. Yes, God bless them! They remind us what we are doing here and we go to sleep contented.

TRENCH FOOT.

Probably no other condition of modern warfare has brought so much hardship to the soldier and presented so many new sanitary and medical problems as trench life. One of the most troublesome of the affections resulting from these conditions is that known as trench foot. Exposure to low temperature and wet for long periods restricts the circulation, especially of the lower limbs, and this is the most active factor in the causation of this disease. In slight attacks there are anesthesia and edema of the parts; in the severe cases there are cyanosis, gross edema, bleb formation, and even serious organic tissue changes. In the very worst cases there is gangrene, accompanied by all the dangers of infection, by destruction of tissue, and loss of limbs. There is a tendency to a contracture of the foot, usually described as a turning under of the foot. At the beginning of the war, trench foot gave a great deal of trouble and caused much of the disability, but now the perfection of general sanitary methods and the construction of better trenches have helped to diminish the incidence of this condition as well as to reduce disease and disability in general. Moreover, as affects trench foot, the smaller sectors and the greater reserve of men, allowing for more frequent change, have of themselves, without the actual preventive methods instituted, reduced both the severity and the incidence of this condition. Where previously the men had to stay in the trenches for long periods, at present there is a change every few days.

As a general prophylactic measure against trench foot it was found that the wearing of looser boots, perhaps a size too large, was of great help. It would prevent the restriction of the circulation, which is so large a factor in the causation of trench foot. The general circulation of the body can be maintained by warmth and by appropriate movements and exercises. Socks must be changed very frequently, and must especially be kept dry. Torn socks are especially liable to constrict the blood vessels and produce injury to the foot. Foot rags, well paraffined, have been tried, with more or less success, to obviate the difficulty of keeping socks whole. If these foot rags are well applied they are found to be far more comfortable than socks. Puttees must be loosely applied. Boots must be thoroughly greased before being put on. Rubber boots have been extensively used, and are looked upon with favor. Thorough greasing of the feet was tried at the beginning, but was found to be offensive to the men, and consequently not conscientiously carried out. The newest, and apparently the most successful, method of preventing trench foot is by means of the so-called "trench-foot washhouses." Immediately before returning to the trenches the men go to these washhouses for treatment. Here they have their feet soaked and washed in warm water and with a special soap composed of soft potash soap 1,000 parts, powdered camphor 25 parts, and borate of soda 100 parts. The feet are then carefully dried, and treated by the regimental surgeon or chiropodist, and finally dusted with a mixture of powdered camphor, talc, and borate of soda. In the trenches the soldiers must be served with hot food in order to maintain warmth and keep up the general circulation.

No amount of attention to the feet of the soldier can be too painstaking as regards their cleanliness, shoeing, and physical condition. To escape disability as the result of actual war violence and to receive it as the result of preventable sanitary conditions, would be indefensible. The pedicuring of the feet is vastly more important than the manicuring of the hands, especially in the case of the soldier. When properly trained and educated to his calling, the experienced chiropodist is a most useful member of the military forces.

A GERMAN VIEW OF TRENCH LEG.

In addition to trench foot and trench hand surgeons have described a so-called trench shin, which manifests itself by pains in the tibia. Quite a literature has grown up about this painful condition in British, French, and Italian journals, and it is claimed that a considerable recent German literature already exists on the subject. According to Peláez this condition is described in full by Sittmann in the *Munchener medizinische Wochenschrift*, No. 32, 1917. The pains which, as a rule, are preceded by malaise, headache, rigors, fever, and lassitude, are most commonly felt on the inner aspect. Absent during the day, they tend to appear in the evening and by night have become unendurable. Warmth aggravates while cold alleviates the suffering which is entirely beyond the control of salicylic acid and aspirin. As a rule, there is no sensitiveness of the bone on handling, but the muscles of the calf and sole are tender to pressure and special tender points may be isolated.

A systematic investigation brings out numerous anomalous symptoms which are not readily coordinated. Active motion does not seem to be inhibited, but upon passive motion the muscles are tense. The sensitiveness of the latter may be reduced at times by use. There is no evidence of motor excitability. In certain cases or at certain times the muscles are hypotonic, and the calf may be relaxed and flabby when the legs are crossed and when the patient lies supine. The calf may even be so flaccid as to suggest a suspended bag. In other cases and especially when the disease is incipient the calf may be swollen, hard, hyperalgesic to pressure and after active movements, especially when made against resistance. In such cases the muscles have a more than normal tension, much as in the myotonus of Thomsen's disease. As a rule this condition wears slowly away.

Disturbances of sensation in the skin are trivial. The patellar and plantar reflexes are, as a rule, exaggerated.

Despite the complexity of the picture the cause is simple—immobilization of the limbs in the trenches. It has not yet been seen in other than trench fighters. Some authors see in the condition only a neuritis *a frigore*, others a mechanical condition due to the leggings, puttees, overgaiters, or whatever leg wear is in use. Korbsch, doubtless having in mind the initial evidences of an infection, accuses recurrent fever, with a special localization of the spirilla in the blood of the extremities, while Grützer similarly makes it a local manifestation of influenza. The syndrome occurs with especial frequency in the flat-footed. It is admitted that the initial behavior does not differ from that seen in the onset of severe infections, as typhus and dysentery. Siegert has noted that subjects with edema of the limbs have a special predisposition. We can only conclude that we have here a syndrome which can occur under very opposite conditions.

Trench Hand.—Péré and Boyé have seen a number of cases of congelation of the hand in trench fighters, some of which ended in mortification. During severe bombardments men lie motionless for hours and snow is liable to fall on them and lie there. The hands have to grasp the musket and cannot be protected. Hours may elapse before they can be dried. Several forms of trench hand are recognized. In one the member is merely stiff and clawlike in attitude. A higher degree shows the same phenomena with addition of discolorations and at times phlyctnulæ. This form may end in exfoliation of the skin. In the gravest form the hand is entirely immobilized with mummification and moist gangrene, the two forms of gangrene coexisting. The discoloration and phlyctenulæ are seen in the terminal phalanges. —*La Press Médicale*, July 16.

Convalescent Malarial Soldiers and Farm Labor.—Jeanselme suggests that victims of malaria may recuperate as farm colonists. In infirmaries they become depressed and bored and should be given some kind of work or diversion. In regard to farm work they should possess some natural training or fitness for it. Picked men may then be placed in charge of abandoned farms. Naturally the men should be graded as to the kind of work. The sojourn of the individual will not be a long one, for he will soon be able to rejoin the ranks. The basic principle involved is, of course, a better convalescence for the soldier plus the advantages which accrue to the State in speeding agriculture.—*La Presse Médicale*, July 19.

Respiratory Tuberculosis and the War.—Much has been written on tuberculosis in the French Army, but careful analyses of personal experience with large material are not so common. In *Le Progrès Médical* for July 14 Morichau-Beauchant reports on his experience with 1206 cases of some form of tuberculosis of the respiratory organs seen by him during seven months (September, 1916 —April, 1917). The patients all came from the Ninth Army and comprised over two-thirds of all the chronic cases under observation. They were divided up as follows: 258 represented tuberculosis in the course of evolution; 948 arrested or non-evolutive tuberculosis. Of the first named 157 were examples of ordinary fibro-caseous phthisis while 74 others represented pneumonic exacerbations which have been termed necrotizing pleuropneumonia. There remains a small group of 28 cases of acute phthisis of which 3 were examples of acute miliary tuberculosis. The non-evolutive material is subdivided into 320 cases of fibroid phthisis, 171 cases of the attenuated, otherwise abortive form of the disease and 451 cases of tuberculous pleurisy. The latter type is of the greatest importance because it makes up over a third of all cases of so-called pulmonary phthisis. Nearly all of these cases (434) form a group of which little is known in literature. The affection is apparently a primary pleurisy which attacks young subjects and is practically of post-bellum origin. The subjects are pale, thin and weak. The cough is incessant, dry and more pronounced at night. The sputum is free from bacilli. A localized pain is present somewhere along the chest wall. The process is usually multiple, often bilateral. There is a tendency to enlarged lymph-nodes in the neck and axilla which is affiliated with tracheo-bronchial adenopathy. The *x*-ray invariably reveals enlarged nodes at the hilus but otherwise gives little information. Fever at night is seldom absent and sweating is habitual. The subjects usually present digestive disturbances, diarrhea, palpitation, headache, vague joint pains and low blood pressure. This type of affection runs an acute or subacute course with tendency to recovery. In not one case did true pulmonary tuberculosis develop. Adhesions invariably result and when these are present about the apex, apical tuberculosis may be simulated.

In about one-quarter of the 1206 cases the tuberculosis antedated the war (302). Of this number 117 had been sent back from the ranks for treatment or auxiliary service. An equally large fraction had remained at the front, having been equal to their duty. As a matter of fact nearly all of the 302 patients suffered from the non-evolutive form of tuberculosis and the balance presented a gradual type of evolution. Conversely the type of disease which appeared during the war was very largely evolutive. As these patients as a class had received antityphoid vaccination, this latter was often accused of lighting up the disease, but the author found but two patients in which this may have been the case. In like manner gassing may perhaps have determined three cases. The possibility that wounds and contusions could act as causal factors is not great, although now and then traumatism seems to light up an old focus.

The regimental surgeon should at once evacuate all cases of evolutive tuberculosis and this extends to all recent cases of any kind. The patients go to hospitals or sanatoria for treatment. Many subjects with non-evolutive tuberculosis (chiefly fibroid) have done good work at the front and have in time been evacuated for bronchitis, hemoptysis, emaciation, etc. Aside from the dry, benign form of pleurisy there is a certain amount of pleurisy with effusion which is almost always followed by pulmonary lesions and must be watched with great care. Complete recovery of cases of tuberculosis

under treatment may still leave the subject unfit for military service. On the other hand many subjects who actually suffer from non-evolutive forms are quite equal to duty at the front.

The Mobilized Dogs of the French Sanitary Service.—Grandjux in *Le Caducée* for August 15 asks what has become of the 120 dogs which once paraded before the public and asks why the complete silence concerning them. The question is often asked whether they have not made good, but to this he is able to answer in the affirmative. He states that some score of the first conscription of animals sickened or were withdrawn from service, so that about an even hundred of the original were really mobilized. On the other hand 80 new animals were drafted as a second contingent, so that 180 actually entered the service. The losses which occur usually take place in the first few days of mobilization. Dogs, like men, desert at times, but only when they have become separated from their masters, and before these have been replaced by others. Early in the war, when the armies were in retreat, the dogs could not be fully utilized. They have been useful in trench warfare, especially in locating wounded men at night. During the day rescue work of any kind is often impossible. The tendency of the dog to bark militates against the necessary quiet of rescue work. A good dog can, however, usually be trained to keep silence save when a shell explodes near him. In detail the possibilities of the dog are summed up in unofficial reports from the Fifteenth Army Corps early in the war. In Alsace they were of the greatest help to the stretcher men, fairly dividing the honors with them. This help was largely made possible because the fighting occurred chiefly in the woods, where the wounded might be readily overlooked. The dogs received many written testimonials, including one from Professor Tuffier. In addition to forest warfare the dogs were of great use at times after wounded men had been driven from the trenches. The Red Cross used dogs in the Balkan war and the Germans profited so well from this lesson that no less than 1,600 animals are said to be now in service in their armies. During the first few months of the war the dogs are known to have rescued over 3,000 wounded. In addition to discovery and signaling they carried first-aid kits. In summing up, the author defends the policy of silent rescue, in spite of the fact that the Germans train their dogs to bark on the discovery of a wounded soldier; if this were done by the French dogs, thus calling attention to the presence of a helpless "blessé," every bark would be a signal for a fusillade.

American Doctors Wounded in Air Raid.—The War Department announces that in addition to those killed in the air raid of September 4, on Base Hospital, No. 4, Drs. Rae W. Whidden of New York City, Thaddeus D. Smith of Neenah, Wis., and Clarence A. McGuire of Kansas City, Mo., all first lieutenants, M. R. C., sustained moderate wounds.

Elks Equip War Hospital.—The War Relief Commission of the Benevolent and Protective Order of Elks announces that it has been definitely decided to equip a hospital at Charlottesville, Va. This hospital is to be known as Base Hospital No. 41 of the University of Virginia. The hospital will be built and equipped at a cost of $60,000 and will care for 500 sick and wounded. This is the first of a number of hospitals which it is planned to equip from the $1,000,000 relief fund which has been raised by the Elks for this purpose.

Nursing Service in Camp Zones.—The Red Cross announces that it has assigned fifty public health nurses for duty in the zones around national army encampments. Nurses have already taken up their work in the districts around Hattiesburg, Fort Riley, Des Moines, Louisville, Ayer, Chillicothe, Atlanta, Newport News, and Petersburg. These nurses will endeavor to prevent the spread of tuberculosis and other infectious diseases. Besides the special work in the camp zones, Red Cross nurses in the town and country nursing service are at work throughout the country, especially in rural and mining communities. No less than nine bureaus have already been established for the supervision of special kinds of Red Cross activities in the States of New York, Connecticut, and New Jersey.

Changes in Organization of British Army Medical Corps.—The British Army Medical Corps is being remodelled to meet new conditions. A new branch is to be established to deal with questions affecting territorial and temporary medical officers. This branch will collect information on the many problems raised by the incorporation of so many civilian practitioners in the army medical service. These civilian officers to-day constitute eleven-twelfths of the army service and furnish one of the best evidences of the drain upon the man power of England. The United States has contributed greatly to the medical work in England, and the outlook at present is that even heavier contributions from this country will be required in the future.

Surgeon General's Office to Supervise Soldiers' Rations.—Surgeon General Gorgas has organized a food division in his office for the purpose of safeguarding the nutritional interests of the troops. This work will be carried on in cooperation with the Quartermaster's Department. It will include food surveys of each camp conducted by specialists in nutrition. Inspection will be made of the food received for soldiers' rations and a study will be made of the methods of preparation. The object of this undertaking is not only to prevent sickness through improper food, but to provide more healthful and appetizing meals. Some fifty or sixty commissioned officers will be engaged in making surveys of the camps and about twice that number of enlisted men will assist in the work which is to be under the supervision of Major John R. Murlin, assisted by Capts. Caspar Miller of Philadelphia, Frank C. Gebhart of New York and Lieuts. A. W. Thomas of New York and N. P. Blutherwick of Washington.

Care of Soldiers' Feet.—Announcement is made that the Surgeon General's office has arranged to give attention to the special care of soldiers' feet, with reference both to the proper fitting of shoes and the prevention of troubles incident to the work the men will do. Orthopedic surgeons have been detailed to the various camps to instruct soldiers how to care for their feet. The soldiers' feet are submitted to regular inspection by the members of the Medical Department, and special inspection after particularly hard periods of work.

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TYPHOID FEVER IMMUNIZATION.

PROPHYLACTIC immunization against typhoid fever has long since become a recognized procedure for the prevention of this disease, not only in military medicine but in civil practice as well. While the measure has not attained the same importance among civil practitioners that it has with the army doctors, yet its value to the former is none the less great, a fact which is fortunately being appreciated more and more, particularly in localities where seasonal incidence of the disease is encountered periodically. It is not putting the case too strongly to state on *a priori* grounds that if the entire population of the country was vaccinated there is reason to believe typhoid fever would eventually disappear.

The therapeutic application of typhoid vaccines has been largely overshadowed by the brilliant results obtained when they are used prophylactically. However, successful treatment of the infection is just as important as its prevention. During the past two years Gay of California has published several articles along this line. In the July issue of *The Journal of Laboratory and Clinical Medicine* he summarizes his views regarding the preventive and therapeutic employment of typhoid vaccines. He maintains that the type of vaccine should be uniform throughout the country, and is best prepared from several strains of known immunizing power. In other words, the vaccine should be polyvalent, and contain strains of bacilli which have been shown to vary. If the vaccine is intended for army administration, it is considered advisable to put in paratyphoid (alpha and beta). It is probably unnecessary to include the paratyphoid vaccines in the immunization of civil communities. Some of the more important of Gay's recommendations as regards the immunizing treatment are as follows: The total dosage should include not less than 3,000 million of each of the organisms (typhoid and the two paratyphoids) employed, and should be administered in equal parts simultaneously. Recent results in Europe lead us to believe that the three vaccines may be given in doses as large as 1,000 million each. Under these conditions, three injections would suffice to complete the treatment, but if the reaction is too severe the dosage could be diminished and a larger number of injections be given. The injections should be given on alternate days, a method which would hasten the time of protection, facilitate the completion of inoculation of large numbers, and apparently produce as lasting immunity as vaccination at longer intervals. In order to determine the degree of immunity in vaccinated individuals, the typhoidin test may be utilized. Gay suggests that every person vaccinated against typhoid fever be tested one month after completing treatment by the typhoidin test, and if this is negative there will be need of further injection. Each individual should also be tested at yearly intervals in a similar manner. It cannot be claimed that the typhoidin test is absolutely specific, inasmuch as typhoid vaccinated persons may give a positive reaction with a similar preparation of paratyphoidin alpha. Despite this fact the test seems to be sufficiently indicative of protection to justify its employment as a valuable adjunct in prophylactic inoculation.

In connection with the therapeutic use of typhoid vaccines, opinions differ, which is to be expected, depending as they do upon the experience of those giving the vaccines, the type of the disease, the number of cases treated, and many other factors which have to be considered carefully before drawing conclusions. Gay favors the intravenous injections of sensitized vaccines as the procedure of choice, and has succeeded with this method in shortening the majority of cases of fever and in aborting the course of the disease in about one-third of the cases. Although the number of patients treated in this way has not been large, the reports available indicate that it is worthy of a thorough trial. The general consensus of opinion regarding the treatment is that, whatever its merits may be in effecting a speedy cure of the disease, it is at least free from harmful results if given with due regard to dosage and technique of preparation, so essential to the success and safety of any form of intravenous therapy.

INHERITANCE OF STATURE.

STATURE is dependent upon many circumstances. Age, sex, and race all contribute to differences in height. Also, as Charles B. Davenport points out in Bulletin No. 18 of the Eugenic Records office, there is a widespread belief that, within limits, growth in stature may be controlled by conditions of life. Hereditary factors involved in the differences of height follow from the recognition of racial differences, for true racial characters are hereditary. In the paper by Davenport some interesting phases of the subject are referred to. Among these is the control of stature by nutrition. Attention is drawn to the fact that variations dependent on this cause are due less to quantity than to quality of ingested food. In this connection the studies of Osborne and Mendel, published in 1914, are of great

importance. They found that if rats are given as much as they can eat of maize deprived of an amino acid and tryptophan they will cease to grow and will fall far behind their fellows who have received these materials. However, if the tryptophan be restored, even after the lapse of months, the little rats will begin again to grow and eventually will catch up with their fellows. That is, the specific growth factor works itself out when it is given a chance, in spite of the prolonged continuation of unfavorable conditions. Therefore, according to Davenport, underfeeding or improper food, in this country and among the class of people with which his statistics have to do, does not count for much in the ultimate result. Likewise, overfeeding, while it may influence weight, has probably little effect on adult stature; it simply may hasten growth and thus enable a man to reach prematurely his predestined stature. The comparative lack of dependence of growth on quantity of food is shown by the fact that a bantam chick, eat what it will, never develops into anything but a bantam fowl.

But, although the writer contends that food conditions have only limited and special relations to growth, this is not at all the case with internal conditions. It is known that variations in the amount of the secretions thrown into the body by various ductless glands have important relations to growth. Moreover, variations in the secretions of the gonads, the thyroid, the pituitary body, and the pineal body are very common and in the opinion of Davenport are hereditary, that is, racial. Since growth is so dependent upon secretions that, in turn, may be modified by numerous frequently occurring accidents, one might feel justified in doubting if any inheritance of stature can be traced. On the other hand, it must not be forgotten, first, that the degree to which the functioning of a gland is disturbed by bad conditions is not independent of hereditary factors and also the variations in the ordinary functioning of a gland are determined largely by such factors. Furthermore, it appears to be true that the minor dysfunctionings of the endocrine glands are unable to prevent the eventual working out of the organism's hereditary growth potentialities.

In the summary of conclusions, Davenport notes that one of the factors that determine variation in stature is probably the variation in age of onset of puberty. That parents of similarly deviant stature have on the average less variable offspring than those of one short and one tall parent. That the offspring of two tall parents are less variable in stature than those of two short parents. That, when both parents are "tall" or "very tall" and of tall stock, practically all the children are tall or very tall. That, when both parents are "very short" or "short" and of short stock, all children are short or very short. It is found that "short" parents may and frequently do carry germ cells which lack the shortening factors, while in tall parents the gametes are more nearly homogeneous and lack most of the shortening factors.

NIKALGIN.

THE European war has upset several more or less generally held notions in medical science and has given many a jolt to orthodoxy in surgical practice, the ultimate effects of which cannot yet be foreseen. The horrible condition of many of the wounds has been found to defy the ordinary aseptic treatment which works so perfectly in a well-ordered hospital, and new methods have had to be devised to meet the new conditions. Then again the fearful nature and great extent of the wounds have called for new pain-stilling methods. The usual anodynes and analgesics have failed to relieve the frightful suffering, and in desperation the surgeons have tried whatever came in their way regardless of the source of the new remedies. Thus many antiseptics were tried, and some adopted, that were prepared after secret or semi-secret formulæ; "ambrine" was extensively used for burns, to the inexpressible relief of the sufferers and of the humane hospital surgeons as well, although its manner of preparation was unknown; and now, as our Paris correspondent writes, another secret remedy has been tried for the relief of the exquisite pain attendant upon the dressing of extensive raw surfaces, and seems to have brought surcease to the most horrible torture.

The basis of this anesthetic is quinine hydrochloride, or more probably the familiar quinine and urea hydrochloride, combined possibly with other anesthetics. Perhaps it is something like the efficient local anesthetic devised by Dr. Douglas H. Stewart of New York several years ago, which consists of urea and quinine hydrochloride with novocain and adrenalin, a solution of which is devoid of the primary irritant properties of the unmixed quinine salt. Whatever it is, it appears to relieve suffering, and the fact that it is secret does not in the least affect its anesthetic action, however irritating it may be to those queer souls who would rather see their patients suffer bravely under pharmacopeial dosing than get relief from a "nostrum."

Ether was patented when its effects were first publicly demonstrated; Warburg's tincture cured malaria before its formula was known and introduced, in modified form, into the National Formulary; ambrine relieved burns while its composition was still unknown, and now many similar preparations, made after various formulæ, some secret and some open, do likewise. The history of nikalgin will doubtless be the same; it has been adopted in a number of the army hospitals on the western front, and according to apparently authentic reports has relieved the fearful sufferings of many a brave poilu; if this is true—and it seems to be—every man with a spark of humanity in his bosom must rejoice, and bless the man who forced the remedy upon the attention of the French army surgeons. Those who grieve because the formula and mode of preparation are secret may take heart of hope, for, as in the case of ambrine, the secret will soon no doubt be brought to light, and then we can all be happy.

Typhoid Fever in Rural Districts.

As a rule, typhoid fever is a greater menace to life and health in rural than in urban districts, a fact emphasized by most writers on the subject and proved by mortality statistics. The reasons for this are not far to seek. The public health is more carefully guarded, by far, in cities than in the country. The surface well and the open closet, absent from towns but common in the country, are potent means by which infection is spread. Soil may become infected through the excreta of a patient or a carrier, and may be conveyed to rapidly growing vegetables, and thus cause typhoid. Or the germs, by the agency of sudden, heavy rains, may filter into wells or streams. Moreover, it must be borne in mind that typhoid germs will live in the soil for a considerable period of time. According to Dr. S. F. Millen, writing in the *Dominion Medical Monthly* for September, 1917, the typhoid carrier causes, directly and indirectly, most of the rural outbreaks of the disease in the part of Ontario in which he resides. Indeed, he holds the view that the carrier is the main cause of typhoid in all rural districts, and that water and other transmitting agents are secondary to the carrier as a mode of disseminating the malady, serving merely as indirect channels for transmitting the infection from the carrier to the one infected. There is little doubt that the carrier does convey infection, but it is manifestly difficult to state to what extent he is a factor in the spread of typhoid. One cannot easily discard the established belief that the disease is water (and milk) borne. However, Millen is right when he asserts that the convalescent typhoid patient should be watched, and the necessary precautions should be taken until it has been demonstrated beyond question that he is no longer a carrier.

Exophthalmic Goiter.

The belief that Graves' disease is a disorder dependent upon an excessive or perverted secretion of the thyroid gland is so firmly accepted by the universal medical mind that any one opposing this view must argue well and cunningly if he would convince. The most recent opponent of the thyroid gland theory is Dr. Robert McCarrison, whose book on "The Thyroid Gland in Health and Disease" was published a short time ago. The author demonstrates to his own satisfaction, and doubtless to that of all who think with him, that Graves' disease is not primarily a disease of the thyroid gland, not essentially a hyperthyroidism, but that the underlying condition is a toxemia due to intestinal stasis. Consequently, in logical accordance with this view, surgical interference with the gland itself is not justified. Rather, should the seat of the evil be attacked medically with petroleum oil and an intestinal antiseptic, or by operative procedure in the abdominal region. Arbuthnot Lane has held for a long time that Graves' disease originated in the intestines, and now McCarrison advances the same view. It may be pointed out that exophthalmic goiter is vastly more frequent among women than men, as also is intestinal stasis. This may be no more than a coincidence, but it is a suggestive coincidence. The author's thesis is entertainingly, if not always absolutely convincingly, sustained.

News of the Week.

Infantile Paralysis in Chicago.—On September 20 there were in Chicago 139 cases of infantile paralysis under observation, and 20 deaths from the disease were reported to the Health Department during the preceding four days. According to Commissioner Robertson the disease shows unmistakable signs of being on the increase.

Typhus Fever in German Prison Camps.—A French soldier recently escaped from a German prison camp brings the report that 3,700 French and British soldiers, and 1,500 Russians have died of typhus fever at the German concentration camp at Cassel.

The Automobile as an Agency of Death.—The Metropolitan Life Insurance Company has just disclosed the results of a study of the deaths due to automobile accidents among the industrial policyholders since 1911. The fact is revealed that during this five-year period the death rate from this cause has tripled. In 1911 the death rate from automobile accidents was 2.3 per 100,000; in 1916 it had increased to 7.4. During this period the rate each year was markedly higher than for the preceding year. Nearly one-third of those killed were children under ten years of age. There were more deaths caused by automobiles among the industrial population than by surface cars, subway trains, elevated trains, bicycles, and horse-drawn vehicles combined. These figures represent almost exclusively pedestrians rather than those who ride in the machines.

Broad Street Hospital Open.—The New Broad Street Hospital has been opened for the reception of patients. The hospital is seven stories high and as now equipped represents an outlay of $270,000. Of this amount $200,000 was contributed by James Barbour. The hospital was established to provide for the needs of the people in the south end of the city, extending from the East to the North Rivers and as far north as Canal Street. The hospital has two motor ambulances and a thoroughly equipped dispensary. Dr. A. J. B. Savage is superintendent. A number of private rooms have been endowed.

Dr. George W. Stoner, Surgeon United States Public Health Service, who has been in charge of the Marine Hospital at Stapleton, S. I., for the past four years, has been retired from active duty, having served forty years. Dr. C. H. Lavinder is now in charge at Stapleton.

Decrease in Belgian Birth Rate.—The heavy increase reported in the death rate in Belgium is accompanied by a corresponding decrease in the birth rate. In the Brussels district, in 1913, there were 6,417 births, an average of 17 per thousand population and a death rate of 13.7 per thousand. In the first six months of 1915 the birth rate was 14.3 and the death rate 14 per thousand inhabitants. In the corresponding period of 1917 there were 3,311 births, an average of 8.5, and a death rate of 19.3.

Health of the Navy.—The report of Surgeon General Braisted of the Navy shows that the health of the men in the navy is very good. Some cases of measles continue to be reported from the Atlantic fleet. Measles is less prevalent than mumps, averaging only ten new cases a week for

the whole force afloat. There are a number of cases of measles and mumps reported from the naval training station at San Francisco.

Scarcity of Rubber Gloves in England.—The shortage of rubber operating gloves in England has become so serious that unless the United States is allowed to send larger supplies very bad results are threatened. The situation has arisen from the fact that the Board of Trade has forbidden their importation. Since the restriction was imposed the army and navy have been supplied under special license, but even the naval and military surgeons have not enough, while the local hospitals are being forced to dangerous expedients. The British Medical Association has made an appeal to the Board of Trade urging license, permitting the civil hospitals to get supplies from the United States.

A Plea for the Conservation of Pharmaceutical and Biological Products.—The Committee of Public Safety of the Commonwealth of Pennsylvania has sent out letters and circulars urging the wisdom of eliminating waste in the handling of pharmaceutical and biological products. It calls attention to the fact that biological products, such as serums, antitoxins, serobacterins, and bacterins as well as all kinds of vaccines, are subject to deterioration and when they are once outdated are of no use whatever. It is, therefore, essential that these products be not stored in excess of reasonable requirements. Many galenical preparations are also subject to deterioration, particularly the fluid extracts and other preparations of ergot, digitalis, and strophanthus. These preparations should, therefore, be ordered in sufficient quantities to last not longer than six months. Cards have been sent to all the retail druggists in the State of Pennsylvania asking them to pledge themselves to cooperate in this particular item of conservation. It is one in which physicians also may do their part.

Indictments in Diploma Case.—Further investigations with reference to the alleged diploma factory where it is possible to purchase certificates, college diplomas, and licenses to practise medicine, have resulted in additional indictments against the chief offender and his wife and several accomplices. One man had in his possession a diploma for which he had paid $1,600, which purported to be from a medical institution of high standing in Vienna, Austria.

The Lincoln Hospital and Home, New York, will receive $100,000 and the New York Orthopedic Hospital $50,000 under the will of Mrs. Helen Cossitt Juilliard, upon the death of her husband. One-fourth of the residue of her estate and $100,000 are to go to St. John's Guild upon the death of Mr. Juilliard.

Dr. Rudolph Duryea Moffett has removed to 70 East Seventy-seventh Street, New York City.

The Association of Military Dental Surgeons of the United States will hold its annual meeting at Hotel Astor, New York, on October 23. All dentists who have taken their examinations for the Dental Reserve Corps, whether they have received their commissions or not, are invited to attend.

The American Association of Clinical Research at its recent meeting in Boston elected the following officers for the ensuing year: *President*, Dr. Marshall W. McDuffie of New York; *First Vice-President*, Dr. Roger M. Griswold of Kensington, Conn.; *Second Vice-President*, Dr. Joseph A. Weitz of Montpelier, Ohio; *Secretary-Treasurer*, Dr. James Krauss of Boston. The next annual meeting of the association will be held in New York in October, 1918.

Dr. Bertram H. Waters, formerly chief of the Tuberculosis Clinics of the New York City Department of Health, has been appointed physician-in-chief of the Loomis Sanatorium, to succeed the late Dr. King.

Medical Association of the Greater City of New York.—A stated meeting of this association will be held at the New York City Children's Hospitals and Schools, Randall's Island, on Monday afternoon, October 15, 1917, at 3.00 P. M. The island is reached by ferry from East 125th Street Pier, at termination of 125th Street Crosstown line. Boats will leave at 2 P. M., 2.30, 2.45, and thereafter on the hour and half hour.. The following papers will be read: "Practical Talk Upon the Differentiation and Care of the Feeble-Minded, including the Moron, with Demonstration of Types," by Dr. William Burgess Cornell, medical director New York City, Children's Hospitals and Schools; discussion by Dr. Walter E. Fernald, the Massachusetts School for Feeble-Minded, Waverley, Mass; "The Care, Management, and Treatment of Epileptics," by Dr. L. Pierce Clark; discussion by Drs. Charles L. Dana, George H. Kirby, and Clarence O. Cheney.

Symposium Upon Neurological Surgery.—This will be held in the surgical amphitheatre of the New York Polyclinic Hospital on October 1, 1917, at 8.15 P.M., by the Department of Neurological Surgery. The following papers will be presented: "Diagnostic Value of Lumbar Puncture," Dr. Y. C. Lott; "Observations Regarding the Anesthesia in Cerebral Surgery," Dr. Charles S. Hunt; "The Appearance of the Fundus Oculi in Certain Intracranial Conditions," Dr. J. A. Kearney; "Presentation of Patients Operated Upon for Various Intracranial, Spinal, and Peripheral Nerve Lesions," Dr. William Sharpe; "Psychopathology," Dr. Edward S. Cowles; "The Treatment of Hypoplastic and Mentally Impaired Children," Dr. E. Bosworth McCready.

Operative Clinics at Greenpoint Hospital.—Dr. Frederick C. Holden announces a series of operative and demonstration clinics in the department of gynecology and obstetrics of the Greenpoint Hospital, Brooklyn, N. Y., to be held Thursday afternoons at 2 P.M.

Straus Milk Depots Complete Twenty-five Years' Work.—With the close of the Straus milk stations for the summer, Nathan Straus has rounded out twenty-five years of this work, during which 44,940,907 bottles and 25,305,519 glasses of pasteurized milk have been dispensed. The largest work of the summer has been at the Straus depot in City Hall Park, where an average of nearly 50,000 glasses of milk were dispensed daily. There are eight Straus depots, which will continue as usual throughout the winter months.

Obituary Notes.—Dr. JACOB M. MORIN of Brockton, Mass., died at his home in that city on September 12, at the age of 48 years. He was a graduate of the Long Island College Hospital in 1899, formerly president of the Brockton Medical Association, and a member of the staff of the Brockton Hospital.

Dr. STEWART W. ALDRICH, one of the oldest physicians of Des Moines, Iowa, died September 3. He was a graduate of the Cleveland, Ohio, University of Medicine and Surgery, in 1874, and practised for some years in Waukee, Iowa.

Dr. PRAMATH N. ROY, a graduate of the University of Glasgow, in 1885, and for thirty years a practitioner of Charlestown, Mass, died of heart disease, on September 5, aged 58 years.

Dr. JOHN B. ROBERTS, a graduate of the Medical College of the State of South Carolina, in 1867, died at his home in Atlanta, Ga., August 30, aged 76 years. At the time of his death he was physician at the Soldiers' Home in Atlanta.

Dr. DELPHIN BIENVENU, a graduate of Tulane University, in 1878, and a Confederate veteran, was killed in an automobile accident, on September 2. He was 81 years of age and retired from practice some years ago.

Dr. JOHN D. BAY, a graduate in medicine and law of the University of Valparaiso, Ind., died in the Boise Hospital, Boise, Idaho, August 30. He had ceased to practise medicine some years ago and was interested in mining in Colorado.

Dr. EDSON CARD, a practising physician of White Plains, N. Y., died at his home in that city, on September 9, aged 60 years. He was a graduate of the College of Physicians and Surgeons, New York, in 1882.

Dr. HENRY A. SALMON, a graduate of Bellevue Hospital Medical College, in 1888, died at his home in New York City, on September 10, aged 59 years.

Dr. WILLIAM F. MCDOWELL, chief pharmacist of the United States Immigration Department at Ellis Island, died on September 11, aged 65 years. Dr. McDowell was a medical officer in the service of the Government during the greater part of his life, having commenced as the medical officer of the U. S. S. *Monongahela*. He was also connected with the United States Marine Hospital at Portland, Me., for a number of years.

Dr. JEROME S. BISSELL of Torrington, Conn., a graduate of Yale Medical School in 1894, died after a long illness on September 14, aged 48 years.

Dr. HUGO KINNER died at his home in St. Louis on September 11, of pneumonia. He was a graduate of the University of Berlin, in 1863, and celebrated his golden jubilee as a doctor in 1913 when the university conferred an honorary degree upon him.

Dr. JOHN C. CHAMPLIN, a graduate of the Boston University School of Medicine, in 1885, died at the home of his sister in Block Island, R. I., September 14, aged 53 years. He was prominent in the political affairs of his locality and for many years president of the Town Council.

Dr. JAMES R. SHARMAN, a graduate of the Louisville Medical College, in 1876, died of heart disease at his home in Meridian, Miss., September 4, aged 65 years.

Dr. WILLIAM D. SILKMAN of Manhattan, Kan., a graduate of the New York University Medical School in 1893, died of injuries sustained in an automobile accident, on September 7.

Dr. JOSEPH F. LINDSEY, a graduate of Harvard Medical School in 1876, and a member of the Massachusetts Homeopathic Medical Society, died at his home in Roxbury, Mass., September 8, aged 67 years.

Correspondence.

REEDUCATION OF WAR CRIPPLES.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—The Surgeon General directs me to invite your attention to the inclosed copy of a letter which has been sent to secretaries of all County Medical Societies. He requests that the letter be published in the MEDICAL RECORD at an early date, with request to readers to send to the Surgeon General short life histories of any partially handicapped persons who have been successful. Names of the handicapped are not at all necessary.

Any successful handicapped who desire to furnish autobiographies will be rendering great aid.

C. L. FURBUSH,
Major, M. R. C.

OFFICE OF THE SURGEON GENERAL,
WASHINGTON, D. C.

1. The Surgeon General directs me to invite your attention to the following:

2. He is arranging for special treatment for wounded including special efforts for functional restoration of damaged parts and vocational reeducation for those who, from the nature of their illness or injury, are unable to follow their previous occupation.

3. It will be a very great help if he can know just what those who are suffering from chronic illnesses or who are partially disabled as a result of injuries are now doing in the United States. As example, one having lost the right hand may still be a successful carpenter or a market gardener; one having lost both lower extremities may be successful in some line; one with chronic heart disease may have found a suitable occupation. The collection of this experience should be of remarkable assistance as showing what the various types can do.

4. The Surgeon General very earnestly requests that the Medical Society, of which you are secretary, aid in this matter by getting, through its members and the various local agencies, a list of the partially disabled in your county who are successfully following a trade or occupation. The information desired in reference to each case is as follows: (*a*) Character of disability, medical or surgical. (*b*) At what is the patient employed and how successful is he? (*c*) In what way did he learn or enter his occupation after his injury or illness? The names of the disabled are not necessary.

5. If any man who has been successful after an injury or illness desires to write a short autobiography stating his experiences the same might be exceedingly useful in this work, in preparing a booklet to be distributed to the men at the proper time.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

THE LORD ROBERTS WORKSHOPS—CARGO ACCOMMODATION FOR THE RED CROSS.

LONDON, August 30, 1917.

THE Lord Roberts Workshops in Fulham Road were established to provide life-occupation for disabled soldiers and sailors—not as a teaching center for the supply of skilled handicraftsmen. The last annual meeting was presided over by Princess Christian when the managing director, Major Algernon Tudor Craig, made so interesting a speech about the work that he was asked to give facilities for personal inspection and gladly did so. A surprisingly interesting time was spent at the works under his guidance. The establishment was opened in March, 1915, and the great effort to provide the memorial fund is a matter of quite recent history. They produced about £162,500, and it is good to know that both the London Central and the Pro-

vincial branches are conducted in a way which has given much satisfaction. Last year a net profit of £965 was received and devoted to the purchase of a house next to the workshops, to be used as a small sick bay, in which the men will be able to receive on the spot that attention in the form of electricity and massage which their disabled condition requires. In the shops themselves the atmosphere is one of well directed activity, yet visitors must look closely to detect any sign of inaptitude due to a missing hand or arm. Toy making, cabinet work, skilled carving are examples, such as an oak overmantel with family crest and motto. So basket work, box making and manufacture of furniture are some of the industries followed. The provision of wonderful up-to-date machinery, which is of itself a treat to see, enables the eight hundred workers to turn out such a quantity of goods that the list of firms keeping them on sale fills a pamphlet.

Mr. Petterolt, freight traffic manager of the International Mercantile Marine, has been appointed manager of the ocean shipping for the period of the war. He will give his services without remuneration. Practically all the cargo space needed has been placed at the disposal of the Red Cross. Much of this will be given free by the steamship companies and the allied governments.

OUR LETTER FROM PARIS.

(From Our Regular Correspondent.)

A NEW LOCAL ANESTHETIC—AMERICAN RED CROSS—ARMY Y. M. C. A.—MACEDONIAN MALARIA.

PARIS, Aug. 28, 1917.

MORE than a year ago, while I was staying at the Hotel Majestic, in New York, I met a Mr. Gordon Edwards from California, who, I was told, was trying to introduce into the French Army Medical Service a preparation of quinine for purposes of local anesthesia. Knowing that this drug had long been used as an anesthetic, and having met numberless men who were trying to introduce something or another to the Government, I took no interest in the new preparation, and rather avoided the gentleman in question; but, learning recently that after many and persistent efforts not only had he succeeded in introducing the new remedy, but that it was reported a great success, I looked the matter up to inform myself as to facts. I found that he had something called "Nikalgin," which seemed really to fill a much-felt want.

Nikalgin is a non-toxic local anesthetic solution of quinine chloride, and capital results have been obtained in the treatment with it of fresh exposed raw surfaces of shell wounds, burns, lacerations, and amputated stumps. By simply spraying the affected parts, or by the application of a saturated pack, anesthesia is produced, and endures for from three to twenty-four hours. Men even in the worst condition very seldom require more than five to seven applications before they are on the way to improvement, because the relief from pain renders recovery more rapid.

Mr. Edwards, who is from Leland Stanford University, California, had been studying the anesthetic properties of quinine for nearly two years before the war, and just after the outbreak he set about producing the solution for spraying raw surfaces, which has brought such relief to the wounded. It is estimated that 100,000 men have already received the treatment. He first went to England, and then came to France, and after nearly two years of fruitless efforts with officials in both countries he finally began work with his own hands in field and base hospitals, proving to surgeons by demonstrations the value of the solution.

The two surgeon-generals of the armies at Verdun and the Chemin des Dames adopted the treatment, and since then all of the hospitals under their control have been supplied through the generosity of Miss Anne Morgan and her societies and friends in New York. Mr. Edwards has assured all the hospitals now using the remedy that he will continue to supply them gratuitously until the end of the war. The first case in which the quinine solution was used was one known to nurses and surgeons as "the Zouave," which designated a patient whose suffering during the dressing of wounds was almost more than man could bear. Down the length of his hip and leg were a dozen great raw wounds from a shell burst, and the gauze dressing had to be removed daily. The gauze was saturated with the solution, and within three minutes the surgeons had begun to peel the dressings from the wounds. The operation was completed without a murmur from the patient, and the surgeons were as happy as the patient.

The Surgeon-General of the Army at Verdun wrote: "I have the honor to send you the reports which have reached me from the ambulances in which I have experimented with nikalgin. The application was very effective on a burned man having large naked surfaces. The médecins-chefs are unanimous in acknowledging that nikalgin produces in a few minutes a diminution of pain, which has disappeared entirely after five or ten minutes." This remedy is said to be useful only when applied to denuded surfaces; it does not replace other well-known local anesthetics for purposes of surgical operations.

The American Red Cross has not only established canteens for the American soldiers wherever it is essential to have them, but is also cooperating with the Convois Auxiliaries de la Croix Rouge Française (S.S.B.M.) in the support of canteens for French soldiers immediately at the front. These canteens are established behind the front, as close to the second line of trenches as possible or at a junction of roads leading to these lines. They serve out hot and cold drinks, coffee, bouillon, cocoa, lemonade, etc., to the men passing to and fro. They also send out the "marmites norvégiennes," which contain hot or cold drinks, to as many points as the post can cover in its sector, and this service is carried on by the use of small automobile trucks.

As many as 2,000 to 3,000 rations are served a day at an ordinary canteen post. The intention is not only to supply hot and cold drinks, as at present, but also food, and, if possible, to make the post a real rest and recreation center for the men by having tobacco, writing materials, games, phonographs, etc. Each canteen is in charge of a convoyer, with the help of two or three men furnished by the army, and it is proposed to have as many American convoyers as there are French.

The determination of the Red Cross to absorb and manage all of the American Relief Work in Paris came as a surprise to the great army of American workers employed and at first caused many heart burnings, but seeing that they must bow to the inevitable, the Women of the American Colony have organized, under the presidency of the wife of the American Ambassador, "The Woman's War Relief Corps," under authority from the Red Cross. All American women and American women whose husbands are citizens of subjects of Allied nations are eligible to membership. The organization will be under the management of a board of directors. These directors will be in charge of the different corps divisions, which will consist of canteens, diet kitchens, general information and reclamation bureau, trained nurses, auxiliary nurses, propaganda and records, publicity department, refugees (adults and children), registration bureau, social service, Red Cross circles, which include Red Cross chapters, ouvroirs and workrooms, surgical dressings, blind. The underlying principle and obligation of membership is that women shall give their services to the utmost of their ability. The first one thousand applicants to register will be called charter members.

The American soldier is due to have a big surprise when there arrives in his training camp a huge canteen on wheels supplied by the American Y. M. C. A. Although the Y. M. C. A. buildings are springing up like Indiana mushrooms wherever there are American soldiers, the Y. M. C. A. felt that every soldier must have an immediate opportunity to supply his needs. The "canteen on wheels" is loaded with towels, soap, razors, chocolate, crackers, games, newspapers, 5,000 novels, 70,000 francs worth of tobacco, and many other articles which the boys are longing for. A Y. M. C. A. secretary is in charge of the canteen. The Paris headquarters are located at 21 Avenue Montaigne and it has an "Airdome" located in the courtyard in which is located the tea garden. They give different forms of entertainment nightly. It is difficult to decide which the soldiers most enjoy, the movies, the ice-cream and refreshments, or the music supplied by a volunteer three-piece orchestra. It is evident that the entire neighborhood appreciates the proximity of the Avenue Montaigne headquarters.

At the monthly meeting of the Academy of Medicine Dr. Marchoux presented an interesting memoir on malaria. He began by showing that the malaria of Salonica has nothing about it that is mysterious, as has been pretended by certain of the army surgeons. It is caused by the agents discovered by Laveran, as are all the varieties of this disease. He claims that it is best treated by basic quinine, rather than the soluble salts. The schizontes are destroyed in the process of evolution and the gametes persist, producing the fever after fourteen days of incubation. The parasites become visible to the microscope three or four days prior to the access, in time to abort the attack by the employment of quinine in four to five-grain doses. At times it fails to ward off the attack, but even in these cases it controls the temperature so that the fever is hardly noticeable. In locations too far distant from laboratories to permit of regular and frequent examinations of the blood, to determine the propitious moment to begin the quinine treatment, he claims that the administration of three doses per week during a period of several months will suppress the evolution of the parasites. This would, therefore, seem to be the safest and simplest course to pursue.

146 Avenue des Champs Elysées.

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 13, 1917.

1. The Modern Treatment of Burns, with Special Reference to Severe Burns and the Use of Ambrine and Its Substitutes. Edward Hammond Risley.
2. Treatment of Old Ununited Fractures of the Neck of the Femur by Transplantation of the Head of the Femur to the Trochanter. E. G. Brackett and May Sung New.
3. Spina Bifida and Allied Malformations, Based on an Operative Experience of Thirty-four Cases. Torr Wagner Harmer.
4. Report of Results of Radium Treatment at the Collis P. Huntington Memorial Hospital by the Cancer Commission of Harvard University. William Duane and Robert Greenough.
5. Mesothorium and Combination Methods in the Treatment of Cancer. F. D. Donoghue.
6. The Roentgen Diagnosis of the Pathological Gall Bladder. A. W. George and R. D. Leonard.

1. The Modern Treatment of Burns, with Special Reference to Severe Burns and the Use of Ambrine and Its Substitutes.—Edward Hammond Risley bases this study on a personal observation of a series of cases treated in the Massachusetts General Hospital since 1914, and upon the tabulation of all burned cases treated at the hospital for the past ten years. He concludes that the three most important factors in the treatment of burns are: (a) Prevention of shock. (b) Prevention of sepsis. (c) Prevention and Treatment of Contractures. 2. Many deaths have been caused by ill-advised attempts at first dressing. 3. The form of first dressing is largely responsible for subsequent sepsis. Oily dressings should be avoided. Cleansing the skin surrounding the burned area with alcohol aids in preventing sepsis. Constant drainage of discharges is essential. 4. The open-air treatment is far superior to that in which any form of dressing is used. 5. Either picric acid or Tr. chloride of iron are by far the best forms of medicated dressing. 6. Contractures can be prevented in 75 per cent. of the cases formerly contracting by the early use of properly adjusted splints and by early passive motion and massage. 7. Duodenal ulcer is a rare complication and can be almost discounted. The writer formulates the following general rules for treating burns: 1. Combat shock. 2. Treat all shocked cases or those with extensive burns by the open-air method or the temporary use of the hot bath. 3. Avoid oily dressings. 4. In burns of the extremities, if fairly extensive but not requiring open air, use picric acid. 5. In all other burns use picric acid, Tr. chloride of iron, or the more modern paraffin film treatment, according to preference or experience. Ambrine, not being on a strictly ethical basis, was investigated. Analysis showed that it contained roughly 90 to 95 per cent. of paraffin of a good grade, about 5 per cent. of beeswax, and a small amount of resin, and probably some such product as eucalyptol and an analine coloring matter. From the writer's experience with ambrine in the treatment of burns it would seem that its favorable effect was due purely to its mechanical action. It seems probable that this mechanical action is favorable because it immobilizes the affected area, because it makes a sterile dressing; because it makes an air-tight sealed dressing, which may possibly be the reason it does not favor bacterial growth, and because of its close adhesion to the part it favors in growth of granulations. From his limited experience with paraffin preparations the writer states that he has been converted from skepticism to a rather firm belief that this method of treating burns, certainly those of limited area, is a decided advance over the methods formerly employed.

4. Report of Result of Radium Treatment at the Collis P. Huntington Memorial Hospital by the Cancer Com-

mission of Harvard University.—William Duane and Robert Greenough present this report, which gives the detailed results of the use of about 235 milligrams of radium in the treatment of 642 cases of cancer and allied conditions at the Collis P. Huntington Memorial Hospital, from September, 1913, to January, 1916, from which they conclude that many cases of advanced, inoperable, or recurrent cancer may be given benefit by treatment with radium. The relief may include relief of pain, diminution of discharge, relief of hemorrhage, diminution in the size of the tumor mass, even to their total disappearance, and improvement in the general condition of the patient. To these must be added the beneficial psychic effect upon the patient. In a very small number of advanced cases improvement may occur such as to permit a radical operation. In about 35 per cent. of superficial and non-metastasizing types of cancer, and in a much smaller number of metastasizing cancers radium is capable of destroying the clinical manifestations of the disease. In a limited number of cases recurrence has taken place even after apparent destruction of the lesion. In keratoses, papilloma, and other benign skin diseases, regarded as precancerous, radium is effective in destroying the clinical manifestations of the disease in from 48 to 60 per cent. of the cases. In myelogenous leucemia the beneficial effects of radium are pronounced, and although the recurrence of symptoms may take place the clinical advantages of the radium therapy are very marked. In malignant lymphoma, lymphosarcoma, and Hodgkin's disease, the lesions appear to be especially sensitive to radiation, and definite, though temporary, relief is obtained. Radium has proven of special value in recurrent or inoperable carcinoma of the cervix or of the body of the uterus, inoperable squamous carcinoma of the tongue, jaw, and buccal mucous membrane, and in non-metastasizing epidermoid cancers. Radium therapy has been of little benefit in recurrent or inoperable carcinoma of the breast, stomach, or intestine, glands of the neck, cancer of the tongue, mouth, and lips, and in deep-seated metastatic extension of cancer from any region. The use of radium in the prophylaxis of recurrence after operation is not advised. Where the affected area is superficial and accessible it may be used with benefit, but not after operation for breast cancer. The combination of radium therapy and operation has yielded satisfactory results in several cases, and is adapted to the more advanced cases of rodent ulcer. In 642 cases treated with radium in this series 354, or 55 per cent., received definite benefit.

New York Medical Journal.

September 15, 1917.

1. Peroral Endoscopy. Hubert Arrowsmith.
2. Control of Hemorrhage from the Upper Digestive Tract. Edward L. Kellogg.
3. Conclusions Drawn from a Comparative Study of Different Methods of Performing the Wassermann Reaction. J. Bronfenbrenner and M. J. Schlesinger.
4. The Rôle of Emotional Influences in Gastrointestinal Diseases. Malcolm Graeme MacNevin.
5. The Use of the Term "Hysteria." Meyer Solomon.
6. The Sero-vaccine Treatment of Pneumonia. Julius Broder.
7. Causes of Appendicitis. Henry P. DeForest.
8. Hygiene of Rural Schools. J. A. Nydegger.

3. Conclusions Drawn from a Comparative Study of Different Methods of Performing the Wassermann Reaction.—J. Bronfenbrenner and M. J. Schlesinger call attention to some of the numerous discrepancies in the methods of performing the Wassermann reaction, and express the belief that the removal of the differences in methods can only be brought about by an extensive comparative study. They have made such a study on over 20,000 cases. As a result of this study they recommend a procedure which makes use of fresh unheated serum. The complement of the serum is titrated and utilized in the test, guinea-pig complement being added when necessary. They use precipitated acetone insoluble lipoids, of which one-tenth the anticomplementary dose still contains ten to 100 antigenetic units. The antihuman hemolytic system is used and the erythrocytes are sensitized before being added to detect the presence of free complement. Incubation for fixation of complement is best performed for thirty minutes at 37° C. in the water bath. However, one can use ice-box incubation for ten to fifteen hours as a presumptive test to eliminate the negative serums, and 37° C. incubation for five minutes to eliminate the strongly positive serums. For diagnosis the one-half hour incubation at 37° C. is best.

5. The Use of the Term Hysteria.—Meyer Solomon points out the reasons why the term hysteria should be abolished. He says that hysteria as a word is etymologically unscientific when applied to any of the phenomena which have been classified under this name, since it harks back to the days when the uterus was incriminated as the cause. It recalls the days when hysteria was synonymous with simulation. It must be discarded because of the heterogeneous clinical group of manifestations in the purely psychological sphere and in the sphere of the voluntary and involuntary nervous systems which have been packed into this group. No unanimity or agreement can be reached as to the delimitation of the clinical concept to be given this name. It would seem therefore that there is no way out of the dilemma other than to do away with the term once for all. The writer then proceeds to a disintegration and arrangement of the conditions hitherto massed together by different students of this problem. He finds that these disorders are usually in one or more of four spheres. These are: 1. Ideational processes. 2. The feelings with their specific attitudes. 3. Disturbance of the voluntary sensorimotor nervous system. 4. Disorders of the involuntary sensorimotor and vegetative nervous system. One must be able to exclude all possible causes except emotional shock and trauma before attributing the disorders under consideration to emotogenetic factors. The writer claims that his classification means that in all cases of so-called hysteria one must make a careful investigation as to the possible mental state of the person presenting the symptoms, and as to the genetic factor or factors responsible for the evocation of the particular picture which is to be diagnosed. Of course, there may be a combination of two or more of these types of reaction in the same person.

7. Causes of Appendicitis.—Henry P. DeForest says that while some of the causes of appendicitis are still obscure, certain facts are definitely known which seem to predispose to this disease. He believes that if the proper hygiene of nutrition is observed it will go a long way toward warding off this disease. He especially warns against irregular meals and too rapid eating, and also against the use of too finely prepared foods. In summing up he says the disease may be due: 1, to infection from the presence of one or more of the intestinal microorganisms; 2, to circulatory disturbances, more or less readily produced by sharply curved or angular shapes of the organ, or a deficient blood supply; 3, to the presence of accidentally imprisoned fecal matter, which is prevented from returning to the cecum both because of the feeble expulsive power of the tube, due to an insufficiency or entire absence of circular muscular fibers, and because of constriction of the tube, which may or may not be due to previously existing inflammation. This fecal matter, because of bacterial infection which it conveys to the parts or because of the pressure effects due to inspissation or both, contributes to the etiology of the disease in its entirety, but particularly in the cases in which perforation takes place. All pain in the right side is not necessarily due to appendicitis. It is quite as often due to indigestion with resulting colic. A tablespoonful of castor oil with an equal amount of glycerin in a glass of iced lemonade can be taken at once by a person who believes he has appendicitis. It can do no harm, and will effectively clear up the diagnosis. Many an attack of appendicitis has been eliminated by this procedure. Once the diagnosis has been made, however, the sooner operation is performed the better.

Journal of the American Medical Association.

September 15, 1917.

1. The Relations of Laryngology, Rhinology and Otology to General Medicine. Francis P. Emerson.
2. Progress in Teaching Psychiatry. Adolf Meyer.
3. The Technique and After-Treatment of Hemilaryngectomy and Total Laryngectomy. John Edmond MacKenty.
4. Persistent Treatment of Epilepsy. Howell T. Pershing.
5. A Study of Arterial Sounds. Stewart R. Roberts.
6. Indications for the Mastoid Operation in Acute Otitis Media. Edward Bradford Dench.

7. Tyramine as an Adjunct to Morphine in Labor. Henry Gray Barbour.
8. A Study of Low Blood Pressure Associated with Peptone Shock and Experimental Fat Embolism. J. P. Simonds.
9. Serum Therapy for Trichinosis. Benjamin Schwartz.
10. The Necessity of a Pure Raw Milk. Henry D. Chapin.
11. A Case of Syringomyelia, with Report of Operation. Edward D. Fisher.
12. Interesting Reactions Incidental to the Treatment of Two Cases of Bronchial Asthma. Francis M. Rackemann.
13. Surgery of the Bones and Joints, with Especial Reference to the Open Operative Treatment of Fractures, and a Method of Arthroplasty in Ankylosis of the Elbow Joint. Hugh McKenna.
14. The Diagnosis and Treatment of Sinusitis in Infants. Ross Hall Skillern.
15. Experimental Pyelitis in the Rabbit. H. F. Helmholz.
16. A Case of Poisoning by Musterole. David I. Macht.

4. **Persistent Treatment of Epilepsy.**—Howell T. Pershing.—(See MEDICAL RECORD, June 23, p. 1118.)

5. **A Study of Arterial Sounds.**—Stewart R. Roberts.—(See MEDICAL RECORD, June 16, p. 1075.)

6. **Indications for the Mastoid Operation in Acute Otitis Media.**—Edward B. Dench says that every physician should remember that every case of acute mastoiditis is in reality a mastoiditis, and if incision of the drum is not followed by recovery drainage through the mastoid is indicated. If after free and, to the surgeon, satisfactory incision of the drum, pain persists from twenty-four to forty-eight hours, this is sufficient indication for opening the mastoid. A persistent high temperature, or a remittent temperature with exacerbations, naturally calls for exploration, but the point should be emphasized that many cases run an afebrile course, and the absence of an abnormal temperature is no contraindication to operation. Early tenderness, within twelve hours after the inception of an acute otitis, is not an indication for operation. One sign which is particularly significant is a recurring tenderness. This tenderness is first found at the tip, and is most severe here. Antrum tenderness is insignificant. The signs found on instrumental examination are to the author most significant of all. These consist of evidence of insufficient drainage of the tympanomastoid space through the small incision in the drum membrane, and narrowing of the canal at the fundus, that is, a persistent bulging of the upper and posterior portion of the drum membrane, with a sinking of the corresponding adjacent meatal walls. This sign present ten days after the inception of an acute otitis is an almost pathognomonic indication for operation. A bacteriological examination of the discharge gives much information. Staphylococci and large bacilli are undoubtedly canal contaminations, but the *Streptococcus capsulatus* is always a dangerous organism. The sudden cessation of a discharge, with the canal signs indicative of sudden interference with drainage is an indication for immediate operation. A history of spontaneous rupture of a drum membrane and a purulent discharge lasting five or six weeks, and also a history of repeated incisions are conditions calling for operation. In obscure cases meningeal symptoms may give the key to the situation. The author finds roentgenoscopy valuable in all cases of mastoiditis.

7. **Tyramine as an Adjunct to Morphine in Labor.**—Henry Gray Barbour states that the employment of morphine in labor has become frequent in recent years. It exhibits in this connection three important effects, the first desirable and the other two untoward, namely, analgesia, respiratory depression in the child, and delay of labor. In view of the value of morphine in labor it would seem that a substance having actions more clearly understood than those of scopolamine might be found which might be combined with morphine. The use in this connection of tyramine has been suggested by the study of Bry, and the author and his collaborators have made a series of experiments in animals and have observed a small number of cases in human beings in which this drug was used in connection with morphine. The dosage employed was 10 mg. of morphine sulphate with 40 mg. of tyramine. In the absence of contraindications this injection is given when discomfort becomes marked in the first stage of labor. Analgesia seems to be as complete as when the same dose of morphine is given alone. The respiratory rate of the mother is increased rather than decreased, and usually remains somewhat accelerated throughout. The condition of the children has been quite satisfactory, no tendency to asphyxia having been observed. In every case the frequency of uterine contractions has been increased within five minutes after the injection, and this augmented activity remained throughout. Forty milligrams of tyramine produces a temporary rise in blood pressure, usually amounting to 20 to 25 mm. This seems to be negligible in normal cases, but should be followed closely. It is hoped that more complete data can be offered soon; in the meanwhile there seems to be no objection to the employment of tyramine and morphine by those who are thoroughly versed in the use of morphine in labor.

9. **Serum Therapy for Trichinosis.**—Benjamin Schwartz refers to Salzer's seemingly successful results with serum therapy in the treatment of trichonosis and describes his own experiments which have given quite contrary results. He summarizes his finding as follows: 1. Serum from animals convalescent from trichinosis when injected into other animals did not produce immunity to trichinosis in the latter. 2. Trichinous meat mixed with serum from animals during the active or convalescent stage of the disease proved to be still capable of producing the disease. 3. Animals once infected and harboring trichinæ in their muscles were not immune to further infection when fed trichinous meat. 4. Serum from a trichinous animal had no observable ill effects on the larvæ freed from their cysts by artificial digestion.

13. **Surgery of the Bones and Joints.**—Hugh McKenna. (See MEDICAL RECORD, June 16, p. 1071.)

15. **Experimental Pyelitis in the Rabbit.**—H. F. Helmholz. (See MEDICAL RECORD, June 16, 1917, p. 1067.)

British Medical Journal.

August 25, 1917.

1. Observations on Trench Nephritis, Its Later Stages and Treatment. J. Mitchell Clarke.
2. Reamputation. W. A. Chapple.
3. A Method of Flapless Amputation, with Subcutaneous Division of the Bone at a Higher Level. W. Sampson Handley.
4. A Note on the Thomas Splint for Fractures of the Femur. W. Rankin.
5. Dakin's "Dichloramine-T" in the Treatment of Wounds of War. Joshua E. Sweet.
6. An Expeditious Method for the Study of Enteric Stools. A report on the Examination of 1200 Specimens of Feces for Enteric Organisms. F. B. Bowman.

1. **Observations on Trench Nephritis, Its Later Stages and Treatment.**—J. Mitchell Clarke presents an analysis of 80 cases admitted to the hospital with the diagnosis "nephritis." Of these there were only six in which the diagnosis was at fault. The remaining 74 were placed in four groups: 1. Thirteen cases in which there was either a distinct history of a previous attack of nephritis or definite signs of an affection of the kidneys of some standing. 2. Ten cases in which the nephritis was found to have cleared up on admission, though the symptoms of an attack before admission were quite definite. 3. Nineteen cases which completely recovered in hospital and were discharged cured. 4. Thirty-two cases which left this hospital not cured, though the majority were greatly improved. Of 68 patients three died, eight were discharged slightly improved, but as permanently unfit, and 11 much improved, but the urine contained casts and more than a trace of albumin, six were fairly well and able to do light work, and 32 recovered completely. In regard to eight patients there was insufficient information. In cases of nephritis at a base hospital the general clinical features perhaps especially characteristic are the benign character of the nephritis in the large majority, the frequency of pulmonary complications, especially bronchitis, edema of the lungs and bronchopneumonia. Apart from these complications a not infrequent dyspnea, the generally good appetite, clean tongue, and maintenance of fair nutrition, and, on the other hand, infrequency of anemia, of marked uremic symptoms, and of a high blood pressure or cardiovascular changes. The short duration of the illness in most cases would explain some of these latter departures from the usual symptoms of other types of nephritis. Severe retinitis or optic neuritis is uncommon, occurring in only three out of 80 cases.

3. **A Method of Flapless Amputation, with Subcutaneous Division of the Bone at a Higher Level.**—W. Sampson Handley suggests a method of amputation

which, while retaining all the important advantages of the guillotine method, will obviate the necessity of a secondary operation. He also believes it is the best way of doing the secondary operation in cases previously submitted to the Kelly method. In a secondary amputation following a Kelly operation it is necessary (*a*) to remove such a length of bone that an adequate covering of soft tissue is provided for what remains. (*b*) To excise the calcified granulations, which do not afford a suitable bed for the spreading epithelium. If calcified granulated tissues are allowed to remain, it is certain that ultimately the skin will be adherent to the end of the bone. (*c*) To do what is necessary with minimum exposure of fresh raw surfaces, since all these cases are necessarily accompanied by sepsis. These requirements are fulfilled by the following procedure: The bone is divided at the selected level by a Gigli saw. Two punctures are made at the end of the bone at the outer side of the limb, separated by about one-third of its circumference. Each of these punctures is situated four inches above the end of the stump. Through one of them a curved pair of forceps is introduced closed, and is insinuated round the bone until it is able to seize the end of the Gigli saw introduced through the other puncture. The pair of forceps is then withdrawn, bringing with it the saw. The bone is now divided, care being taken not to rasp the soft tissues. The punctures are made on the side of the limb remote from the main artery, so as to avoid all risk of injury to the large vessels by the action of the saw. The end of the bone is now seized by lion forceps and with the aid of a periosteal elevator is easily separated from the soft tissues and removed. It only remains to excise the layer of calcified granulated tissue and to insert one or two sutures, making ample provision for drainage. In patients exhausted by long-continued suppuration it may even be advisable to do this little operation in two stages. The first stage is the subcutaneous division of the bone at the selected level. This operation should run an aseptic course. In a few days the isolated distal end of the bone can be removed with a minimum risk of osteomyelitis in the proximal end. This method has been successfully employed as a primary operation on several occasions and may be used to replace the guillotine operation except in cases where extreme rapidity is required.

5. **Dakin's "Dichloramine-T" in the Treatment of the Wounds of War.**—Joshua E. Sweet reports on his experience in the treatment of some 80 patients with Dakin's "dichloramine-T." The new dichloramine solution is made by dissolving the crystals of "dichloramine-T" in chlorinated eucalyptol and then diluting this solution by the addition of chlorinated paraffin oil. It is best applied by an oil spray, an ordinary hard rubber or all-glass atomizer being the most practical method. This method saves the pain of wound dressing and effects an appreciable saving of dressing material. The amount of solution needed is of small bulk. The number of wounds which a surgeon can dress in a given time is far greater than by any other method. The elimination of the Carrel tube simplified the dressing and the problem of the transportation of the wounded. The elimination of the Carrel tube eliminates the time taken by the nurse for the periodic flushing.

La Presse Médicale.

July 26, 1917.

Diagnosis of Tuberculous Otorrhea.—Lermoyer gives a brief historical outline of this subject. In prebacteriological days caries of the petrous bone was set down straightway to tuberculosis. After Koch's discovery the profession was surprised to learn that few or no tubercle bacilli were to be found in otorrheal discharges. From that time we began to hear less and less about tuberculous otorrhea. Even an otorrhea in a consumptive could not be hastily pronounced a tuberculous lesion for statistics came to show that at least 40 per cent. of such otorrheas were nontuberculous. Conversely, a man could have a tuberculous otorrhea and yet not be a consumptive. He could keep his general health and be cured of his ear trouble. His condition often escaped diagnosis, while he himself often dropped out of the control of his otolgist. If we exclude cases which develop in the last stages of consumption not over 10 per cent. of otorrheas involving bone are tuberculous. Twenty per cent. of this 10 per cent. are bilateral. Much the greater incidence of tuberculous otorrhea is in childhood, where it may amount to three-fourths of all cases; while in adults four men are attacked for ever woman. The war has notably increased the frequency of tuberculous otorrhea. Middle ear tuberculosis is a secondary manifestation, *i.e.* other specific lesions must preexist, and one of these may infect the middle ear through the blood, integument, or mucosæ, eustachean infection being the chief cause. Middle ear tuberculosis is ranked as an open lesion in theory, but in practice represents a closed tuberculosis. When actually an open lesion, the way is paved for mixed infection through the perforated drum head. In such cases Koch's bacillus plays second fiddle, and the added pyogenic infection may be expressed as a fulminant process rapidly ending in mastoid abscess, etc.; or it may merely be expressed as an acute exacerbation. In a third class of cases the condition set up is insidious—a sinus phlebitis, intracranial abscess, or meningitis. In diagnosis the first point to determine is whether we are confronted by a true or false otorrhea, true otorrhea always meaning bone involvement. Second, we must ascertain which bone, if any, is involved; if it be the petrous bone, are we dealing with a tuberculous or nontuberculous infection? If the former, the type must be determined—open, abortive, etc. To establish the diagnosis we have factors of probability and factors of certainty. The latter comprise presence of tubercle bacilli in the pus, positive biopsy of vegetations and guinea pig inoculation. The latter is infallible, but requires two months of waiting. The tuberculin test, while efficacious, is dangerous. The presence of tubercle bacilli and a positive biopsy can settle the diagnosis at once, but if they give negative results we cannot feel sure that the case is nontuberculous.

Correspondenz-Blatt für Schweizer Aerzte.

July 28, 1917.

Operation or Irradiation for Cancer of the Uterus?—According to Labhard the radical operation for uterine cancer is now about forty years old, having been initiated by Freund and Czerny with the abdominal and vaginal operation respectively. Their operations culminated in the Wertheim and Schauta techniques. All know that these interventions do not prevent recurrence and recourse was had with avidity to the then new methods of radiation. Within the past three years brilliant end results have been reported from use of the latter along with some discouraging experience. At first wholly inoperable, but latterly operable cases were attacked. Naturally, irradiation may be prophylactic or curative and may be used alone or as accessory to the knife. On account of divisions of opinion, every gynecologist should test the subject thoroughly for himself and be guided by his own experience until such time as a consensus of opinion can be reached. Since January 15 (about two years ago) radium bromide has been used in the Basle clinic, both for prophylaxis and the after-treatment of operated cases, supported by Röntgen radiation. Thirteen operable cases were treated exclusively with rays; 17 operated cases received postoperative irradiation, and 20 inoperable cases (not including 4 recurrences) were treated in the same manner. All of the 54 cases have been controlled to date. The results are probably better than they appear for such unpromising material. The radiated operable cases do not show up very well, for but 2 of the 13 are clinically cured, while 3 are dead. The remaining 8 have not yet improved and some of them are worse. On the other hand, the 17 operated cases with postoperative irradiation show no less than 12 clinical cures. Of the 24 inoperable cases not one has been clinically cured, although 11 patients are still living. The dead in this series number 13. But in all the negative results, radium acted as a true palliative, keeping in check the worst symptoms and alleviating the lot of the patients. This is offset to some extent by untoward by-effects of the radium rays. Six of 37 women treated exclusively with irradiation developed fistulæ. All in

all the author is disappointed in his results and does not understand why they are so much inferior to those of Krönig, Döderlein, Bumm, Klein and others. He is not the only one to feel so and to entertain a certain skepticism as to the suppression of certain data. Do these men mean by "recovery" what he himself implies? What diagnostic criteria are used? It is of course possible that they secure their superior results by superior technique. Suppression of the so-called stimulation effect of too small doses is a very delicate and difficult problem, to which must be added the great differences in the vulnerability of cancer cells in individual cases. Experience of operators also undergoes changes in respect to the relative value and harm of Röntgen rays and radium.

Gazzetta degli Ospedale e delle Cliniche.

August 3, 1917.

Two Cases of Mesoaortitis with Aortic Insufficiency of Luetic Origin.—Binetti reports two cases of this affection in soldiers, each of whom was aged 37. Both patients also showed evidences of incipient tabes. The Wassermann was positive, but to render the diagnosis of specific aortitis beyond question all other possible causal factors could be eliminated. There was a certain amount of general improvement as a result of calomel injections and potassium iodide. The association of mesoaortitis with cerebrospinal metasyphilis is extremely common, although the author only cites figures for paresis in this connection. Naturally the diagnosis in these cases does not have the certainty of autopsy finds (especially microscopic). One of the case reports is as follows: Patient of good stock and antecedents contracted syphilis at 20, and after a year never presented any symptoms of this affection, but was troubled off and on with bronchitis. For some years past he had complained of dizziness, throbbing in the head, dyspnea on exertion, palpitation, and slight edema of the feet toward evening. He served in the army for 3 months before he was interned for bronchitis and declared unfit for military duty. Upon examination was found to present general micropolyadenitis. Careful examination of the chest then revealed the presence of a cardiac lesion. There was hypertrophy of the left ventricle, a Flint murmur (presystolic) at the apex, and accentuation of the second sound. Over the aorta could be heard in addition to a short, mild systolic sound a diastolic murmur, metallic in character and filling the long pause completely. This was most audible over the base of the sternum. The *x*-ray showed the enlarged left side and an enlarged, pulsating aorta. Aneurysm could be excluded. Traube's double sound could be heard over the carotid and axillary arteries; there was no sound over the femoral and no subungual capillary pulse. The neurological examination showed abolished kneejerks and a marked Romberg, with pupils sluggish to light. Comparing the other case with the preceding the aortic focus showed to auscultation a pure first tone, a shrill second sound and diastolic murmur of loud origin, becoming softer and completely filling the pause. It was most audible over the sternum and low down. Over the apex the tones were clean and Flint's murmur absent. On percussion the left ventricle was found enlarged. There is no mention of *x*-ray finds.

Annali d'Igiene.

July 31, 1917.

The Curve of Mental Labor.—Scelba-Sandesky sums up the results of her original research on this subject in part as follows: She corroborates the finds of others to the effect that school fatigue need not be feared as long as there is a wise distribution of the school work. The curve of reading can maintain fully the ascending type up to the close of an hour of intense application, while the curves of computation (addition, etc.) show a tendency to decline from the outset. These two types of curve are therefore antagonistic. The oscillations in the curves are much more pronounced for reading than for calculation; this depends—at least in part—on the heterogeneity of the material. To account for another factor the author suggests an alternation in the attentive tension in the speech test which does not obtain in the figuring test. The conditions of the research are based approximately on the labors of Maccagno and de Sanctis in Italy and Kraepelin and Ebbinghaus in Germany, in regard to mental fatigue in general.

Colloid Complexes and Their Importance in Biology, Pathology, etc. — Scala concludes that adsorption, or better, the formation of colloid complexes is physiochemical in nature (not merely physical). In the formation of complexes between colloids and electrolytes there is always a liberation of acids and bases. In living organisms, which are formed chiefly of colloids, there is a continuous tempestuous movement of complexes and the liberation of acids and bases is normal within certain conditions, but if it becomes irregular the reactive properties of the colloids are disturbed and a temporary or permanent pathological state is produced. Mineral substances ingested with the food play an extensive rôle in the production of such deviate or abnormal conditions; for the colloid substances in the living organism, chemically inert, develop ionic properties and are then able to form combinations. The inconstancy of the mineral matter content explains the great diversity of behavior in the colloid reactions. The mineral matter in our drinking water shows a greater degree of constancy and contains both saline and colloid complexes in much variety which have physiological properties, not due merely to those of the constituent elements. The author believes that as soon as we understand the relationship between mineral alimentation and maintenance of physiological equilibrium, light will be thrown on the nature of many diseases.

El Siglo Médico.

August 4, 1917.

The Psychasthenic.—Sánchez-Herrero asks of this type of individual, "Is he abulic?" and answers that hypobulic is the better term. His volition lacks the element of intensity, he is not dynamogenic, has no executive ability, is incapable of prompt action, must deliberate, is changeable and vacillating, cannot come to a conclusion, and remains in a state of inertia. These subjects are represented in Murger's Bohemians, in coffee house politicians who would reform the country by useless talk while incapable of sustained labor in their proper spheres of activity. Their mental sufferings cannot be transmitted into energy and their output of actual effort is small. They are victims of inhibitions, are pessimistic and egocentric, hyperesthetic, out of touch with the external world, akin to the hypochondriac. In contemplating the endocosm they lose sight completely of the idea of finality. Thomas à Kempis said that all doubts should be referred to God as to the final object of life, the Omega as well as the Alpha. In his intellectual myopia the psychasthenic fails to grasp this solution. Egotism is the only delight of the psychasthenic and at the same time the source of all his misery.

Autobiography of Ramon y Cajal. — Cortezo writes apropos of the second volume of an autobiographical work, "Recuerdos de mi vida," by Spain's foremost medical citizen, whose name heads the list of presidents of the First National Medical Congress of Spain to be held next spring. The publication, through the eminence of the author and his superior literary ability, will doubtless become a classic in the national literature. Through its pages the author stands forth as a great psychologist as well as an illustrious scientist. It is through the former quality that he has loomed up as a teacher par excellence in the branches of science which he has made his own. But he could not have become the national figure that he is as a mere scientist and thinker. Behind these are his personality, which explains his participation in all activities which are national in scope and his unselfish character. Cortezo appends the author's preface, which is dated June, 1917, and seems to suggest his indebtedness to Taine, who is generally acclaimed as the pioneer of modern psychology as distinct from metaphysics. Like most great men, Ramon y Cajal had an inauspicious beginning, and his life represents a series of obstacles successively overcome, which naturally makes his narrative one of unusual interest. He began his medical career as an army surgeon in Cuba.

Book Reviews.

THE NEW SYSTEM OF GYNECOLOGY. Edited by THOMAS WATTS EDEN, M.D., F.R.C.S.E., F.R.C.P., Temp. Major R.A.M.C., Vice-president of Section of Obstetrics and Gynecology of Royal Society of Medicine, Obstetric Physician Charing Cross Hospital, Surgeon Chelsea Hospital for Women, and CUTHBERT LOCKYER, M.D., B.S., F.R.C.S., F.R.C.P., Vice-president of Section of Obstetrics and Gynecology of Royal Society of Medicine, Obstetric Physician to Out-Patients Charing Cross Hospital, Surgeon to In-Patients Samaritan Free Hospital for Women. In three volumes, with numerous illustrations in color and in black and white. Vol. I, 761 pages, with 288 illustrations; Vol. II, 875 pages, with 443 illustrations; Vol. III, 871 pages, with 329 illustrations. Price for the three volumes, $36.00. London and New York: The Macmillan Company. 1917.

THIS is an excellent work and one with whose value the reader becomes more and more impressed with each hour of study. This estimate does not at all coincide with the reviewer's early impressions; for upon merely reading here and there one occasionally gets the impression that a subject is only indifferently covered. This is due to the fact that in some cases various phases of a subject have been split up among several authors and sometimes the reader must look through chapters in one, two, or even all three volumes before he learns all that the work has to offer on the subject.

There are fifty contributing authors, most of whom are men of international reputation, and in this list we find the names of two American gynecologists, H. Franklin Martin of Chicago, who contributes the section on after treatment of gynecological operations, and Howard C. Taylor of New York, who contributes that on vaginal celiotomy. The scope of the work is somewhat wider than the title would indicate; for the editors have felt that certain fields not ordinarily considered as belonging to the gynecologist should come within his domain. Thus we find sections on diseases of the breast, the vermiform appendix, methods of examination of the urethra and bladder, infections of the urinary tract, hernia in women, and diseases of the rectum; while there is a comprehensive chapter on intestinal surgery and one each on radium and Roentgen rays in gynecological surgery.

Space permits but little reference to individual authors' articles. The description of the development of the female genitourinary apparatus is exceptionally lucid, making the genesis of congenital anomalies unusually clear. Although we still have much to learn regarding the physiology and interrelation of the endocrine glands, the subject is in hardly so hazy a state as one would gather from reading the section entitled "The corelation of the internal secretory organs with the function of reproduction." In the chapter on methods of examination the attitude of the author regarding the examination of girls and unmarried women is inconsistent; for in one place he says: "The inability to refer a specific symptom or symptoms to any particular organ is due rather to want of acumen on the part of the examiner or to a deficiency in diagnostic methods," and in another he says: "Needless to say, no local examination should be made upon girls or unmarried women in the absence of urgent pelvic symptoms directly calling for such examination." If the author feels that each individual symptom should be tagged with an etiological label he certainly should not expect the gynecologist to wait until the symptoms become "urgent" before resorting to examination in all except his married patients. Much unnecessary mental and physical suffering has been caused by such diffidence and delay in making proper examinations of unmarried women and young girls; and it is high time the profession realized this point and acted accordingly. The dangers of excising portions of cervical tumors and waiting days for a report before proceeding to radical extirpation are not mentioned, and sufficient stress is not laid on this point in the section on breast tumors. The chapter on ectopic pregnancy is a strong one and contains many valuable suggestions, among which is that of compressing the abdominal aorta when attempting to remove a diffusely attached placenta. The more frequent pathological conditions affecting the genital apparatus are well covered by the various authors, and we find many new suggestions, especially as regards operative technique, that should be most helpful. The chapter entitled Associated Nervous Diseases should be somewhat more exhaustive. The descriptions of pathology are excellent, especially in the second volume, and but little fault can be found with the treatment and technique suggested. We fail to see the advantage of the modification of the classical technique of the Gilliam operation as employed by the author of the chapter on backward displacements of the uterus; while the author of the chapter on prolapse seems unduly exercised in mind over the interposition operation which, admittedly, has its faults but seems distinctly advantageous occasionally. In the chapters devoted mainly to operative technique we find the usual operations well described and illustrated.

The books are well bound, the type is large and clear. there are relatively few typographical errors for a first edition, and the numerous illustrations are usually excellent. The work forms a really valuable addition to gynecological literature.

THE NATION'S HEALTH. The Stamping Out of Venereal Disease. By Sir MALCOLM MORRIS, K.C.V.O., Member of the Royal Commission on Venereal Diseases, etc. Price, $1.25. New York: Funk & Wagnalls Company.

THIS book, written for the laity, especially legislators, contains nothing new for the medical man who is actively interested in the subject. Members of the profession who are unfamiliar with the details of the problems involved could profit from a study of the book, which, however, is written for the British layman, who is much more conservative in his ideas of personal liberty than our own public. We regret to note, in passing, that Sir Malcolm has succumbed to Bloch's arguments in favor of the American origin of syphilis. So far as we know, not a single medical scholar has been won over to this belief through Bloch's book. The historical method of interpretation of old texts has very largely been displayed by the study of original contemporaneous records of every sort, and these are quite silent on the subject of a death dealing pandemic of syphilis after the discovery of America.

THE ELEMENTS OF THE SCIENCE OF NUTRITION. By GRAHAM LUSK, Ph.D., Sc.D., F.R.S. (Edin.), Professor of Physiology at Cornell Medical School, New York. Third Edition. Price, $4.50 net. Philadelphia and London: W. B. Saunders Company, 1917.

AT the conclusion of the preface to this edition the author states "that he has no intention of again revising this book. In another decade the development of scientific knowledge will probably permit the formulation of the subject from the standpoint of physical chemistry." Until that time arrives, and for the immediate present, it may be said that the third revised and enlarged edition of this book connotes our knowledge to date in a very readable form. While the subject matter is of a highly scientific character and on this account may appeal more to those particularly interested in the science of nutrition, at the same time the book deals with so many fundamental problems pertaining to body metabolism in health and disease that it cannot fail to be of distinct value to anyone interested along this line. Such timely subjects as a normal diet, the food requirement during the period of growth, metabolism in diabetes, nephritis, cardiac disease, etc., the influence of drugs upon metabolism, represent some of the practical considerations met with.

In the introduction the author gives many interesting details regarding the studies and experiments of the pioneers in the science of nutrition, such as Pettenkofer and Voit, and shows how certain basic deductions made by these and other early investigators paved the way for the great advances that have been made in recent years. Probably one of the most important chapters is the concluding one on "Food Economics." We cannot do better than quote Professor Lusk on this important topic. Speaking of the probability of food shortage in the United States, he says: "This can be remedied by increasing the number of milch cows and by reducing the live stock raised for meat. . . . It is quite certain that meat in the quantity it is consumed today is entirely unnecessary, and it is susceptible of scientific proof that mechanical work is more efficiently and economically derived from carbohydrate food than from meat."

Public Health Reports.

REPORT ON THE MEDICAL ORGANIZATION OF THE POLICE DEPARTMENT OF NEW YORK CITY BY THE PUBLIC HEALTH COMMITTEE OF THE NEW YORK ACADEMY OF MEDICINE.*

At the request of Mr. Arthur Woods, Police Commissioner of New York City, the Public Health Committee of the New York Academy of Medicine has undertaken a study of the organization and work of the medical service of the Police Department with a view of suggesting to the Commissioner what steps might be taken to increase the usefulness and efficiency of the service. In this study the committee has had the cordial cooperation of Dr. Edward T. Higgins, Chief Surgeon, and of Mr. E. V. O'Daniel, the Fourth Deputy Commissioner, as well as of other members of the Department. The committee was accorded access to all the records of the service and freedom to interview anyone connected with the force. The reports and statistics of the Medical Division have been analyzed and tabulated. Several of the surgeons and one ex-surgeon of the Police Department, as well as a number of patrolmen, have been interviewed. The committee desires to commend the spirit in which the investigation has been met by the officers of the Department and the ready cooperation it has had in securing the desired data and explanations.

On the basis of the information and statistics obtained, the committee has prepared the following report which consists of three major parts: Part I—An analysis of the health problem in the Department, and of the organization of the medical work; Part II—Comments and criticisms; and Part III—Suggestions regarding certain changes and remedies, some of immediate application, others of a more radical nature involving reorganization and possibly requiring changes in the Charter provisions before they can be put into operation.

Part I—The Health Problem in the Police Department.

1. **Statement of the Problem.**—The nature of police work exposes the members of the force to certain hazards and accidents which result in injuries and disabilities. The discharge of police duty involves an irregularity in the hours of work and a consequent irregularity in the mode of life. It entails frequent and prolonged exposure to inclement weather in the winter months and to heat in the summer, and at times demands a considerable amount of overwork. A large measure of illness and disability in the Police force is unavoidable, while a certain amount is preventable. One of the tasks of organization is to eliminate all the preventable disability and to keep the force in a condition of maximum efficiency. A reduction in the sick rate of the Police force is equivalent to an increase in the amount of police service available. Toward the accomplishment of this end the Department maintains a medical corps whose two chief duties are: (1) To certify to every case of illness with a view of determining the fitness of the patrolmen for duty; and (2) To give treatment to every sick or disabled member of the force in order to restore him as quickly as possible to his post.

The treatment of disabled policemen was added definitely to the duties of the Medical Division only three years ago; prior to that time it was not required, although some of the surgeons always have given medical care voluntarily.

2. **Organization of the Medical Service.**—At the present time the medical staff of the Police Department consists of 18 surgeons. One is designated as Chief Surgeon and is assigned to administrative and consultant work, and one devotes his whole time from 9 A. M. until 5 P. M. to the recently organized clinic, opened on October 15, 1916, at Headquarters. The clinic has not as yet been properly equipped, while the average attendance is about 20 patients a day. The remaining 16 surgeons do district work covering the entire city.

The Charter admits the employment of 40 surgeons at a salary of $3,500 a year. The Board of Estimate and Apportionment, through its failure to appropriate the necessary funds, has reduced the number of surgeons to 18.

At the present time there is one district surgeon to every 700 men in the Police Department. The surgeons' districts are large, particularly in the less densely populated boroughs, and are based on the number of patrolmen residing in a certain area, regardless of where they are assigned to duty. The average size of a surgeon's district in Manhattan is over 5 square miles, in Brooklyn 12½, in the Bronx 13¾, in Queens 30, and in Richmond 57 or the whole Borough. The surgeon in charge of Richmond has also a section in Manhattan between 86th and 110th Streets on the west side.

The duties of the surgeons can be divided into two classes: (A) Regular, and (B) Incidental.

A. The regular duties consist in examination of applicants for admission to the police force, reexamination of applicants at the end of six months' probation period, examination of patrolmen for pensions, examination of patrolmen reported ill or injured, treatment of ill and injured patrolmen, and examination of applicants for reinstatement. These latter examinations are made by a committee of three surgeons. The statistics of examinations made in 1916 are as follows:

Examinations for reinstatement	292
Reexaminations at end of probation period	228
Examinations as to fitness for police service	216
Examinations for retirement	53

The examinations for retirement are made by a committee of five surgeons.

The surgeons are expected to be regular in their attendance at the meetings of the Board of Surgeons, called twice every month. They are also called upon to give lectures to patrolmen in the Training School on first aid to the injured. Last year 30 such lectures were given, though not a single lecture was given on personal hygiene for the men themselves.

B. The incidental duties of the surgeons consist in attendance at large fires, explosions or other major calamities, in attendance at parades—at the 5 large parades in 1915 on an average 12 surgeons were on duty at each parade—attendance at certain medico-legal autopsies at the request of the Detective Bureau and also in cases of suspected rape, and attendance at the trial court in cases of malingering patrolmen brought up on charges by the surgeons. There were about 100 such cases in 1916 and the average time spent by the surgeons at each trial was about 3 hours. About 150 emergency visits are made to precinct station houses in a year; these include calls to station houses in cases of arrest of intoxicated chauffeurs. Last year 12 surgeons were required to be in attendance at the Police Training Camp at Fort Wadsworth for a period of 2 weeks each.

In case of illness of a surgeon or during vacation period, his work is apportioned among his colleagues, and the size of their districts necessarily is increased thereby.

At the present time the surgeons have no definite hours of work. There are no Charter provisions as to the time to be given by the surgeons in the performance of Department duties, nor are there any Departmental regulations to that effect. According to the statement of the Police surgeons, they give on a average 7 hours per day for 7 days per week throughout the entire 52 weeks in the year. This would give approximately 40 minutes per patient, as the average number of visits per day per surgeon is 10.9, as reported by the Police

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Department. Allowing the time spent in transit to and from the patient this seems a high average, particularly when one takes into consideration the fact that only one-third of the calls are home visits, the remainder being office visits at which full physical examinations are seldom given.

The total number of visits recorded for 1916 was over 63,000, of which 53,869 were visits to members of the force actually on sick report. The difference between these figures represents about 9,000 extra calls which were made in the treatment of convalescents after return to duty, and of sick patrolmen who, not wishing to suffer a reduction in pay because of illness, take their vacation during the time of illness. These cases do not appear on the sick list, but the patients nevertheless are entitled to treatment. The extra calls also include examinations made by the surgeons at their semimonthly meetings and the cases referred by one surgeon to another, who may be a specialist in a certain branch of medicine, for confirmation of doubtful diagnosis. No exact classification of these calls is available.

Of the 18 surgeons 2 are genito-urinary specialists, 2 are nose and throat specialists, 1 is a surgeon, 1 is a gynecologist, and 1 is a pediatrician. The others are general practitioners.

An analysis of the dates of appointment shows that one of the surgeons was appointed 30 years ago, one was appointed 29 years ago, and two were appointed 24 years ago. The remaining appointments have been made since 1900—one in 1900, two in 1902, one in 1903, one in 1904, three in 1907, two in 1909, two in 1910, one in 1911, and one in 1912.

The surgeons are required to send in daily reports on which are specified all the employees of the Department under their care, the names of the patients seen that day being indicated by a special mark. In addition, the police surgeons are required to send in daily slips for every patient who has been referred to them as sick. On this slip the diagnosis is recorded. No history cards are made out nor are they required.

All the surgeons of the department are of equal rank. The Chief Surgeon is designated by the Commissioner and serves at the pleasure of the Commissioner. He has authority over the other surgeons, which, because of the insecurity of the office, he may not care to exercise. Due to the indefinite tenure of the office of Chief Surgeon, the administrative discipline necessarily has been lax.

Surgeons, as other employees of the Department, are entitled to pension after 25 years of service if they have reached the age of 55 years. According to the present rules anyone leaving the Department before he is legally entitled to a pension does not receive a surrender value of the contributions made during the preceding years. This pension system may act as a deterrent to surgeons who, because of a large practice which they may have built up or because of other pressing duties and obligations, would leave the service if they received a surrender value commensurate with the amounts contributed and based on the length of service.

The powers of the Commissioner with reference to the surgeons are the same as those with reference to the other members of the Department, and he may promulgate such rules as he thinks best. He may require full time service, and residence within or near the District to which the surgeon is assigned. He may discipline by suspension, fine or dismissal for any misconduct, infraction of rules, or neglect of duty. A surgeon may be brought up on charges. The surgeon against whom charges are preferred has legal right to a hearing before the Commissioner, the right of employing counsel, and the right of having the case reviewed by a court. The dismissed surgeon may seek court reinstatement, as was done by one surgeon who was suspended because of insufficient budget appropriations to pay all the surgeons. The court reinstated the surgeon, holding that the Board of Estimate and Apportionment did not have the authority to reduce the number of surgeons in this manner.

3. Statistics of the Police Force, and Rules Governing Sick Leave and Pensions.—There are about 11,000 employees in the Police Department. 10,592 are in the uniformed force, and 10 per cent. of these are in the higher ranks, *i. e.* holding positions as captains, lieutenants, sergeants and inspectors, at salaries graded according to rank.

The age distribution of the police force cannot be obtained as of the present time, but the pension report made by the Commissioner of Accounts early in 1913 showed that the median age was 35 years. The age distribution has probably changed slightly since 1913 and presumably has raised the median to a younger age group, as quite a considerable number of new patrolmen were appointed since the early part of 1913 and a large number of older men were pensioned during Commissioner Waldo's administration.

The committee has been unable to ascertain definitely the marital status of the police force. The estimates place the number of married men as being over 90 per cent. of the force.

With the exception of the Traffic Squad, which works daily for eight hours and for an hour or two in the theatre district at night, the majority of the force is divided into three platoons, each platoon working eight successive hours. Every tenth day the tour begins at a different hour. For instance, if a platoon should start on a certain day to work at 12 midnight they would work until 8 A. M. for nine days; then, on the tenth day they would begin to work at 4 P. M. and work until 12 midnight for nine days; then they would begin to work at 8 A. M. and work until 4 P. M. for another nine days.

Each platoon consists of three squads, each squad doing reserve duty three days in every nine days. When on reserve duty the patrolman has four hours of leave after his regular tour; he then goes to the precinct station house for eight hours of reserve duty, during which he may sleep, as beds are provided at the station houses; and then he has four hours more of leave, after which he goes back on regular patrol duty. The chief surgeon stated that the four hours of leave is purely nominal, as the officer may have duties to perform at court or elsewhere.

The short hours of leave in many instances prevent the policeman from going home. He often lives a long distance from the precinct station. For this reason, and also because of the inconvenience to his family of preparing meals at irregular hours, he often secures his meals at a nearby restaurant.

The Charter of the City of New York provides for the manner and conditions under which members of the force may be dropped because of physical disability. There are but four ways in which the members of the force can sever their relation with the Police Department: By death, resignation, dismissal (Section 300), or retirement (Section 354, pp. 3 and 4, and Section 355). A policeman may be retired when he reaches the age of 55 years if he has been in service for 25 years. The Commissioner may retire a member of the force when he reaches the age of 60 years. Members of the force suffering from permanent disability may be retired only after 10 years of service, with a pension equal to one-fourth of their annual salary. Should the disability occur before the expiration of 10 years of service, the disabled patrolman cannot be retired but must be carried on the sick list and given half pay. In other words, if a man should become disabled during the first year of service, he would be granted nine years of sick leave on half salary. At present there are 23 patrolmen unable to do full duty who must be carried on the pay roll of the Department. The disease disabilities and operations which bar them from active service are as follows:

Tuberculosis	8
Pulmonary emphysema	1
Blindness	1
Neurasthenia	1
Epilepsy	1
Flat feet	1
Diabetes	1
Chronic rheumatism	1
Chronic Bright's disease	1
Gastroenterostomy	2
Hemiplegia	2
Amputation of thigh	1
Spondylitis	1
Deformity of leg, following fracture	1

Some of the patrolmen whose disabilities are prolonged but who can be of some service to the Department are assigned to light duties, such as watching raided premises, for example.

When the policeman becomes ill he, or someone for him, is required immediately to notify the precinct station house in person. A statement of his condition is not required, but the lieutenant inquires whether the patient will be able to go to see the surgeon or whether the surgeon should be sent to him. In the latter case a notice is sent to the surgeon by messenger, but the surgeon has no way of determining whether or not the case really requires immediate attention.

A policeman reporting ill is automatically admitted to sick leave and is given half pay, except in cases of injury received during the actual performance of police duty and by reason of the same, when he receives full pay. He is continued on the sick report under charge of his district surgeon until entirely recovered and returned to duty.

4. **Morbidity Statistics.**—The morbidity statistics for 1916 are as follows:

Total number of admissions to sick report, including readmissions.	8,316
Total number of days lost because of illness	76,101½
Total number of days lost because of injury	25,732½
Average number of days lost per sick patrolman	9.1
Average number of days lost per injured patrolman	14.0

The average percentage of time lost per annum on account of illness or other disability was as follows:

1914	2.29 per cent of the total time of expected service.
1915	2.16 per cent of the total time of expected service.
1916	2.54 per cent of the total time of expected service.

The rate is lower than that of London, England, which in 1914 was somewhat over 3.0 per cent.

The following is the distribution of days lost by months for 1915 and 1916. In 1916 the number of days lost was larger, month for month, than in 1915 with the exception of April.

1915		1916	
January	8,019	January	10,847
February	7,211	February	9,026
March	7,951	March	10,045
April	7,956	April	8,167
May	6,463	May	7,445
June	6,093	June	7,032
July	6,768	July	7,181½
August	6,643	August	8,294
September	6,464	September	8,244
October	6,601	October	9,143½
November	6,760	November	7,513½
December	7,940	December	8,895½

The large amount of sickness in January, February and March of 1916 was attributed to the epidemic of grippe and influenza; and the high incidence of sickness in the summer of 1916 was due in a measure to the strain put upon the policemen by exigencies of the traffic strike.

Comparative Statistics.—An attempt was made to secure information bearing on the sickness rate of policemen in other American cities, and letters of inquiry were sent to a number of police departments. Replies have been received from four cities: Boston, St. Louis, Philadelphia, and Chicago.

In Boston sick leave is counted, as in New York, from the first day of illness. In 1916 the total number of days lost because of illness was 8,006 in a force of 1,618, or 4.9 days per man. The total time lost on account of illness was 1.4 per cent. The total number of days lost because of injuries was 2,744, or 1.7 per patrolman in the year 1916. The loss of time of absentees from duty on account of injuries was one-half of one per cent. of the required total time of service. The total percentage loss of time on account of both sickness and injury was 2.2, which is lower than our city police rate. It may be noted that the Boston Police Department does not employ any surgeons.

The health statistics of the St. Louis police force, which the committee obtained, allow of only a few comparisons. The total loss of time due to sickness disability was 10,739 days in 1916. The total force of the city is 1,661 men. The average number of days lost because of illness per member of the force was 6.4. The annual rate of illness, as reported, was 1.6 per cent. in 1916. The St. Louis Police Department employs four surgeons on a basis exactly the same as that obtaining in New York City. The chief surgeon gets a salary of $3,000, the assistant surgeons get $1,200. The surgeons may be called upon at any time to attend to the police department calls irrespective of the claims of private practice. The surgeons in St. Louis are chiefly disciplinary officers, but they attend sick members of the force who desire their services.

In Philadelphia the police department employs one surgeon at $4,000, who gives full time to the work. In addition, the department has 41 district surgeons who work on a fee basis. Sick patrolmen are not treated by the police surgeons except when injured in the performance of duty. There are no detailed statistics available concerning the Philadelphia force, which numbered 3,928 in 1916. On the average, 354 were admitted to sick report monthly, and 10.4 days was the average time lost on account of illness per man per annum.

In Chicago the police surgeons perform ambulance work and give only first aid to the members of the force, similar to that given to any other injured person. There are no detailed medical statistics available for the police force. In 1916 about 1,300 police officers, in a force of 5,075, were examined for sickness or injury. No other data have been obtained.

The experience of the New York Fire Department is as follows: The uniformed force of the Fire Department is 5,026 and the civilian force is 777, making a total of 5,803. In 1916 the budget provided for a salary of one medical officer at $4,200 and of nine medical inspectors at $3,300. In the Fire Department a man is not admitted to sick report until he has been seen by a surgeon. The surgeon must see the sick fireman within six hours after report is made. The health statistics of the Fire Department are as follows:

	1914	1915
Number of cases of illness	2,129	2,373
Number of cases of injury	836	663
Total number of cases of disability	2,965	3,036
Days lost on account of illness	28,649	38,021
Days lost on account of injury	12,950	12,182
Total days lost	41,599	50,203
Average number of days lost on account of illness	13.4	16.0
Average number of days lost on account of injury	15.5	18.4

The average number of days lost per case of illness, as well as per case of injury, was larger in the Fire Department than in the Police Department, the rate for the latter being 9.1 and the rate for the former being 14.4 in 1916.

The following table brings out certain comparisons:

	1916. New York Police	1916. Boston Police	1916. St. Louis Police	1916. Chicago Police	1916. Phila. Police	1915. New York Fire Dept.
Number of men on force, uniformed	10,592	1,618	1,661	5,075	3,928	5,026
Number reported ill	8,316	..	..	About 1,300 m'nthly	Average of 354	2,373
Number reported injured						663
Total days lost on sickness	76,101½	8,006	..	....	....	38,021
Total days lost on injury	25,732½	2,744	10,739	..	..	12,182
Average number of days lost per sick member of force	9.1	..	..	..	..	16.0
Average number of days lost per injured member of force	14 0	..	....	..	....	18.4
Average total time of disability per disabled member of force	12 2				10 4	16.5
Average duration of sickness per member of the force in days		4 9		..	..	7.5
Average duration of injury per member of the force in days		1.7		..	....	2.4
Average of total time of disability per member of the force	9 6	6.6	6.4		..	9.9
Average percentage of time lost on account of illness or other disability	2.54	2.2	1.6	....	....	..

In the entire New York police force the total number of cases of disease disability in 1916 was 10,156; of these, the most important diseases, numerically considered, are as follows:

Diseases of the digestive system.	2,592
Infectious diseases	2,584
Of which there were 1,420 cases of influenza	
580 cases of acute articular rheumatism	
58 cases of tuberculosis, and	
29 cases of lobar pneumonia	
Diseases of the respiratory system	1,312
Diseases of the nervous system	959

It is interesting to note that in the detailed medical report there were recorded only 26 cases of alcoholic poisoning, 29 of lobar pneumonia and 155 classified as diseases of the reproductive and urinary systems. A striking feature of the report appears in the fact that while during the years 1914, 1915 and 1916 the number of diseases of the digestive system remained practically the same, there was a marked increase in the number of diseases classified as of the nervous system, 444 such cases being reported in 1914 as against 959 in 1916. The genito-urinary cases remained substantially the same in number. The remaining cases included in the number of total disabilities were varied in nature and for the most part of ordinary character, such as would naturally occur in any large group of 10,000 or so men.

The number of patrolmen off duty daily on account of disabilities varies with the season of the year. It is larger in the winter months than during the summer. On February 2, 1917, there were 390 men of the uniformed force on the sick list, of whom 15 were in hospitals. The distribution by hospitals and boroughs was as follows:

Manhattan Hospitals.

	Precinct.	Hospital.	Diagnosis.	Condition.
1	23	Bellevue	Fracture of knee	Healing
2	21	Bellevue	Pott's fracture	Complicated
3	144	Polyclinic	Appendectomy	Healing
4	16	St. Vincent's	Pneumonia	Stationary
5	23	New York	Scalp wound	Stationary
6	13	Seton	Pulmonary tuberculosis	Stationary
7	63	Hahnemann	Hernia, operated	Doing well
		Bronx Hospitals.		
8	68	St. Francis	Hernia	Improving
9	T.D.	Lincoln	Exostosis metatarsal bone, operation	Stationary
		Brooklyn Hospitals.		
10	145	Kings County	Varicose veins	Improving
11	D.B.	Prospect Heights	Gastric ulcer	Improving
12	174	Coney Island	Fracture of femur	Stationary
13	169	Coney Island	Hernia	Stationary
14	170	St. Peter's	Meningitis	Doing well
		Queens Hospital.		
15	277	St. John's	Lumbago	Stationary

The Police Department does very little in the way of disease prevention among its employees. In recent years the only approach to preventive work has been the publication of a leaflet "How to Keep Well," published on October 1, 1915, for distribution among the force, and the occasional articles on health in the Monthly Bulletin of the Department. In May, 1915, there was an article on digestion; in June there was a short article on vacation typhoid; and in July the Bulletin was devoted entirely to an article on foot troubles, their cause and prevention, prepared by the chief surgeon in co-operation with four other surgeons. In a later Bulletin there was a short article by Dr. Higgins on the influence of fresh air on health.

Systematic lectures on personal hygiene and disease prevention are not given, and the Department does not require periodic physical examination of the force.

5. Mortality Statistics.—During the year 1916, 79 patrolmen, or seven-tenths of one per cent. of the active uniformed force, died. The causes of death are summarized as follows:

Infectious diseases:	
Pneumonia	12
Typhoid	1
Tuberculosis, pulmonary	5
Urinary system:	
Nephritis, chronic	10
Diseases of metabolism:	
Diabetes mellitus	3
Diseases of digestive system:	
Liver and gall-bladder	4
Stomach and intestine	4
Circulatory system:	
Cardiac disease	11
Disease of brain and nervous system	7
Malignant tumors:	
Carcinoma	6
Osteosarcoma	2
Injuries:	
Extreme multiple injuries	3
Fracture of the skull	3
Pistol shot wounds	8

Part II—Comments and Criticisms.

1. Medical and Preventive Work.—The rules governing the duties of surgeons with reference to treatment of sick members of the force never have been defined clearly. Some of the surgeons always have given medical care to sick policemen voluntarily, while others have not considered it their duty. In order to determine in a general way the attitude of the patrolmen regarding the medical care they receive, a number of them were asked by the committee to express their opinion on the subject. The impression appears to be quite prevalent among the members of the force that there does not exist any close relationship with the surgical division. One man stated, for instance, that it was the impression among his friends on the force that the surgeons are glad to pass them on to outside physicians and are rather bored to treat the men. Another stated that much illness might be prevented if the patrolmen felt more free to go to the surgeons for early preventive instruction before they became seriously ill; in other words, to go to them at times when not actually applying for sick leave. Most of the men agree in attributing their digestive disorders in part to the necessary irregularities in their mode of life, particularly with reference to meal hours and sleep, and in part to their own indiscretions in diet, many of them eating wrong kinds of food, drinking inordinate quantities of coffee, etc. A few of the men attributed such digestive disorders to excessive alcoholic indulgence.

According to the understanding of the committee, at the present time the medical service of the department consists of diagnosis and treatment of disease, and disciplinary control of malingering. It is the opinion of the committee that in order to perform these two functions satisfactorily, *i.e.*, to have a prompt and rigid disciplinary control and to give to sick members of the force as good treatment as is expected in private practice, a larger number of surgeons than are at present at the disposal of the department would be necessary. This larger number would be 40 per cent. greater than at present. But the committee is of the opinion that since the conditions of service in the Police Department are entirely different from those prevailing in the army, an attempt to exercise full control over the health of the force by the department is impractical and always impossible of full attainment, the first reason being that it would require hospital facilities, and the second being that it would interfere with the constitutional rights of the men to such treatment as they considered best for themselves. Treatment, even if exercised through additional surgeons, would necessarily apply only to a part of the force, although presumably a majority of the men might avail themselves of the medical services offered.

It is the feeling of the committee that the interests of the department would be served to a greater extent if the medical service were limited to diagnosis and prevention of disease, and disciplinary control. Preventive work has been almost entirely neglected, no instruction in personal hygiene being given. All the medical lectures given in the Training School were on first aid to the injured. The department does not require periodic (annual) physical examinations of the force. It is the opinion of the committee that the institution of such examinations is desirable and that it would result in a decrease in the sickness rate. This has been the general experience wherever periodic physical examinations have been carried on. In the Milwaukee Street Railway service, for example, the sickness rate has been decreased from nine to something over four days per annum since periodic physical examinations have been made. In the Health Department of New York City, in spite of the constant contact which a large percentage of the force has with infectious diseases, and in spite of the considerable

number of clerks in the department, whose work is indoor and sedentary, absence on account of illness is less than in the Police Department, and was considerably decreased in the two years following routine annual examinations.

The question was raised whether a system of periodic examinations which will inevitably lead to the discovery of a variety of chronic conditions would not result in an increase of malingering and in making hypochondriacs of some of the men, who would be apprised of their condition and warned against certain things which their police duties might demand of them. It is the opinion of the committee that these are exaggerated fears and that the system, if carried out with proper judgment, would bring about a considerable reduction of preventable disease. Periodic physical examination has been accepted as one of the fundamentals of modern preventive medicine.

2. Organization of the Medical Service.—The present administrative organization of the Medical Division of the Police Department is defective. There is no concentration of authority. The chief surgeon is appointed by the commissioner and serves at the pleasure of the commissioner. With a change in administration he may be returned to district work. Under the present circumstances he may not care to exercise rigid control over the other surgeons, any one of whom in time may become his chief. His position does not carry with it particular prestige or a higher compensation, and his duties are chiefly clerical. The committee believes that an organization with a gradation of ranks and salaries would be more adaptable to administrative efficiency and would create more of a spirit of emulation than is at present possible with all the surgeons of the same rank and receiving the same salary from the time of entrance into the service until the day they leave it. Such a graded organization would comprise (1) a chief surgeon, (2) a number of district surgeons, (3) a number of assistant surgeons, and (4) a number of medical inspectors.

3. Admission to Sick Report.—The present method of reporting illness by the members of the force is defective, as it frequently imposes unnecessary hardships on the surgeons and affords opportunity for malingering on the part of the men. According to the present rules of the department, when a man reports ill either in person or by a responsible messenger, he is admitted to sick leave immediately. He is merely asked whether he will go to see the surgeon or whether the surgeon should be sent to see him at his home. If he should report sick late at night and declare that he would see the surgeon next morning, it would be very difficult for the surgeon to determine whether an alleged acute headache or stomach disturbance warranted his refusal to perform duty the previous night. If the man reporting ill at night should ask that the surgeon see him at his home, the surgeon is immediately notified by messenger. No report is made of the symptoms of the illness nor whether it is urgent that the patient be seen immediately. The surgeon uses his own judgment. Sometimes he goes to see the case immediately, only to find that the patient is suffering from a trivial ailment or perhaps that in order to relieve a condition he should have brought certain instruments with him.

In the opinion of the committee there should be a change in the method of reporting, which would prevent malingering and would at the same time relieve the surgeons of making unnecessary calls. The procedure in the Fire Department, whereby a man is not admitted to sick leave until he has been seen by a department physician and which provides that the physician must see him within six hours after the report is made, seems preferable to that existing in the Police Department. Instructions should be given to the officers in charge of the precinct station houses to ascertain in a general way the nature of the complaint of the man reporting sick, and convey this information to the surgeon in cases requiring house calls.

4. Medical Records.—The medical records of the Police Department are very inadequate in that they give only a designation of maladies without any additional data concerning the patients, the nature of the disease, the duration of convalescence, and the home conditions surrounding the men under treatment. The form of report is unsatisfactory in that it requires the surgeons to write out daily the names of all the men under their care and to designate by a check mark opposite the names the patients seen during the day. This involves unnecessary labor and renders it impossible, except with the expenditure of a great deal of time, to trace the record of visits to every individual patient. The record keeping could be greatly improved by changes in classification and nomenclature, the introduction of modern forms, and a proper arrangement of the files.

The classification of morbidity statistics should be done carefully, and should follow a recognized nomenclature, such as that of Bellevue Hospital.

5. Sickness Statistics.—In comparing the three groups of diseases—digestive, respiratory, and nervous—in our police force with those in the Boston police force for 1916, one is surprised at the difference in the relative importance of the three groups in the two cities, as seen from the following table:

	New York City		Boston	
		Per Cent		Per Cent
Total cases of disease disability	10,156	100	744	100
Digestive	3,126	30.9	132	17.7
Respiratory, exclusive of influenza	1,399	13.8	357	48.0
Nervous	959	9.4	24	3.2

The digestive disturbances constituted the chief group of ailments in the New York City police force, whereas the respiratory diseases constituted almost one-half of all the illness in the Boston force. Then, too, the prevalence of nervous disorders is three times as great in the New York force as among the patrolmen of Boston.

The committee examined the records of diagnosis in 980 cases reported last year among the New York force, in which diseases of the nervous system were specified. Under this heading there were recorded among the principal ailments the following:

Insomnia	114
Neurasthenia	134
Neuritis	66
Neuralgia	134
Neuralgia of the face	63
Lumbago	169

Many of these cases are recorded as having been under treatment only for one or two days, whereas neurasthenia, if genuine, is a serious ailment of gradual onset and protracted course. It is also difficult to understand why there should be so many cases of insomnia in a selected body of men, which are recorded as having been under treatment only from one to two days. Insomnia, when serious, is usually the outcome of definite disease, worry, strain, etc., and is not ordinarily curable so promptly. If trivial, lasting only one or two nights, it hardly demands consideration and should not be incapacitating.

It should be noted, however, that to a certain extent the occurrence of "insomnia" may be referable to crowded and improperly ventilated sleeping quarters in the station houses, or occasionally to prolonged duty in connection with the control of strikes, or similar work.

Neuralgia and neuritis are conditions which may or may not have serious underlying causes. In some instances these conditions may be due to exposure, fatigue, indigestion, alcoholism, etc. If serious, they are usually symptoms of some underlying ailment, record of which should be made.

The number of cases recorded under the diagnosis of "facial neuralgia" attracts attention. This disease is uncommon among males. It has been noticeably decreased among motormen and chauffeurs, since the wide introduction of windshields. If so many cases occur among the policemen they should have better protection of the face as with mufflers or heavy caps or collars to be worn in severe weather.

The question naturally suggests itself whether a good many of these minor ailments, recorded under "diseases of the nervous system," may not be due to malingering or alcoholism. It is the impression of the committee, however, that with the present esprit de

corps of the force these factors cannot be especially important.

The general comments to be made upon the nature of the diseases reported as observed among the force are as follows: The rate of illness, while not exceptionally high, in all probability might be reduced by as much as 25 per cent. The more serious types of illness, such as pneumonia and appendicitis, are unavoidable and are in no respect more numerous than is to be expected. The minor ailments, however, particularly the digestive and nervous diseases, on cursory examination appear to be excessive, and if any reduction in the morbidity rate is to be obtained it could be brought about through more attention to preventive measures against these groups of ailments. The police surgeons, themselves, for example, on finding a patrolman suffering from insomnia or dyspepsia might investigate in detail the conditions which led to the trouble, to determine whether they are due to such factors as poor sleeping accommodations, improper diet, drinking too much alcohol or coffee, etc. No doubt, in many cases useful instructions could be given to the patrolmen in regard to bettering their home environment or changing their personal habits.

6. Sickness Rates by Districts.—The Committee obtained statistics by months of the number of days lost through illness in each of the sixteen surgeons' districts, and computed the average days of absence per patrolman in each district to determine the variations from one district to another. It appears that the variations are in some instances considerable, from 7.3 days to 13.2 days per patrolman per annum.

The following is the table as computed on the basis of the statistics obtained:

Days of Absence Through Sickness. Comparison of the Sickness Rate in the Different Police Surgeons' Districts in New York City.

District.	Number of Patrolmen in District.	Total Days of Absence.	Average Annual Absence per Patrolman	Number of Permanently Disabled Patrolmen in District
1	572	5541.5	9.7	
2	520	6070	11.7	4
3	581	5533.5	9.5	2
4	608	6020	13.2	
5	591	5786	9.8	3
6	523	4095	7.8	1
7	610	4437	7.3	
8	639	4867	7.6	4
9	613	5508.5	9.0	2
10	581	4579	7.9	
11	612	5941.5	9.7	3
12	515	4724	9.1	
13	540	3694	9.0	
14	598	4859	8.1	1
15	572	5218	9.1	1
16	590	6472	11.0	2
17*	481	3878.5	8.1	
18	437	4014.5	9.4	
19	502	3744	7.5	**

*Since November, 1916, one surgeon has retired, one has died, and one has been assigned to clinic duty. As a result, the number of districts has been decreased from 19 to 16.

**The differences in the district sickness rates are attributed in part to the uneven distribution of hospitals. Policemen when in hospitals come under the supervision of the surgeon in whose district the hospital happens to be located. As the number of policemen in hospitals is not very large at any time, the discrepancies can hardly be explained by this element affecting the rate. The Committee did not have time to make a more detailed study of the causes, but suggests that it would be worth while to determine the causes of these variations.

The distribution of chronic cases carried on the sick roll of the department by surgeons' districts shows that the largest number of chronic patients is not necessarily in the districts showing the highest sick rate. As a matter of fact, in one of the districts where the rate is highest, 13.2, there is not a single chronic case domiciled.

7. Sanitary Conditions of the Precinct Station Houses.—Representatives of the committee visited a number of the station houses with a view of determining their hygienic conditions. The stations appear clean and are kept in as good order as the conditions of the buildings will permit. The more modern buildings afford exceptionally good accommodations with regard to dormitories, lavatories, etc. In several of the older station houses the conditions, owing to the structure of the buildings, are most unsatisfactory. For example, in one station house dormitories, approximately 27 by 28 feet square, contain 25 beds each, besides large lockers which occupy a great deal of room. In these dormitories the beds are so close together that one must walk sidewise to pass between them, and in many instances the heads of the beds were within 8 or 10 inches either of a radiator or a window, conditions which might easily predispose to taking cold. In cold weather the windows are not adequately opened, owing to the proximity of some of the beds to the windows, the occupants of which complain of the cold. The result is that the air becomes very foul after a squad has occupied the dormitory. Arrangements for darkening the windows for the daytime sleepers were in many cases inadequate and out of order. Sleeping under such conditions is neither healthful nor restful.

The beds are comfortable and clean, every effort being made to eradicate vermin.

The clothes lockers are of exceedingly faulty construction. Modern lockers with pressed metal sides are designed to permit free ventilation whereas the lockers in the dormitories of the station houses are ventilated only by one or two narrow slits six inches wide. The result is that when a wet raincoat, wet boots, etc., are placed in the locker the patrolman's underclothing becomes very damp. In some of the lockers towels were shown which were still wet after hanging for 8 or 10 hours. As the police regulations require that all clothing of the men while sleeping should be locked in the lockers, it would seem desirable to have holes bored in the lockers, sufficiently numerous to insure thorough ventilation. The only objection to this would be the possible access afforded to vermin, but this should be controlled in other ways. Lockers should not be in sleeping quarters. The possibility of installing drying rooms is also suggested.

In one of the station houses visited, a dormitory under the roof, into which large beams projected, presented very inadequate ventilation, there being only two-foot windows placed at the floor level, together with skylight windows, the arrangements for opening which were out of order. In general, the bathing facilities, hand basins and toilet closets were found adequate and in fairly good order.

The lounging rooms for the men vary greatly in the different station houses. In one room in which at times as many as 40 men congregate there were only seven chairs. In another room there were no chairs and only exceedingly uncomfortable narrow hardwood benches. It seems a pity that men who must be on their feet so constantly while on duty should not be given comfort in their off hours in the station houses. The newer houses, however, are much more adequately equipped in this regard.

While the present sleeping accommodations may be sufficient for the ordinary reserve force, they are inadequate in cases of emergencies. During the several months of last year when the total force of the department was on reserve call, the accommodations were entirely insufficient and a number of the men had no facilities for sleeping. As a result, some of them reported for sick leave, which was granted in order to enable them to obtain sufficient sleep, and this sick leave was entered as "insomnia." This may account for the unduly large number of cases under this heading, referred to above.

Part III—Recommendations.

A. Of Possible Immediate Application.—1. Establishing a permanent office of Chief Surgeon, with a salary higher than the other surgeons receive, and vesting him with recognized and definite authority over all the employees of the Medical Service.

2. The duties of the Police Surgeons should be limited to the functions of diagnosis and prevention of disease, control, and administration. They should not be permitted to treat patients outside of the clinics, except in emergencies.

3. The clinic at headquarters should be equipped adequately and enlarged, and a dental clinic should be added to it. The latter would do much toward preventing gastrointestinal and "rheumatic" disorders.

The committee recommends also the employment of a chiropodist to attend to the minor foot ailments of the policemen.

The committee suggests also the possibility of establishing such clinics in other boroughs, or what is still better, of making arrangements with the existing dispensary clinics for the utilization of their equipment at certain fixed hours, and that the patients be under the charge of surgeons of the department.

4. Arrangements might be made with the city hospitals, as well as with some of the private hospitals, for special facilities to be provided for the sick members of the force.

A special fund might be created for defraying the expenses incurred in providing accommodations in hospitals.

5. The members of the force should be examined annually by the surgeons, and should receive proper medical and hygienic advice at the time of examination.

With the existing staff of surgeons, the average number of examinations per surgeon will be about two daily.* On the basis of experience in industrial establishments, 20 minutes should be the average time allowed for the examination of each man.

In addition, instructions in hygiene should be given, in the form of specially prepared pamphlets applicable to conditions most commonly encountered in the police force, and given to the men at appropriate times when they will be most appreciated.

6. There should be a change in the procedure of admission to sick report, to make it correspond with that of the Fire Department of New York City. A man should not be admitted to sick report until he has been pronounced ill by a police surgeon who shall see him within a few hours after the man had reported sick.

For a better correlation of the work, a central office for receiving reports of sickness seems desirable. With a medical system as outlined, no objection could be raised to receiving reports over the telephone.

7. The reports of the surgeons should contain more facts of medical value, and should be more precise and complete from the scientific, descriptive and statistical point of view.

8. The surgeons should be relieved of the duty of testifying against malingering policemen at the trial court, whenever possible. This could be accomplished by requiring the men suspected of feigning prolonged sickness to appear before a board of three surgeons and by making the opinion of the board a basis for action by the Trial Commissioner.

9. The sanitary conditions of the dormitories of the Police precinct stations should be improved. Several suggestions with reference to the matter are contained in paragraph 7 of Part II of this report.

10. Several nurses should be attached to the office of the Chief Surgeon, to be used for investigations of home conditions of sick policemen and in connection with instructions in hygiene.

B. Of Remoter Application.—1. A change should be made in the Charter, allowing the discharge of men permanently incapacitated, even before the completion of ten years of service. Provisions should be made for a lump sum gratuity to the men so incapacitated, on the basis of the duration of service. The reasons for this recommendation are given in paragraph 3 of Part I of this report.

3. A change should be made in the Charter, providing for a surrender value of the moneys contributed toward the Pension Fund by the surgeons, on the basis of the duration of service.

The lack of such a provision may, under present conditions, act as a deterrent to the surgeons who enter the service at a comparatively early age and who, because of a large practice or other pressing obligation which might interfere with the proper discharge of Police Department duties, might wish to leave the Service.

C. Alternate Plan, Recommended in the Event that Treatment Is Given to Sick Members of the Force.—Should the suggestions made by the Committee as to the duties of the surgeons be impractical or against the policy of the Department, the Committee would suggest the organization of the larger work of the medical division on a basis different from what it is at the present time.

*This does not mean that the physical examinations should be spread over the entire year. It may be better to examine large numbers of policemen at certain specified times.

If the surgeons are to be requested to give adequate treatment to sick patrolmen and to do the other fundamental duties, the present staff of the medical division is inadequate. There will be need of additional medical service. The Committee would suggest that:

1. All the new appointees should give full time to the medical work of the Department, *i.e.* should not be permitted to engage in outside practice.

2. The new men should be appointed to the rank of medical inspector or assistant surgeon with a salary smaller than the present surgeons receive, but with the possibility of promotion with increase in salary.

The appointment system might, to advantage, be modelled after the Army Medical Service. It is the understanding of the Committee that in the organization of the medical division of the Fire Department some such system has been installed.

The maximum salary of the police surgeon doing full time work should be made higher than the present level of $3,500.

3. The clinic at Headquarters should be equipped adequately and enlarged, and a dental clinic should be added to it. The latter would do much toward preventing gastrointestinal and rheumatic disorders.

The Committee recommends also the employment of a chiropodist to attend to the minor foot ailments of the policemen.

The Committee suggests also the possibility of establishing such clinics in other boroughs, or what is still better, of making arrangements with the existing dispensary clinics for the utilization of their equipment at certain fixed hours, and that the patients be under the charge of surgeons of the Department.

4. Arrangements should be made with the City hospitals, and perhaps with certain private hospitals, for special rooms or wards for the more seriously sick or injured members of the police force. In such cases blank forms of record should be supplied to be filed and returned to the Department.

5. As it would be manifestly unfair to the surgeons now in the employ of the Department, who entered the service with a different understanding, to make them full time officers, the Committee would suggest that those who have appropriate specialties be put in charge of the clinic for a few hours every day in addition to certain other special duties to which they could be assigned.

6. The district work should be given to those of the surgeons who would consent to doing full time work, if their salaries were increased; and that newly appointed full time medical inspectors or assistant surgeons be put in charge of the districts.

7. It has been estimated that 1,000 persons is the maximum number of a group which a physician can undertake to care for under the health insurance plan. Applying this maximum to the Police force, it would become necessary to employ eleven full time district surgeons, if their duties are only those of treatment. As the duties of the surgeons include much more than treatment, and as the districts in New York are very large, it seems that there would be need of at least fifteen full time district surgeons, and probably ten additional surgeons to do special work in the clinics and to supervise the cases in hospitals.

8. As a system of medical care would require supervision of the cases treated at home, the Committee recommends that the Department employ a number of nurses to do visiting work. The nurses could be used also for making investigations of home conditions of patrolmen showing a high sickness rate, with a view of supplying the Medical Division with information which could be used in preventive work.

In presenting the foregoing impartial analysis and criticism, the Committee recognizes fully that the defects of the Medical Service exist partly through extraneous legislative action which at times has hampered progress. On the other hand, the Committee has been much impressed by the marked improvement in morale of the entire Police force, which has taken place under the present administration.

The Committee esteems it a privilege to have been invited to contribute suggestions for the betterment of the medical service. Should it seem desirable that any of the details which have been discussed in the report

be elaborated, the Committee would be happy at any time to co-operate further with the Commissioner.

Respectfully submitted,

THE PUBLIC HEALTH COMMITTEE OF THE NEW YORK ACADEMY OF MEDICINE.

March 5, 1917.

SUPPLEMENTARY RECOMMENDATIONS INVOLVING BUDGET APPROPRIATIONS FOR THE MEDICAL SERVICE OF THE POLICE DEPARTMENT.

Since it is the established policy of the Police Department to give medical treatment to sick members of the force, the matter of the best method of providing treatment for sick and disable patrolmen has been carefully reconsidered, and the following modified recommendations are made bearing on this particular phase of the report. It will be noted that these also will provide the necessary machinery for putting into effect the other recommendations of the original report, particularly that pertaining to the co-operation of City and private hospitals.

1. That the medical organization of the Police Department consist of (*a*) the chief surgeon; (*b*) the police surgeons; (*c*) the board of surgeons, composed of (*a*) and (*b*); and (*d*) the medical officers.

(*a*) The Chief Surgeon of the Police Department shall be a high grade full time officer, who shall be responsible for the activities and administration of the Medical Division of the Department. The office of Chief Surgeon shall be permanent and the incumbent shall be vested with well recognized and definite authority over all the employees of the medical service. His salary shall be $6,000 a year.

The requirements of efficient administration call for a responsible chief of the medical service, whose tenure of office would not be dependent upon political patronage and whose salary would be adequate to allow him to give up all outside professional interests.

(*b*) Under the suggested plan of having the treatment given by the medical officers, the Police Surgeons would act as administrative officers of the Department and their duties would consist in making examinations of men reporting sick and referring them to the proper medical officer for treatment, and in making examinations of applicants for admission to the Police force, for pensions and for reinstatements. They would also have to respond to emergency calls, attend Board meetings, and in rotation attend the clinic at Headquarters. The junior Medical Officers might relieve them of many of their duties when so ordered by the Chief Surgeon.

(*c*) The Board of Surgeons shall be continued. It shall remain as it has been in the past and its functions and duties shall remain unaltered.

(*d*) The treatment of sick policemen shall be carried on by a special medical corps known as Medical Officers of the Police Department. They shall be non-civil service, part time employees at $1,500 per annum. These Officers shall be recommended by the Chief Surgeon to the Commissioner for appointment. The Committee recommends that before confirming an appointment, the Commissioner shall ask the advice of some independent body of competent medical men not connected with the Police Department or the City administration. This recommendation is made in order that the Commissioner may not be dependent entirely upon the judgment of the Chief Surgeon, but may have the aid of a qualified body of experts of non-partisan composition.

The Medical Officers shall be graduates of a recognized medical school of first grade and shall have had at least one year of training in a general hospital. They shall not be eligible for appointment and shall not continue in this service after they have been out of the hospital as internes for more than five years. Their duties shall be assigned to them by the Chief Surgeons and shall consist in treatment of sick and disabled members of the Police Force whether at the homes of the patient, in the offices of the Medical Officers or in the clinic of the Police Department, and in visiting and reporting to the Chief Surgeon upon the condition of policemen under treatment in the various hospitals.

The Committee feels that complete and competent medical service can be obtained for the treatment of sick and disabled policemen by thus employing recent graduates of medical schools of high standards and paying them a reasonable compensation, such as $1,500 a year. By not making rigid requirements as to the consecutive number of hours these medical officers should be on duty, this position can be made attractive to a very high grade of medical men who, under competent administration, can render the City a large amount of service. In order to forestall any possibility of these medical officers falling into perfunctory routine work, the Committee recommends that their term of appointment should be no longer than five years and that they should be exempt from Civil Service.

The Committee feels that the training received by these Medical Officers would eminently qualify them for the position of Police Surgeon should they wish subsequently to secure appointments as permanent officers of the Police Department Medical Service.

On the basis of the figures of the average prevalence of sickness in the force and on the basis of what would constitute adequate medical attention, it was estimated that ten medical officers should be appointed at the present time and the number increased as need arises. If this addition to the medical staff be made, the present number of Police Surgeons will be found to be in excess of what will be needed, because as stated above, they will be relieved of the duty of treating patients. In view of this, it is the opinion of the Committee that no new Police Surgeons be appointed, and that vacancies occurring either by resignation or death be not filled until the number be reduced to twelve, or less, if twelve should prove more than are needed, each vacancy being met by the appointment of one additional medical officer.

The Committee desires to point out, however, that owing to the exigencies of the war, it will be impossible to obtain the services of men qualified to fill the new positions of Medical Officers at the present time, because practically all such men will be in the military service. The new organization, therefore, must await the termination of the war before being put into effect.

The Committee fully recognizes the fact that this plan will temporarily throw an additional burden upon the present Police Surgeons instead of granting the relief to which the increased force entitles them. However, the Committee feels no hesitancy in presenting the recommendations because it feels certain that the Police Surgeons will accept this burden as a part of their contribution to the military situation.

2. It is recommended that a staff of nurses be appointed to facilitate the work of the Medical Staff of the Police Department. Four should receive immediate appointment to organize the work, one of whom shall be assigned to duty at the Headquarters clinic and three of whom shall be assigned to duty on special cases and to such duties of investigation and home instruction as the Board Surgeons may designate.

3. The Headquarters clinic shall be fully equipped for the treatment of all types of ambulatory cases. It shall be open daily from 9 A.M. until 5 P.M. As need arises, other branch clinics shall be established.

Respectfully submitted,

THE PUBLIC HEALTH COMMITTEE OF THE NEW YORK ACADEMY OF MEDICINE.

June 18, 1917.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

TEXAS STATE BOARD OF MEDICAL EXAMINERS.

Austin, June 19, 20, 21, 1917.

ANATOMY.

1. Name the nerve tracts in the white substance of the spinal cord.
2. What vein and nerve are in the same sheath as the common caretid artery?
3. What structures would be severed in an amputation of the lower third of the thigh?
4. Name and give function of the cranial nerves.
5. Give origin, insertion, function, and nerve supply of the trapezius muscle.
6. Name bones of carpus and tarsus.

7. Describe the knee joint.
8. Give origin, course, and branches of the brachial artery.
9. What organs are supplied by the pneumogastric nerve?
10. Describe the sacroiliac articulation.

PHYSIOLOGY.

1. Define a cell and name its physiological properties.
2. State where fecundation of the human ovum may occur and explain the physiology of menstruation.
3. Describe the nervous mechanism of the heart.
4. Discuss the physiology of the pancreas.
5. Enumerate the functions of the lymphatic system.
6. Differentiate between: tidal, complemental, reserve, and residual air, and state the average respiratory capacity of an adult.
7. Discuss the physiology of the skin and name in the order of their importance the avenues through which the body heat is lost.
8. Define "internal secretion" and name the organs which produce such a secretion.
9. State the function of each of the anatomical divisions of the auditory organs.
10. A man is struck on the head and, without injury to the eyes, vision is lost. State the probable location of the lesion.

CHEMISTRY.

1. What test do you consider the most reliable for traces of arsenic? Briefly describe it.
2. Give common name for acetate of lead. How is chronic lead poisoning acquired? Antidote.
3. When corneal ulcer is treated with nitrate of silver what color does it give? Explain reactions.
4. Describe chlorine gas; how is it prepared and of what use is it?
5. Define double decomposition; valence; isomerism.
6. What is the difference between putrefactive and fermentative changes? Give examples.
7. Describe Trommer's test for sugar in urine. What is the reaction of normal urine? Specific gravity of normal urine?
8. Write an equation in which $HgSO_4$ will be found in the reaction.
9. Liberate bromine gas from bromide of potassium, and state the physical properties of the gas.
10. Give test and chemical antidote for morphine sulphate.

HYGIENE.

1. What hygienic measures should be taken to prevent malarial infection?
2. Give dietetic and hygienic management of scarlet fever.
3. Name some of the diseases contracted from drinking impure water.
4. Give hygienic care of pulmonary tuberculosis (latent).
5. What is pasteurization of milk? What are its advantages and disadvantages?
6. What diseases of the (*a*) spine, (*b*) skin, (*c*) respiratory tract, (*d*) digestive system are especially common in school children?
7. Give hygienic care of typhoid fever.
8. Name two good disinfectants and describe their application.
9. Differentiate: (*a*) endemic, (*b*) epidemic, and (*c*) pandemic diseases.
10. What hygienic considerations would influence you in the locating of a camp or mobilization site for an army?

ANSWERS.

ANATOMY.

1. *Nerve tracts in the white substance of the spinal cord:* Direct pyramidal tract, and the anterior fundamental column, in the anterior column; direct cerebellar tract, crossed pyramidal tract, lateral fundamental column, and anterolateral ascending tract, in the lateral column; column of Goll, column of Burdach, and Lissauer's tract, in the posterior column.

2. The internal jugular vein and the pneumogastric nerve are in the same sheath as the common carotid artery.

3. In amputation through the lower third of the thigh, the following structures would be severed: Skin; fascia; quadriceps extensor cruris, sartorius, adductor longus, adductor magnus, gracilis, biceps, semitendinosus, and semimembranosus muscles; femoral vessels, profunda and perforating branches, branches of external circumflex, comes nervi ischiadici, and internal saphenous vein; great sciatic, obturator, femoral, small sciatic, and external cutaneous nerves; the femur.

4. The special *names* by which the twelve pairs of nerves are generally known are: (1) Olfactory; (2) Optic; (3) Motor oculi; (4) Trochlear or Pathetic; (5) Trifacial; (6) Abducens; (7) Facial; (8) Auditory; (9) Glossopharyngeal; (10) Pneumogastric or Vagus; (11) Spinal Accessory; (12) Hypoglossal.

Functions: (1) Special sense of smell; (2) Special sense of sight; (3) Motor; (4) Motor; (5) General sensation and motor; (6) Motor; (7) Motor; (8) Special sense of hearing; (9) General sensation and special sense of taste; (10) Motor and general sensation; (11) Motor; (12) Motor.

5. TRAPEZIUS. *Origin:* external occipital protuberance, inner third of superior curved line of occipital bone, ligamentum nuchæ, spinous processes of seventh cervical and all the dorsal vertebræ. *Insertion:* outer third of posterior border of clavicle, acromion process, and spine of scapula. *Function:* draws back the scapula and shoulder, elevates shoulder, draws head to corresponding side, or if both act the head is drawn backward. *Nerve supply:* spinal accessory, and branches from third and fourth cervical nerves.

6. *Bones of carpus:* scaphoid, semilunar, cuneiform, pisiform, trapezium, trapezoid, os magnum, and unciform.

Bones of tarsus: os calcis, astragalus, cuboid, scaphoid, and internal, middle, and external cuneiform.

7. The *knee joint* is a ginglymus, and is formed by the condyles of the femur, the head of the tibia, and the patella. "The *external ligaments:* The *anterior* or *ligamentum patellæ* is the continuation of the tendon of the quadriceps extensor. Above it occupies the apex and rough marking on the lower and posterior surface of the patella; below it is attached to the lower part of the tubercle of the tibia. There is a bursa between the upper part of the tubercle and the ligament. The *posterior ligament* (*ligamentum posticum Winslowii*), broad and thin, covers the back of the joint. It consists of a central and two lateral parts. The lateral parts spring above from the femur above the condyles and are attached below to the head of the tibia. The central part is derived from an expansion of the semimembranosus tendon, and passes from the inner tuberosity of the tibia to the inner side of the upper part of the outer condyle of the femur. The *internal lateral ligament*, broad and flat, is attached above to the inner condyle of the femur; below, to the margin of the inner tuberosity, to the internal fibrocartilage, and to the inner surface of the shaft of the tibia for 1½ inches. The *long external lateral ligament*, a rounded cord, is attached above to the external condyle of the femur, and below to the external part of the head of the fibula, dividing the biceps tendon into two parts, a bursa intervening. The *short external lateral ligament*, very indistinct, lies parallel and behind the preceding, attached above to the outer condyle of the femur, and below to the styloid process of the fibula. The *capsular ligament*, thin, fills up the intervals between the special ligaments; it is attached to the margins of the articular surfaces of the bones, and blends with the fascia lata of the thigh; above it receives expansions from the vasti (*lateral patellar* ligaments).

"The *Internal Ligaments:* The *anterior* or *external crucial ligament* is attached to the depression in front of the spine of the tibia and to the external semilunar fibrocartilage; it passes upwards, backwards, and outwards to the posterior part of the inner side of the external condyle of the femur. The *posterior* or *internal crucial ligament* is attached to a depression behind the spine of the tibia, to the popliteal notch, and the posterior border of external semilunar fibrocartilage, this latter slip being sometimes called the *ligament of Wrisberg;* it passes upwards, forwards, and inwards, the posterior fibers attached by side of oblique curve of inner condyle, the anterior ones to the fore part of intercondylar fossa and to the anterior part of the outer

surface of the inner condyle. The *semilunar cartilages* are thicker at the circumferences than at the central margins, and serve to deepen the cavities for the head of the femur. The *internal semilunar cartilage* is oval in shape, the anteroposterior diameter being the longer. Its anterior extremity is attached to the tibia in front of the anterior crucial ligament, and the posterior extremity in front of the posterior crucial ligament. The *external semilunar cartilage* is nearly circular; its anterior extremity is attached to the tibia in front of the spine, the posterior extremity to the back of the spine." (*Aids to Anatomy.*)

8. The *brachial artery* is the direct continuation of the axillary, and extends from the lower border of the teres major muscle to about half an inch below the bend of the elbow, where it divides into the radial and ulnar arteries. The course of the artery is along the inner border of the coracobrachialis and the biceps muscles; at first it lies to the inner side of the humerus, but gradually passes to the front of that bone. It is superficial throughout its entire course. Its branches are the superior profunda, inferior profunda, anastomotica magna, nutrient and muscular.

9. *Organs supplied by the pneumogastric nerve:* Dura mater of brain, skin of external ear, pharynx, esophagus, stomach, larynx, heart, lungs.

10. The *sacro-iliac articulation* is an amphiarthrosis, formed between the lateral surfaces of the sacrum and ilium. The auricular or anterior parts of the articular surfaces are covered with cartilage, and connected by the two following ligaments:

The *anterior sacro-iliac ligament:* small bands passing obliquely from sacrum to ilium on the anterior surface.

The *posterior sacro-iliac ligament* consists of strong interosseous bands passing chiefly downwards and inwards from the rough part of the ilium behind the cartilage, to the posterior part of the sacrum. There are two *superior*, passing from the first and second transverse sacral tubercles, and one sometimes called the *oblique sacro-iliac* ligament, which reaches from the posterior superior iliac spine to the third transverse sacral tubercle. (*Aids to Anatomy.*)

PHYSIOLOGY.

1. *A typical cell* is the ultimate element of structure; it enters into the formation of all tissues. It consists of a tiny mass of protoplasm, and contains a nucleus and an attraction sphere, but as a rule no cell wall. Cells vary in shape and size (from about 1-3000 to 1-300 of an inch in diameter). The manifestations of cell life are: (1) Irritability, or power of responding to a stimulus; (2) power of movement; (3) power of assimilation; (4) power of growth; (5) power of excretion, and (6) power of reproduction.

2. It is believed that fecundation of the human ovum normally occurs in the outer end of the Fallopian tube.

Menstruation is a periodic discharge of blood from the mucous membrane of the uterus, due to a fatty degeneration of the small blood-vessels. Under the pressure of an increased amount of blood in the reproductive organs, attending the process of ovulation, the blood-vessels rupture, and a hemorrhage takes place into the uterine cavity; thence it passes into the vagina. Menstruation lasts from five to six days, and the average amount of blood is about five ounces. It begins at puberty and occurs periodically at about 28 days intervals, until the menopause; it is absent during pregnancy and early lactation.

The relation existing between ovulation and menstruation is not known. The two processes are usually coexistent, but they may be independent of each other. The following theories have been held: (1) Menstruation is dependent upon ovulation; (2) ovulation is dependent upon menstruation; (3) they are independent of each other; (4) they both depend upon some other (at present unknown) cause.

Menstruation has been considered as being analogous to the condition of "heat" or "rut" in the lower animals.

3. The nervous mechanism consists of an inhibitory and an accelerator supply. In addition, there are various intrinsic ganglia in the heart which are supposed to be responsible for the heart-beat. The *cardio-inhibitory* center is connected with the nucleus of the vagus in the floor of the fourth ventricle, and the fibers from it pass to the heart along the vagus nerve. Its function is to slow the beat of the heart. It is sometimes known as the anabolic center, because it lessens the rate and force of the heart and so allows time for building-up processes (anabolism). If the peripheral end of the cut vagus is stimulated, the heart is slowed and may be entirely stopped. It is a tonically active center, that is, it acts continuously, so that the simple cutting of the vagus takes off the brake and lets the heart run away.

The *cardio-accelerator* center is also in the floor of the fourth ventricle. It acts through the sympathetic fibers which descend in the spinal cord and leave it through the anterior roots of the first and second dorsal nerves, and go thence to the cardiac plexus. This center keeps up the rate of the heart beat.

These centers may be stimulated by afferent impulses, such as *psychic* from the cortex cerebri, or *cutaneous*, or *visceral*. The centers are also affected by the state of the blood; thus excess of carbon dioxide in the blood, as in the beginning of asphyxia, stimulates the cardiac centers and makes the heart beat more strongly and more rapidly. Increased temperature of the blood also increases the rapidity of the heart's action.

4. The *functions of the pancreas* are: (*a*) The secretion of the pancreatic juice, which (1) changes proteids into proteoses and peptones, and afterward decomposes them into leucin and tyrosin; (2) converts starch into maltose; (3) emulsifies and saponifies fats, and (4) causes milk to curdle. (*b*) The manufacture of an internal secretion.

5. The *function of the lymphatic system* is to provide the tissues with material necessary to their functional activity, growth, and repair; to receive from the tissues their waste products; and to convey the products of digestion and absorption to the blood-current.

6. *Tidal air* is the air which is constantly passing in and out of the lungs during ordinary calm respiration. It measures about 30 cubic inches.

Complemental air is the air which can be taken in beyond what is normally inspired in ordinary breathing. It measures about 100 cubic inches.

Reserve air is the air which can be expelled at an extraordinary expiration. It measures about 100 cubic inches.

Residual air is the air which still remains in the lungs after the deepest expirations. It measures about 100 cubic inches.

Respiratory or *vital capacity* is the amount of air which can be expelled from the lungs by an extraordinary expiration after the most forcible inspiration. It includes the tidal, complemental, and reserve air, and measures about 225 to 230 cubic inches.

7. The *functions of the skin* are: (1) Protection, (2) excretion, (3) secretion, (4) heat regulation, (5) absorption, (6) general sensation, (7) special sense of touch, and (8) respiration.

(1) By its mechanical covering, and also by its being an organ of sensation. (2) Very slight; and see (3). (3) It secretes sebum to lubricate the hairs, and sweat (which has several functions: excretion of water, carbon dioxide, and urea; cooling of surface of body; and regulator of body heat). (4) By radiation, and see 3. (5) Very slight, chiefly of oily substances. (6) and (7) By end organs. (8) A slight amount of carbon dioxide is exhaled.

Body heat is lost mainly through the skin, the lungs are next in importance, and a very small amount is lost in the urine and feces.

8. *Internal secretions:* It is generally held now that the glandular organs, chiefly the pancreas, liver, and the ductless glands, produce a secretion, peculiar in each case to the particular gland producing it, and which is supposed to be given off to the blood or lymph, and to have some peculiar value in the general metabolism of the body. Such secretions are called internal secretions, in contradistinction to the previously known secretions, which are carried off by a duct, and are known as external secretions. Very little is definitely known of these internal secretions, but much work is being done on the subject.

Internal secretions are produced by the liver, pancreas, ovaries, testes, thyroids, parathyroids, spleen, suprarenals, pituitary body, and by the fetus.

9. "The function of the *auricle* is to collect the sound waves and direct them to the *membrana tympani*. The concha is especially important for this purpose, as well as the cavity just beneath the tragus. After the sound waves have reached the *drumhead* through the *external auditory canal*, they are transmitted by the *chain of ossicles* to the fluid of the labyrinth, the ossicles probably vibrating as whole bodies. The sound waves then pass through the fluid in the *cochlea* and reach the *organ of Corti*. From the nerve filaments in the cochlea the sensations called sound are conveyed through the *auditory nerve* to the brain center."—(Bacon's *Manual of Otology.*)

10. The lesion is probably in the occipital lobes.

CHEMISTRY.

1. For the practitioner of medicine the most reliable test for arsenic is *Reinsch's test*, as follows: To the suspected fluid add a little pure HCl; suspend in the fluid a small strip of bright copper foil, and boil. If a deposit forms on the copper, remove the copper, wash it with pure water, dry on filter paper, but be careful not to rub off the deposit. Coil up the copper, and put it into a clean dry glass tube, open at both ends, and apply heat at the part where the copper is. If arsenic is present there will appear in the cold part of the tube a mirror, which will be found on microscopical examination to consist of octahedral crystals of arsenic trioxide.

2. The common name for acetate of lead is sugar of lead.

Sources of chronic lead poisoning: Contamination of drinking water which has been in contact with lead; the use of food or chewing tobacco which has been wrapped in tinfoil containing excess of lead; drinking of beer or other beverages which have been in contact with pewter; handling of lead or its alloys, manufacturing processes in which lead or its compounds are used. Antidote for lead is magnesium sulphate.

3. If a corneal ulcer is treated with nitrate of silver, a black discoloration results. This is due to the decomposition of the silver nitrate when it comes in contact with an organic substance; this decomposition results in the separation of the silver, and the deposit of this silver causes a black stain.

4. *Chlorine gas* is a greenish yellow gas, with a penetrating odor, and very irritating to the respiratory passages; it is soluble in water, is more than twice as heavy as air, it combines readily with many elements, and is readily fixed by many organic substances, either by addition or by substitution. In the presence of water, chlorine is an active bleaching and disinfecting agent.

It may be *prepared* by heating together manganese dioxide and hydrochloric acid:

$$MnO_2 + 4HCl = MnCl_2 + 2H_2O + Cl_2.$$

It is *used* as a bleaching and disinfecting agent, and also in the preparation of such agents.

5. A *double decomposition* occurs when two substances mutually react upon each other with the formation of new substances, as:

$$2KHO + H_2SO_4 = K_2SO_4 + 2H_2O.$$

Valence is the combining power of an atom of an element as compared with that of an atom of hydrogen.

Isomerism: Two substances are said to be isomeric when they have the same percentage composition.

6. *Putrefactive changes* only occur in proteid matter.

Fermentative changes only occur in non-nitrogenous organic matter.

7. *Trommer's test for sugar in urine:* To the suspected urine, in a test-tube, add about one-eighth of a 1:10 solution of sodium hydroxide or potassium hydroxide; then add two or three drops of a 1:10 solution of copper sulphate; shake and boil. If sugar is present, a yellow or red precipitate of cuprous oxide is formed.

The *reaction* of normal urine is acid.

The *specific gravity* of normal urine is about 1015 to 1025.

8. $HgSO_4 + 2NaCl = Na_2SO_4 + HgCl_2$.

9. *Bromine* may be liberated from bromide of potassium by heating with strong sulphuric acid and manganese dioxide:

$$2KBr + 3H_2SO_4 + MnO_2 = 2KHSO_4 + MnSO_4 + 2H_2O + Br_2.$$

Bromine is a very heavy, mobile, dark-red liquid, with a very offensive odor, and an irritating action on the mucous membranes; when boiled the vapor has the same color as the liquid; it is soluble in a number of liquids.

10. *Test for morphine:* Solution of neutral ferric chloride gives a blue color with morphine.

There is no recognized *antidote* to morphine. Atropine will overcome the respiratory depression; black coffee or strychnine will act as a stimulant; a weak solution of potassium permanganate is very serviceable.

HYGIENE.

1. *Prophylaxis of malaria:* Individuals should use mosquito netting around their beds and wire gauze in doors and windows so as to keep out the mosquitoes as much as possible. During residence in malarial districts quinine should be taken every morning before breakfast. All pools, stagnant water, etc., where *anopheles* may breed, should be removed. All mosquitoes, larvæ, etc., should be destroyed as far as possible. By staying indoors during dusk and darkness, opportunities for infection may be avoided. Occasional fumigation with formaldehyde or sulphur is also beneficial.

2. *Dietetic and hygienic management of scarlet fever:* "A quiet sunny room that can best be used for purposes of isolation should be selected. An open fireplace is preferable to any other form of heating. All unnecessary furniture should be removed, a gown or sheet and a bowl of bichloride of mercury 1-1000 shou'd be placed in readiness in an empty closet outside of the room for the use of the doctor. During convalescence toys of little value, that can be burned, should be provided, so that the period of quarantine, which is usually six weeks, may not be too irksome for the child. Disinfection can be carried out when the patient is ready to be discharged. All cases of scarlet fever, whether mild or severe, should be regarded as dangerous, as the complications and sequelæ may permanently injure the patient. Skilled nursing will do more to promote the comfort, progress, and the prevention of complications than remedial measures. If circumstances will not permit of a trained nurse, some one member of the household should be put in charge and given careful instructions as to the quarantine regulations and written orders for the patient. *The diet* should consist wholly of milk in the first few days of the illness; later, for the sake of variety, fruit juices, whey, buttermilk, or matzoon may be added or substituted. When convalescence is established, gruels, crackers, well-toasted bread, and apple sauce may be added to the dietary. Vegetables and eggs are allowed in the fourth or fifth week if there is no fever or other contraindication. Water shou'd be offered often and freely throughout the illness." (Chapin and Pisek's *Diseases of Children.*)

3. *Diseases carried by infected water:* Typhoid, cholera, dysentery, diarrhea, indigestion, goiter, intestinal worms, and lead poisoning.

4. *Hygienic precautions to be taken in case of tuberculosis:* "The patient's quarters should be free from dust, and admit of spending many hours daily in the open air in all weathers, properly sheltered, and, if very ill, lying wrapped in a hammock or reclining chair. His bedroom should be well aired at night, draughts being avoided. The room should be uncarpeted and free from hangings. It should be often cleaned and periodically disinfected. All sputum should be collected in paper spit-cups, which should be burned daily. Smoking should be forbidden. Harm is done by any exercise which results in fatigue, and while fever exists it should not be attempted at all. Patients should be taught the necessity of practising lung gymnastics and breathing only through the nose, which should be kept clear and free from occlusion by secretions, or an hypertrophied catarrhal mucosa. . . . The clothing should be woolen, but not too heavy, or sweating is increased; and a flannel nightgown and loosely knit leggings should be worn at night in cool weather. The skin should be cleansed by daily sponge-baths of lukewarm alcohol and water."—(Thompson's *Practical Medicine.*)

5. *Pasteurization of milk* consists in heating the milk for twenty minutes at a temperature of 140° F.

"Advantages of the pasteurization of milk: (1) That most, if not all, of the common bacteria and their toxins are killed. (2) That the ordinary ferments and germicidal properties of the milk are not destroyed. (3)

That the process may be accomplished on a large scale, and furnish a commercially safe milk. (4) That the taste, appearance, odor, and cream separation quality of the milk are not altered. (5) That pasteurized milk, if kept cold, furnishes a clean, healthy milk, safe for infant food and other uses.

"Disadvantages of the pasteurization of milk: The following are some of the objections which are urged by the opponents of pasteurization upon a large and commercial basis: (1) That the spore-bearing bacteria and bacterial toxins are not destroyed, and the milk is therefore not wholly safe. (2) That pasteurization stops lactic-acid fermentation, and thus destroys the only 'nature's danger signal,' and the first symptoms by which aged milk is known. (3) That unless pasteurized milk is rapidly cooled and kept under 50° F., certain fermentative changes which are ordinarily stopped by lactic-acid fermentation increase in activity, owing to the destruction of lactic-acid bacilli by the pasteurization. (4) That pasteurization, by preserving unclean milk for some time, may induce the producers to furnish dirty milk, discourage rigid cleanliness, and promote carelessness on the part of the producer who relies entirely on the pasteurization to preserve the milk. (5) That the pasteurization furnishes a 'purified' milk instead of a 'pure milk.'"—(Price's *Hygiene and Sanitation.*)

6. *Diseases prevalent in school children. Skin:* Pediculosis, scabies, ringworm, as favus, impetigo. *Respiratory:* Bronchitis and bronchopneumonia. *Spine:* Scoliosis, kyphosis, and lordosis. *Digestive:* Constipation, gastritis, anorexia, diarrhea.

7. In *typhoid fever* the patient should be placed in bed in a quiet and well-ventilated room; an intelligent nurse is necessary. The utmost cleanliness of the patient, bedding, sick-room requisites, etc., must be observed. The patient's strength must be conserved in every way possible; the infection must not be allowed to reach others; the diet must be suited to the patient, and must be given frequently; drugs are only to be given when there is a distinct need for them; the patient must be carefully watched for the first sign of complications; the best method for reducing the body temperature is generally held to be the use of the Brand bath; the patient should be allowed plenty of water to drink.

To prevent the spread of typhoid fever: Flies should be kept out of the house as far as possible, by means of screens or otherwise; all discharges from the sick person must be disinfected; all utensils, dishes, etc., used by the patient must be thoroughly cleansed and boiled every day; soiled linen must be soaked in a disinfectant solution before being washed; after each attendance on a patient, physicians, nurses, and others should wash their hands in a disinfectant; thorough sterilization of all bedding, etc., must be performed after the disease is over. Further, each household should boil all water that is to be used for drinking or for washing dishes, etc.; all the milk should be boiled also, if any cases of typhoid fever are in the neighborhood; and no ice should be put in water or other drink or food.

8. *Two good disinfectants:* Sulphur dioxide, and formaldehyde.

"Sulphur dioxide, SO_2, though not so positive in its action as chlorine, is much more frequently employed on account of the lesser risk and trouble connected with it. It probably kills the germs not containing spores if sufficiently concentrated and in the presence of moisture, and is, therefore, useful in the fumigation of rooms and of articles that cannot be subjected to steam heat or chemical solutions. But it will bleach or tarnish many articles, and for this reason and the fact that it is much inferior to formaldehyde, it will hereafter probably be almost entirely supplanted by the latter whenever that can be obtained. To secure sufficient concentration at least three pounds of sulphur should be burned for every 1000 cubic feet of air-space, care, of course, being taken that there may be no risk of igniting the floor or any articles in the room."—(Egbert's *Hygiene.*)

"Formoldehyde gas has greatly superseded sulphur dioxide as a disinfectant. Its main value is that, while it is a good germicide, it does not destroy fabrics and injure objects as the latter, and also it is nontoxic. Formaldehyde is also but a surface disinfectant, its penetrating qualities not being very great. Bacteria are killed by formaldehyde immediately on direct exposure, and spores within an hour. It kills dried organisms as well as those in a moist state. Formaldehyde is not an insecticide. For domestic disinfection formaldehyde is generated by spraying liquid formalin (which contains 40 per cent. of the gas), or by heating paraform pastils or powder, also by means of generators or lamps. Other methods of evolving formaldehyde in disinfection which are used in large house and hospital disinfections are by means of large generators or lamps, or in specially constructed autoclaves under pressure, or in retorts without pressure."—(Price's *Hygiene and Public Health.*)

9. An *endemic disease* is one which is peculiar to a district or is limited to a class of persons.

An *epidemic disease* is one which affects at the same time a large number of persons in a community; or one which spreads rapidly, and attacks many persons.

A *pandemic disease* is one which affects at the same time large numbers of persons in many countries.

10. *In selecting a camp site* the following conditions should be borne in mind: The presence of water, wood, and grass. The soil should be dry and elevated, with enough protection from winds. There should be space enough to accommodate the men without crowding. Old camp sites should be avoided because the soil is certain to be polluted and may be infected. Excess of vegetation and dense woods should be avoided on account of the extreme moisture or dampness which they induce. Marshes and stagnant water should also be avoided on account of mosquitos.

(To be continued.)

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†
Alabama*	W. H. Sanders, Montgomery	Montgomery
Arizona*	J. W. Thomas, Phoenix	Phoenix Oct. 2
Arkansas	T. J. Stout, Brinkley	Little Rock Nov. 13
California	C. B. Pinkham, Sacramento	Los Angeles Oct. 9
Colorado	David A. Strickler, Empire Building, Denver	Denver Oct. 2
Connecticut*	Chas. A. Tuttle, New Haven	New Haven Nov. 13
Delaware	J. H. Wilson, Dover	Dover Dec.
Dist. of Col'bia	E. P. Copeland, Washington	Washington Oct. 9
Florida*	W. M. Rowlett, Tampa	Jacksonville Dec. 4
Georgia	C. T. Nolan, Marietta	Atlanta Oct. 9
Idaho*	Charles A. Dettman, Burke	Pocatello Oct. 2
Illinois	F. C. Dodds, Springfield	Chicago Oct. 9
Indiana	W. T. Gott, Crawfordsville	Indianapolis Jan. 8
Iowa	G. H. Sumner, Des Moines	Des Moines Oct. 9
Kansas	H. A. Dykes, Lebanon	Topeka Oct. 9
Kentucky	J. N. McCormack, Bowling Green	Louisville
Louisiana	E. L. Leckert, New Orleans	New Orleans Dec. 6
Maine	F. W. Searle, Portland	Portland Nov. 13
Maryland	J. McP. Scott, Hagerstown	Baltimore Dec. 11
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston Nov. 13
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Lansing Oct. 9
Minnesota	T. McDavitt, St. Paul	Minneapolis Oct. 2
Mississippi	J. D. Gillevlen, Jackson	Jackson
Missouri	G. H. Jones, Jefferson City	Kansas City
Montana*	Wm. C. Riddell, Helena	Helena Oct. 2
Nebraska	J. J. Homres, Lincoln	Lincoln Nov. 14
Nevada	S. L. Lee, Carson City	Carson City Nov. 5
N. Hampshire	Walter T. Crosby, Manchester	Concord Dec. 10
New Jersey	A. MacAlister, Trenton	Trenton Oct. 16
New Mexico	R. K. McClanahan, Santa Fe	Santa Fe Oct. 8
New York	H. H. Horner, Univ. of State of New York, Albany	New York Albany Oct. 2 Syracuse Buffalo
N. Carolina	H. A. Royster, Raleigh	Raleigh June
N. Dakota	G. M. Williamson, Grand Forks	Grand Forks Jan. 1
Ohio	, Columbus	Columbus Dec. 4
Oklahoma	R. V. Smith, Tulsa	Oklahoma City Oct. 9
Oregon	B. E. Miller, Portland	Portland Jan. 7
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia Jan.
Rhode Island	R. V. Richards, Pawtucket	Providence Oct. 4
S. Carolina	H. E. Boozer, Columbia	Columbia
S. Dakota	P. B. Jenkins, Waubay	Pierre Jan. 8
Tennessee	A. B. DeLoach, Memphis	Memphis Nashville June Knoxville
Texas	M. F. Bettencourt, Mart	Austin
Utah	G. F. Harding, Salt Lake City	Salt Lake City Oct. 1
Vermont	W. Scott Nash, Underhill	Burlington Feb. 12
Virginia	I. W. Preston, Roanoke	Richmond Dec. 11
Washington*	C. N. Suttner, Walla Walla	Spokane Jan. 1
W. Virginia	S. L. Jenson, Charleston	Clarksburg Nov. 21
Wisconsin	J. M. Dodd, Ashland	Madison Jan. 14
Wyoming	H. E. McCollum, Laramie	Laramie Oct. 10

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary for all the details regarding the examination in any particular State.

Books Received.

The Medical Record *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading, but it must be with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

Good Health, How to Get and How to Keep It. By Alvah H. Doty, M.D. 304 pages. Illustrated. Published by D. Appleton & Co., New York and London. $1.50 net.

The Book of Home Nursing. A Practical Guide for the Treatment of Sickness in the Home. By Frances Campbell. 271 pages. Illustrated. Published by E. P. Dutton & Co., New York. Price, $1.25.

Preventive Medicine and Hygiene. By Milton J. Rosenau. 1374 pages, illustrated. Published by D. Appleton & Co., New York and London. Price, $6.50.

Practical Medicine Series—Vol. IV—Gynecology. By Emilius C. Dudley and Sydney S. Schochet. 232 pages, illustrated. Published by The Year Book Publishers, 608 South Dearborn Street, Chicago, Ill. Price, $1.35.

Practical Medicine Series—Vol. V—Pediatrics—Orthopedic Surgery. By Isaac A. Abt and John Ridlon. 240 pages, illustrated. Published by The Year Book Publishers, 608 South Dearborn Street, Chicago. Price, $1.35.

Linfadenias en la Infancia. By Dr. Juan Carlos Navarro. 339 pages, illustrated. Published by Libreria "Las Ciencias": Casa Editora de A. Guidi Buffarini, Buenos Aires.

Materia Medica for Nurses. By George P. Paul. 295 pages, illustrated. Published by W. B. Saunders Company, Philadelphia and London. Price, $1.50.

A Manual of Personal Hygiene. By Walter L. Pyle. 555 pages, illustrated. Published by W. B. Saunders Company, Philadelphia and London.

The Treatment of War Wounds. By W. W. Keen. 169 pages, illustrated. Published by W. B. Saunders Company, Philadelphia and London. Price, $1.75.

Diseases of the Chest, and the Principles of Physical Diagnosis. By George William Norris and Henry R. M. Landis. 782 pages, illustrated. Published by W. N. Saunders Company, Philadelphia and London. Price, $7.00.

Malingering, or the Simulation of Disease. By A. Bassett Jones and Llewellyn J. Llewellyn. Published by P. Blakiston's Son & Co., Philadelphia, Pa. 708 pages, illustrated. Price, $7.00.

Progressive Medicine—Vol. III. By Hobart Amory Hare, assisted by Leighton F. Appleman, M.D. Published by Lea & Febiger, Philadelphia and New York. 268 pages, illustrated. Price, $6.00 per annum.

War-Shock, the Psycho-Neuroses in War Psychology and Treatment. By M. D. Eder. Published by P. Blakiston's Son & Co., Philadelphia, Pa. 154 pages, illustrated. Price, $1.75.

Ammunition for Final Drive on Booze. By Rev. Louis Albert Banks, D.D. 402 pages, illustrated. Published by Funk & Wagnalls Co., New York and London. Price, $1.50.

A Treatise on Regional Surgery. Vol. 1. By Various Authors. Edited by John Fairbairn Binnie, A.M., C.M., F.A.C.S. 652 pages, illustrated. Published by P. Blakiston's Son & Co., Philadelphia. Price, $7.00.

The Sense of Sight. By Frank Nicholas Spindler. 156 pages, illustrated. Published by Moffat, Yard & Co., New York. Price, $1.25.

Pain and Pleasure. By Henry Thomas Moore. 174 pages, illustrated. Published by Moffat, Yard & Co., New York. Price, $1.25.

The Conversion of Hamilton Wheeler. By Prescott Locke. 285 pages, illustrated. Published by The Pandect Publishing Company, Bloomington, Ill. Price, $1.25.

Surgical Therapeutics and Operative Technique. Vol. I. By E. Doyen. English edition prepared by the author in collaboration with H. Spencer-Browne, M.D. 746 pages, illustrated. Published by William Wood & Co., New York. Price, $25.00 per set of three volumes.

Miscellany.

The Spanish Medical Congress of 1918.—The great European War will not be allowed to interfere with the activities of next year's Spanish National Medical Congress, apparently the first of its kind. The session will be held in Madrid on April 21-26, under the presidency of Ramón y Cajal and others. The number of sections will be seventeen. Of the topics for symposium treatment the majority present nothing of especial novelty.

Under the section of "medical literature, bibliography, etc.," we note two movements of interest. One is directed toward the establishment of a Spanish Index Medicus and the other refers to the "Castellanization," or Spanishing, of technical terms. This may refer to a uniform orthography and pronunciation of foreign technical terms or it may go much deeper and seek to substitute modern Spanish words for exotic expressions.

Another national movement apparently refers to listing all the medicinal mineral springs in respect to properties and uses, central control, etc. One theme for discussion is "spectrum analysis of spring waters." Papers on various aspects of tuberculosis which occur under a number of sections show the great importance of the subject. Echoes of the war are seen chiefly in such papers as "hygiene of the submarine," "reeducation of the mutilated," "neurology of the war," and "odontology of the war."

One of the sections, No. VII, is quite novel; it covers "pedopathy, puericulture, mothercraft, and eugenics" and is under the direction of Vargas of Barcelona. Despite its portentous title, the subjects for general discussion are limited to "infantile colitis" and "infantile tuberculosis." The double section of anatomy and physiology, Chairman Dr. P. Suner, has as a general theme "physiological factors of diuresis." There is a subsection under Internal Medicine on "nutrition, hematology, and endocrinology," the open papers to be devoted to "opotherapy" and "lymphadenias." The remainder of the program contains nothing of unusual interest.

The Death Rate in Rio de Janeiro.—This seems to have been unusually high last June, a winter month. During the week of June 10-16 inclusive there were 422 deaths, a daily average of 60, as against 50 in the same week of 1916. In the week of June 3-9 inclusive the daily average was 65. A third of the deaths were due to transmissible diseases, tuberculosis leading with 93 for the week. There were no epidemics, but deaths from acute contagious diseases amounted to more than 50. There were 74 deaths of infants under one year of age. Deaths from diseases of the circulatory and digestive apparatuses numbered 62 and 63 respectively. Malignant tumors claimed but 12 victims. Since the births (604) far exceed the deaths, it is probable that the increased numbers are due to the natural growth of the city, although no figures are forthcoming. There was but a single death from diphtheria, which is about the usual weekly toll, a document to the infrequency and mildness of this affection in Rio.

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Original Articles.

A CRITICAL ANALYSIS OF THE TREATMENT OF TUBERCULOSIS WITH COPPER AND POTASSIUM CYANIDE.*

BY GEORGE H. EVANS, M.D.,

SAN FRANCISCO, CAL.

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THE brilliant achievements of Ehrlich in the chemotherapy of syphilis have anew called the attention of the medical profession to the possibility of the discovery of a specific for tuberculosis among the metallic substances used in medicine. Attention for the meantime has been to a certain extent diverted from biologic remedies by the impetus given by the researches of Meissen, von Linden, Dewitt, Koga, and others in the field of chemotherapy. In these studies, gold, copper, arsenic, iodine, and other substances have had their respective advocates, and results of animal experimentation and clinical experience have been presented, sometimes with an enthusiasm which would almost suggest that the great panacea for tuberculosis was in our hands. A critical analysis, however, usually demonstrates that the optimism of the therapist has been responsible for deductions not in accordance with the actual results, and thus remedy after remedy is brought forth only to be consigned to therapeutic oblivion.

A curious misapprehension popularly exists in the mind of the public, and to a certain extent in that of the profession, that a specific remedy for tuberculosis is possible in the sense that such specifics exist for malaria, diphtheria, or even syphilis. This is due to the popular misapprehension concerning the pathology underlying chronic phthisis in the adult, the result and development of tuberculosis which has existed since early childhood.

Thus we see these remedies presented and advocated as specifics, based on the result of animal experimentation. It is quite a different thing to inhibit or even heal a recent tuberculous lesion experimentally produced, from successfully attacking bacilli firmly intrenched behind impenetrable barriers of fibrous tissue, the result of years of development. We read much in literature concerning the curability of early tuberculosis. It is time we changed our views in accordance with the facts brought out by modern studies of phthisiogenesis, and recognized the fact that incipient pulmonary tuberculosis in the adult does not exist; that phthisis is a pathological process, the result of years of tuberculous disease, where, in the favorable cases, processes of destruction and repair have gone on hand in hand. The lessons of the autopsy table surely teach this.

Last year Koga, working in the Kitasato Institute for Infectious Diseases in Tokyo, presented two contributions to the chemotherapy of tuberculosis. After considerable experimentation with different substances and different solutions of the same substances, he prepared a double salt of copper and potassium cyanide, put up in dilution of two milligrams of the salt to the cubic centimeter of diluent. The results recorded by him were such as to justify a careful clinical trial of the merits of the preparation. Through the kindness of Dr. Koga a sufficient amount of the remedy for study was placed at my disposal, and the following case records are from my wards in the tuberculosis department of the San Francisco General Hospital.

The criticism will at once be made that an insufficient number of patients has been studied on which to base any conclusions as to the value of the remedy. Such criticism must be met by the statement that a critical analysis of a few cases intensively studied and carefully observed affords a better basis for subsequent study than does a large clinical material where the facilities are frequently not such as to allow of such intensive study and observation.

Out of a service of about seventy beds, ten patients were selected for treatment. The service in this department is for the reception of late cases only, and the preparation therefore was put to a rather severe test. On the other hand, the favorable results usually accomplished by dietetic-hygienic treatment on the earlier cases generally renders any conclusion impossible as to the value of this or that remedy which may have been tried.

The cases selected presented a variety of tuberculous lesions and complications and were chosen without much regard to their severity, in the attempt to determine better the immediate effect of the preparation upon tuberculous tissue generally.

In the examination of these patients, careful records and studies were made of the blood, urine, functional kidney tests, amount and content of sputum, etc., and other chronic conditions were ruled out as far as possible. With one exception the Wassermann blood-serum test was negative. Tubercle bacilli were present in the sputum of all

The preparation was used in doses varying from eight to twenty-one milligrams, and was invariably given intravenously, a vein in the elbow being chosen. Scarcely any difficulty was experienced in the administration. Occasionally some soreness and temporary induration were experienced by a

*Read at the eighteenth annual meeting of the American Therapeutic Society, held June 1 and 2, 1917.

few drops of the material getting into the perivascular tissues. The patients were confined to bed during the first week following each injection, some of them during the entire course of the treatment. Those who were allowed up were strictly limited as to their activity.

It was administered at intervals of two weeks following the plan of Dr. Koga.

Case I.—Walter P., age 29, a waiter, born in the United States, entered the San Francisco Hospital December 6, 1916, complaining of cough, weakness, loss of weight and pain in the left chest. He had a cough eighteen years ago, and was told then that he had tuberculosis. He apparently recovered and enlisted in the army. He had had several attacks of tonsilitis, and a fistula in ano was operated upon last May. His present illness had begun two years before with a severe cold. He lost weight, became weaker and had night sweats. His weight on entrance was 142 pounds, representing a loss of 46 pounds. He had used alcohol to excess, denied Neisser or luetic infection, had chancroid when in the Army.

Examination showed a man somewhat emaciated, with dullness over both upper lobes, rales in the right upper lobe, and signs of cavity in both apices. His urine was negative, with a total phenolphthalein output of 58 per cent. Blood examination was negative. Wassermann blood serum test negative. Tubercle bacilli were present in the sputum, Gaffky 1.

Treatment: On January 14, 1917, 8 mg. of the copper and potassium cyanide was administered intravenously; it was almost immediately followed by a chill of 10 minutes' duration. The following day showed a rather prompt rise in temperature and pulse, soreness in the chest, with slight increase in rales. There was some soreness around the scar of the old fistula in ano, which appeared inflamed. On January 28, two weeks later, 12 mg. were injected, followed by slight dizziness. The next day there was again soreness in the chest. The sputum, however, had decreased, the cough was less, and no bacilli were found. On February 12, 12 mg. No general reaction followed this, but the next day there was some increase in sputum and pain in the chest. There was some local pain in the arm for some time following this injection. February 26, 16 mg. were given, followed by considerable perivascular infiltration and some increase in the sputum, which was blood streaked. March 12, 17 mg. was given without reaction. March 29, 12 mg. was injected. The next day showed a slight increase in the number of bacilli, but no general reaction.

This man's weight increased from 136 pounds to 145 pounds during the treatment. While his general condition seemed considerably improved, there was very little change in the physical signs, and bacilli were still present.

Case II.—Chris. F., a student, 21 years of age, born in the Philippine Islands, entered the San Francisco Hospital November 16, 1916, complaining of cough, hoarseness, weakness, and night sweats. He had lived for the past four years in San Francisco. The only history of significance was an attack of smallpox when four years of age. He denied symptoms of his present illness before September, 1916, at which time he began to have a slight morning cough and pain in the chest; later hoarseness developed, which had increased; in October night sweats appeared. His weight on entrance was 109 pounds.

Examination showed a fairly well developed and nourished young man, well pock-marked, with bad tonsils and poor oral hygiene. The larynx showed ulcerations on the right cord. The chest was normal in shape, with considerable regional emaciation and extensive tuberculous involvement of both lungs, more marked on the left, and cavity formation in the left upper lobe. The heart was small. Blood pressure 138, 98. Urine negative, with a phenolphthalein output of 45 per cent. Blood and Wassermann negative. Tubercle bacilli in the sputum.

Treatment: On January 15, 1917, 8 mg. of the double salt was given, followed by a chill lasting 15 minutes. The next day there was focal reaction shown by slight increase in the sputum and some pain in the throat. On January 29, 15 mg. was given, followed the next day by a slight increase in sputum. On February 12, 8 mg. This was not followed by any reaction. February 26, 12 mg.; no reaction except some local induration at the site of the injection. He stated that his throat was considerably better. On March 4, six days after the last injection, he developed a sudden pain in the chest, with sharp rise of temperature to 104°. A spontaneous pneumothorax had occurred on the left side. This was accompanied by painful respiration, increased pulse, and slight increase in the sputum. The next day the sputum had markedly decreased. On March 13 fluid was present in the left pleura in considerable quantity. Thoracentesis (5 c.c. withdrawn) showed a clear transudate; 14 mg. of the cyanide salt was given, with no evidence of reaction. The temperature remained high. On March 26 the pleural fluid was decreasing in quantity. On April 26 his hoarseness continued, the pleural fluid had apparently been entirely absorbed, and the temperature had been nearly normal for three weeks. Sputum was present in negligible quantities. His weight, which was 105½ pounds at the beginning of treatment, decreased during the attack of pneumothorax, but increased again to 103¼ pounds.

There was very little change in the condition of the lungs except that produced by the changes in the pleura. There was no demonstrable fluid remaining. The larynx had not improved. This man was very optimistic and thought he was better, but the prognosis is bad. He still had bacilli in his sputum, Gaffky 2.

Case III.—Karl S., age 31, single, cook, born in the United States, entered the San Francisco Hospital on December 18, 1916, complaining of cough and shortness of breath, which had existed for seven months. He had had night sweats for six months, and a week before there had been blood in his sputum. He had been subject to frequent colds for the past twenty years. Admitted Neisser infection; denied lues. Had formerly used alcohol excessively. Lately his appetite and digestion had been disturbed and there had been considerable dyspnea. Temperature on entrance was 100°, pulse 85.

Examination showed both lungs involved in an extensive tuberculous process, with cavity formation at the left apex. The *x*-ray plate showed considerable mottling throughout the right lung, with dense fibrous shadow in the left upper lobe. The heart was ptosed. The bases were fairly clear, the left emphysematous. the diaphragmatic domes well marked. The sputum contained tubercle bacilli, Gaffky 3. Urine and blood were negative, except that the Wassermann in this instance was ++. (This was the only case in the series presenting a positive Wassermann.)

Treatment: January 16, 1917, 8 mg. of the double salt was given, followed by a slight chill and some headache. January 29, the man's general condition was much improved—rales had diminished and there was less cough; 16 mg. was administered, followed that night and the next day by pain in both sides of the chest, some increase in rales on both sides, and increase in sputum. Two days later there was a decided increase in his leucocytes. On February 12 there were very few rales present—decidedly decreased in number in both apices; 12 mg. administered. This was followed by slight pain at the site of injection. There was no focal or general reaction. Sputum had disappeared. On February 16 he felt well and wanted to leave the hospital, which he later did without permission.

This man's weight increased from 133 pounds to 142½ pounds. His sputum, which was quite abundant at the beginning of the treatment, steadily decreased, and after the increase marking the reaction from the second injection, entirely and permanently disappeared.

Case IV.—Gustav P., age 59, single, a Russian sailor, entered the San Francisco Hospital December 4, 1916, complaining of cough, much sputum, dyspnea, loss of weight, and recent hemoptosis. His father died of tuberculosis. Patient had at times been immoderate with alcohol; denied venery. His present trouble began about four years ago with a cough which had gradually increased. Occasional fever, night sweats, and chest pains on the left side. During past two years had lost 20 pounds in weight. For past year he had had nausea and vomiting, with weakness, cough, and dyspnea.

Examination showed a man fairly well developed, without marked emaciation. Fingers clubbed. He had an emphysematous chest with considerable muscle atrophy in the clavicular fossæ, with dullness over the upper lobes and hyperresonance below. He had excessive crepitation through both lungs, with marked asthmatic rales on both sides. There was cavity formation in the left upper lobe. Examination of the heart was negative. Blood pressure 105, 70. Urine was negative. Phenolphthalein function 53 per cent. Blood count and Wassermann negative. Sputum contained tubercle bacilli, Gaffky 3. Tuberculin reactions were mild and delayed, both cutaneous and intracutaneous. *X*-ray plate of his chest showed extensive mottling throughout both lungs, with much fibrosis in the apices.

Treatment: 12 mg. of the copper and potassium cyanide was given on January 18, 1917, followed by an increase in the number of rales, some chest pain and traces of blood in the sputum. No general reaction. On February 1, the second dose, 16 mg., was given. Following this there was some increase in the number of leucocytes, the sputum became thicker and a few blood clots appeared on the second day. February 15, 14 mg. The next day there was slight pain in the chest and the sputum had somewhat increased. There was also some local tenderness at the site of injection. March 1, 16 mg. was given, with evidence of focal reaction, the rales again being increased, with some increase in the bacillary content of the sputum. During this time, and since his entrance, he had been continuously vomiting in the morning, with considerable burning sensation in his stomach; this had been relieved by alkalis. March 15, 13 mg., without any evidence of reaction.

This man's weight increased from 137 lbs. to 145 lbs. His physical signs had improved somewhat, although the bacillary content remained about the same. There had been very little change in the actual amount of sputum compared with the beginning of treatment. Traces of blood were frequent during treatment, but with very little relation to the time of injection. The man was of the emphysematous, fibroid type, essentially chronic, where one frequently sees periods of remission regardless of any treatment. His mental attitude toward his disease was, of course, very much improved.

Case V.—Bernard O., Italian laborer, age 27, entered the San Francisco Hospital December 28, 1916, without a very satisfactory history. As far as it could be obtained, his disease had begun 3½ months before, with cough, sputum, night sweats and hemoptysis. He had dissipated considerably and his weight had decreased from 140 lbs. to 106 lbs. He had been steadily failing since his entrance to the hospital and had been running a high septic temperature with correspondingly rapid pulse.

Examination of the chest showed extensive bilateral disease with probable cavity formation in both apices. There was, in addition, considerable laryngeal ulceration and he was coughing large amounts of sputum, Gaffky 7.

The prognosis was considered hopeless in this case. He gained somewhat in weight during his stay in the hospital, and at the time treatment was commenced had increased to 119 lbs., but temperature and pulse were still running very high.

Treatment: Three injections of the double salt were given, of 6, 7 and 10 mg. respectively, at intervals of two weeks. Aside from a chill lasting 20 minutes following the first injection, no symptoms referable to the injection could be determined.

He lost steadily and died 40 days following the first injection. His temperature, pulse, sputum, and throat symptoms remained unchanged during this time. Autopsy showed extensive tuberculous involvement of both lungs, with large cavity formation. There was no evidence of tuberculosis in any of the other organs.

Case VI.—Henry B., a Swiss laborer, age 48, single, entered the San Francisco Hospital November 13, 1916, complaining of cough, weakness and loss of weight. He denied venery, had always been moderate in his habits, and had always been well and strong until six years before, when he sustained a compound fracture of the leg. During the following 16 months he had lost in strength and weight and suffered from malaise. Six months before entrance he had severe pleural pains in the left side of the chest, followed shortly by a brisk hemorrhage. Cough had persisted and steadily increased. He had a second hemorrhage one month after the first, and since has had occasional night sweats and intermittent attacks of fever. Recently coughing had produced vomiting. No intestinal disturbance.

Examination showed a poorly developed and nourished man, markedly emaciated. There was an extensive tuberculous process involving both lungs, more marked on the left, with cavity formation in the left upper lobe. The heart was displaced somewhat to the left, apparently the result of adhesions. His abdomen showed his liver somewhat enlarged and tender, the spleen was palpable, and there was considerable tympanites. Tuberculin reactions, cutaneous and intracutaneous, were delayed and mild. Blood pressure 115, 75. Urine, chemical, microscopical and functional, negative. Blood and Wassermann negative. Sputum contained tubercle bacilli, Gaffky 3.

Treatment: January 23, 1917, copper and potassium cyanide, 12 mg., followed the next day by headache and some increase in rales. February 6, the sputum had very much decreased in quantity since the first injection, being less than one-third the amount; an injection of 16 mg. was given. This was followed the next day by a temporary increase in sputum and bacillary content (Gaffky 1-3). There was no evidence of general reaction, but he complained of some pain in the region of the left shoulder, which he admitted had been present since the first injection. He had a restless night because of some perivascular infiltration at the site of injection. February 20, 21 mg. given. Seven hours following this rather large dose, he complained of malaise, with occasional sharp pain in the left chest. The next day there was a slight rise in temperature (100.6°), some rise in pulse, and a slight increase in leucocytes. The sputum was also increased. The temperature remained up for four days following the injection. The leucocytes were up for two days, when they fell to normal. During these days he was nervous, slept poorly, had general aching sensations, felt tired, appetite poor, and he had slight chills for two days. There was a feeling of oppression in the chest and an increase of the sputum for four days. His cough had increased; he required heroin for his relief, and there was general depression. On March 1 he felt better, though the cough was still troublesome and there were occasional traces of blood in the sputum. March 6, 13 mg. was administered, followed by some increase in rales, sputum and bacilli. No general reaction. He felt much better than usual and his appetite had improved. March 22, 13 mg., without any evidence of reaction, local or focal. He felt very well and was anxious to be up.

On April 26, examination of the chest showed practically unaltered physical signs. During the treatment his sputum had been reduced to practically negligible quantities. His weight increased from 113¾ lbs. to 121½ lbs. His general condition, physical and mental, was very good, and he was exceedingly optimistic. The reactions following the third injection were probably due to the large dose.

Case VII.—Eva H., age 29, widow, entered the San Francisco Hospital November 1, 1916, complaining of cough, loss of weight, night sweats, vomiting, hoarseness, and occasional hemoptysis. She had been troubled with bronchitis for the past five years and had coughed constantly since February, 1915, with hoarseness. Said she had been run down for the past four or five years, and had had night sweats for the past year. Since August, 1915, she had had frequent hemorrhages, two of them severe. She was about 15 lbs. below her usual weight.

Examination showed a poorly nourished, anemic woman, with excessive cough, emaciated, with extensive bilateral disease, more marked on the left, where the entire lung was involved in a tuberculous process with considerable destruction in the apex. Rales were heard throughout. There was dullness throughout the right upper lobe, with rales at the apex and probable small cavity under the clavicle. The *x*-ray plate showed practically the same extent of disease. The urine, blood, and Wassermann were negative. Temperature was running between 100° and 102°, with very rapid pulse. The prognosis was extremely bad.

Treatment: Treatment begun January 26, 1917, when 12 mg. were given. This was followed by the most severe focal reaction of the series. The next day her hoarseness had increased and there was complete aphonia. Examination of the larynx showed the arytenoids so swollen that a view of the interior of the larynx could not be obtained. The sputum had increased, the cough was very troublesome, and there were extensive sticky and moist rales throughout the left lung. These evidences of focal reaction remained for about 10 days. There was no general reaction. February 9. During the past week she had had an attack of tonsillitis. An injection of 10 mg. was followed the next day by slight focal reaction and some soreness at the site of injection. February 23, 12 mg., with slight focal reaction, as shown by some increase in sputum. Cough still troublesome. March 9. Night sweats had been frequent and severe during the previous week; 10 mg. given, with increase in sputum and cough appearing two days after the injection.

This woman's weight decreased from 104 lbs. to 98 lbs. during the treatment. She became steadily worse, but had been losing ground before. She had been febrile throughout, but during the latter part of the treatment the temperature became higher with more extensive septic swings. On May 1 she was too weak for thorough examination of the chest, but showed that the disease had been progressing. It is possible that she was made worse by this treatment (note the severe focal reaction following the first injection).

CASE VIII.—Minna B., widow, age 25, entered the San Francisco Hospital May 3, 1916. Two weeks before entrance she had had severe hemoptysis, since which time she had had cough and pain in the left side of the chest. She had lost 10 lbs. in weight. She remained in the hospital for five months under dietetic-hygienic treatment, when she was discharged very much improved. Bacilli had disappeared. She was readmitted January 18, 1917, having had several brisk hemorrhages during the preceding two months.

Examination on readmission showed activity on the left side from the apex to the angle of the scapula, with dullness and some rales over the right upper lobe. The *x*-ray plate showed an extensive process throughout the left lung, with the heart shadow shifted to the left—the result of fibrosis. The left lung shadow was particularly dense in the lower part. There was some mottling on the right side, with a few discreet gland shadows. She had a temperature of 100° and pulse of 100. The urine and blood were negative. Blood pressure 120, 83. Tubercle bacilli were present in the sputum, Gaffky 1.

Treatment: On January 26, an injection of 12 mg. was given, followed the next day by slight pain in the chest, but no general reaction or change in the physical signs. January 9, 16 mg. given, followed in two hours by sharp pleural pain in the right side of the chest. The next day there was a definite increase in rales, some of them being moist. Rales were also heard in the right interscapular region, though none had been there the day before. Two days after the injection there was an increase of sputum. Several days after the last injection the sputum was blood-streaked; this was during menstruation, and she had frequently seen blood in the sputum before the onset of her menses. On February 23, a third dose of 16 mg. was given, which was followed by some headache and increase in leucocytes. There was also an increase in the bacillary content of the sputum. March 9, 16 mg., followed shortly by headache and flushing of the face, which lasted all day, though there was no rise in temperature or pulse. The next day the leucocytes were found to be increased; some increase in the cough and traces of blood in the sputum. March 22, 12 mg., without any evidence of reaction. April 6, an *x*-ray plate taken showed practically no change in lung shadows as compared with the previous plate. She had recently developed some edema of the ankles. On April 15 the bacillary content was Gaffky 2, and there had been a slight increase in sputum. The edema was decreasing, though at times she suffered with palpitation and orthopnea, and on one occasion had a rather sharp attack of precordial pain. On the evening of April 29 she had a brisk hemorrhage, 80 c.c. On May 1 another, 60 c.c., and on May 3 still another, amounting to 100 c.c. Since that time there had been no further hemorrhage. It will be noted that these hemorrhages came on after an interval of about five weeks following the last injection.

During the treatment this woman's weight increased from 117 lbs. to 134¼ lbs. This exceeded her highest weight before illness by 5 lbs. Her general condition was very much improved, although probably her improvement was no more marked than on her previous discharge. Very little general reaction followed the injections, but focal reactions were frequent, occurring principally as pain in the chest. After the second injection there was a definite increase in the extent of rales. She ran practically an afebrile course throughout. Bacilli were still present after the last injection.

CASE IX.—Thomas D., an Irish lumber-jack, age 36, entered the San Francisco Hospital January 16, 1917, complaining of cough, weakness, loss of weight, slight hemoptysis, and an ischiorectal abscess, which ruptured spontaneously a few days later. He had been a heavy user of alcohol. Denied venery. He had had pleurisy two years before and had lost 10 lbs. in the past year. Since his pleurisy he had had constant cough, with occasional pain in the chest. Bacilli were found in his sputum one month before entrance. There had been several small hemorrhages since his entrance.

Examination showed a very well developed man, not appearing very sick. The extremities were slightly cyanosed. There was extensive bilateral tuberculous involvement, dullness extending to the fourth rib on either side, with rales almost to the base in both lungs, Although the heart was somewhat enlarged, there were no murmurs. The pulmonic second sound was accentuated. There was a slight amount of sclerosis of the peripheral arteries. The *x*-ray plate showed extensive mottling throughout both lungs, less marked at the bases, with fibrosis at both apices. Blood pressure, 110, 60. The rectum showed a discharging ischiorectal abscess. The urine was negative, with a phenolphthalein function of 50 per cent. Blood and Wassermann were negative. Tubercle bacilli in the sputum, Gaffky 4.

Treatment: Treatment was commenced January 29, 1917, 14 mg. being administered intravenously. This was followed by a slight increase in the cough and sputum, but no increase in rales. On February 12, 19 mg. given. The following night there was some cardiac irregularity, but no other evidence of general reaction. The next day a careful search of the sputum failed to reveal any tubercle bacilli, a gain in weight was recorded, and there were fewer rales. The ischiorectal abscess looked cleaner, and the patient was generally feeling very well. February 26, 18 mg., followed by considerable perivascular infiltration at the site of injection, causing some pain. No general reaction followed this injection. There was a slight increase in rales and sputum. Two days after the injection he left the hospital without permission.

This man's weight increased from 156¼ lbs. to 162 lbs. during the treatment. As he left suddenly, there was no opportunity for examination at the time.

CASE X.—Luella D., age 49, married, native of the United States, entered the San Francisco Hospital December 23, 1916, complaining of cough, pain in the chest and occasional night sweats. A sister had died of tuberculosis, and a brother and three sisters had died in infancy. She had had scrofula at two years of age, typhoid at fourteen, pleurisy at thirty; at about that time she was operated upon for mastoid trouble, the wound of which has never entirely healed. From that time on she lost in weight, suffering at times from stomach trouble, accompanied by cough. Three months before, during sharp pleuritic pains, tuberculosis had been diagnosed. She had always been delicate and subject to frequent and protracted colds. She had been married at sixteen, and three children had died of whooping-cough in early childhood.

Examination showed a woman wasted and bedridden, with a suppurating scar over the right mastoid, chronic pharyngitis, bad oral hygiene. Both upper lobes were involved in a tuberculous process, with considerable cavity formation in the left upper lobe. The *x*-ray plate showed extensive mottling throughout the left upper lobe, with probable large cavity under the clavicle. There was less involvement of the right lung, but there was rather a dense apical shadow and marked peribronchial thickening in the right lower lobe. The

heart was ptosed. Tubercle bacilli were present in the sputum. The urine, blood and Wassermann were negative. Blood pressure 110, 72. Prognosis was bad, in fact, death seemed imminent.

Treatment: On February 1, an injection of 12 mg. was given, without reaction. On February 15, 16 mg. injected, followed the next day by slight increase in leucocytes. On March 1, following an injection of 12 mg., there was a slight chill, and the day following the bacilli were slightly increased. On March 15, 12 mg., with focal reaction the following day, shown by increase in rales, bacillary content of sputum and cough. The next day she felt very well. March 29, 14 mg. administered. This was followed by some distress in the chest and some increase in cough. The bacilli disappeared after this injection and were absent from the sputum until May 1, when they were found again in numbers amounting to Gaffky 2.

She increased in weight from 86¼ lbs. to 91¾ lbs. during the treatment. Examination of the chest on April 27 showed very little change in the physical signs, except that the signs of cavity in the left upper lobe were not as distinctly marked as before. The rales were less abundant, fibrosis and drying up of the cavity secretion had apparently been progressing satisfactorily. The amount of sputum and bacilli, however, were practically unaltered. The general condition was much improved; her appetite was good, she was hopeful, and was convinced that she had derived much benefit from the treatment.

Prognosis for improvement much better than at the beginning of treatment.

General Reaction.—There was little evidence of general reaction in the patients above recorded. Five cases experienced chills, four following the first injection, one following the fourth. These chills were in no instances severe and seemed to have no relationship to the amount of the preparation used.

Rise in Temperature: This was unusual. There do not appear those sudden rises similar to what is occasioually seen following tuberculin administration. Two cases, I and VI, had slight temperature increases. In case VI it followed a dose of 21 milligrams. It was accompanied by a slight rise in the pulse rate and the number of leucocytes. It subsided again in four days. In two cases, V and VII, the temperature rose steadily and was higher at the end than at the beginning of treatment. Most of the patients were, however, afebrile throughout.

Effect Upon the Pulse Rate: Cases I and VI had increase in pulse rate, accompanying rise in temperature above mentioned. Some arrhythmia was noticed in Case IX, following his second injection of 19 milligrams.

Other evidence of general reaction was rare. The leucocytic curve was as frequently decreased as increased. Headaches were observed but usually in cases where headache was a frequent manifestation in the interval between injections. Particularly was this noticeable in Case VIII. Headache, malaise, insomnia, loss of appetite followed the large amount (21 milligrams) given Case VI at his third injection. These symptoms persisted for several days following.

Focal Reaction.—Evidence of focal reaction was very frequent, and was present to a greater or lesser extent in all cases save the one who died. This was indicated in various ways.

Probably the most marked focal reaction was seen in Case VII, where the morning following the first injection of 12 milligrams the entire left side of the chest was filled with moist, sticky rales, replacing the previous crepitation. Hoarseness, almost to aphonia, was also present and the arytenoids were much swollen. These evidences of focal reaction persisted for more than a week. Similar, though not as severe, reactions followed the second injection given this patient. All the cases, except the fatal one, showed increase in rales after one or more injections, but none to the same extent as Case VII. It usually occurred when doses of more than 12 milligrams had been given.

In the majority of the cases there was increase in cough following the injection, sometimes so severe as to require heroin for its relief. This was in quite a number of instances accompanied by an increase in the amount of sputum, and frequently traces of blood appeared. No brisk hemorrhages occurred, except in Case VIII, and in this instance it appeared more than a month after the last treatment. She had, however, a history of several severe hemorrhages before admission.

Sputum was carefully and frequently examined during treatment with reference to bacillary content, the Gaffky scale being used for this purpose. No definite results were derived from this, the count decreasing in as great a number of cases as it increased.

There was pleural pain following most of the injections, sometimes very severe. This usually occurred with the other signs of focal reaction, but frequently it was present as the only evidence.

None of the patients had demonstrable pleural effusion except Case II. Six days after his fourth injection of 12 milligrams, spontaneous pneumothorax occurred on the left side. It was ushered in by a sharp rise in temperature, increased pulse, a slight increase in sputum, and much pain and dyspnea. The next day the sputum had materially diminished. This was followed in a few days by a pleural effusion which gradually absorbed. His temperature remained high for more than two weeks, when it subsided to a point slightly above normal.

General Condition.—All of these patients except Case II showed some increase in weight; not marked in any except Case VIII, the hemorrhagic one, who increased from 117 to 134¼ lbs., which is five pounds above her highest weight before illness. Of course, no deductions can be drawn from Cases III and IX, who left the hospital after receiving three injections each. It is significant, however, that in the first instance there was a remarkable improvement in his general condition, and after the focal reaction following the second injection, the cough and sputum entirely disappeared.

Most of these patients, in fact, all of them, now under observation except the one who had the severe focal reaction following the first injection, and with whom the prognosis was decidedly bad at the start, lay claim to a feeling of improvement and well-being entirely irreconcilable with the physical findings. This is not surprising to any observer who has had much experience with the tuberculous. Aside from the benefit naturally resulting from bed treatment and careful nursing to which these patients were subjected, the importance of psychotherapy in tuberculosis has long been recognized. This fact has been seized upon and illegitimately exploited by quacks for many years. The most

glaring instance of it occurred a few years ago, when the profession complacently allowed the Friedmann fiasco to be perpetrated upon large numbers of these sufferers. I had the privilege at that time, through the courtesy of Dr. Stimson of the United States Public Health Service, of examining a considerable number of these patients. The optimism of these sufferers in the face of rapidly progressive destructive lesions afforded as pathetic a picture as could be drawn before the medical mind of the vicious results of conscienceless press advertising.

As a result of these observations, which by reason of the comparatively short time they have been studied, must be looked upon as a preliminary report, the following conclusions would seem justifiable:

(1) Copper and potassium cyanide in amounts from 8 to 12 mg. in cases of uncomplicated pulmonary tuberculosis is not followed by injurious results.

(2) Large doses, or even smaller ones in complicated cases or those presenting extensive active lesions with fever may produce serious focal reactions causing permanent harm.

(3) Severe hemorrhages are not likely to occur.

(4) Its administration is not followed by severe general reactions.

(5) The preparation is not very irritating to the perivascular tissues if small amounts are accidentally injected into them.

(6) The value of the preparation in the treatment of pulmonary tuberculosis has not been conclusively demonstrated.

(7) Its further trial in the treatment of this disease is justifiable.

233 Post Street.

A PLEA FOR GREATER EXACTNESS IN THE DIAGNOSIS AND TREATMENT OF TUBERCULOSIS.*

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The writer well remembers his feelings of surprise and incredulity when he was presented with an excellent skiagraph of the thorax of a person alleged to be affected with pulmonary tuberculosis, and was told that certain mottled appearances—which one writer has compared to the eruption of measles, and which were scattered over the lung tissue, being most abundant at the left apex and the root of the right lung—were indisputable manifestations of active tuberculosis. This occurred ten years ago, and I regret to say made only a passing impression on my mind. The radiograph was moved from a conspicuous place in my office to the receptacle which contains the unread reprints and other treasures which are put away in good faith and are occasionally resurrected for some good purpose, always provided that they have not been consumed in one of those semi-annual maelstroms called housecleaning. I desire to pass this skiagraph around; not alone because it so well fulfills its diagnostic object, but because I hope that it may arouse among my hearers some of the feelings of repentance and a desire to shake off the *vis inertiæ* of mental conservatism and intolerance which is so powerful a bar to the general advance of medical thought, and which is often at least the cause of our shortsightedness and ineptitude as clinicians.

Personally, I look upon this picture with shame and humility, because it has taken me ten years to learn the lesson it so obviously teaches and to believe the assertion made when it was given me that the Roentgen ray will establish the diagnosis of pulmonary tuberculosis before auscultation and percussion can do so.

It is perhaps superfluous to call your attention to the now well recognized fact that when a positive diagnosis of pulmonary tuberculosis can be made by the physical examination of the chest the case is no longer incipient, and the golden moment for the institution of successful treatment has passed. If modern medicine has taught us anything of permanent value it is that treatment, to be effectual, must be timely. No one thinks of delaying the administration of antitoxin in diphtheria for one instant after the presence of the Klebs-Loeffler bacillus in the patient's throat has been demonstrated. Nor does any one expect to cure tetanus or rabies after the overt symptoms of these diseases have manifested themselves. In the same manner, no one should expect that the routine treatment of tuberculosis will be invariably successful unless the diagnosis is made and the treatment instituted at the earliest possible moment. It has always been the complaint from the sanatoria that they do not get hold of the patients early enough. Many of us, who do not yet call ourselves old, remember when no one was sure of his diagnosis of pulmonary tuberculosis until the tubercle bacilli had been demonstrated in the sputum. Now we know that while their presence makes the diagnosis positive, they may be absent in about forty per cent. of all cases of consumption. And no good clinician now waits, as we used to do, until the bacilli are found before taking steps to arrest the disease.

The matter of diagnosing pulmonary tuberculosis by the *x*-ray in general practice is at present surrounded by a number of difficulties. The number of good *x*-ray operators is limited. One professor who is using this method, not only for diagnosis but for a study of the progress of the disease in the lungs, has told me that there are few operators who really understand how to take the pictures of the lungs, and fewer still who are able to read them correctly after they have taken them.

Professor Northrup declares that the *x*-ray is his diagnostic sheet anchor, and is more valuable than the von Pirquet test or the swabbing of the throat and nostrils in children for the detection of the tubercle bacillus. He alludes to auscultation and percussion as mere accessories to the diagnostic methods just mentioned. The demand for more *x*-ray operators able to give us these early diagnoses in pulmonary tuberculosis is, therefore, very urgent, and it is our duty as clinicians to insist that this demand be supplied. We must, however, first educate ourselves up to the point where we can read and interpret ordinary *x*-ray pictures fairly well ourselves, and we shall then know whether

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the *x*-ray work that is done for us by the so-called experts is good or bad. In a recent address, Professor Northrup also laid great stress upon the physical condition of the child. He spoke of the pearly white skin, the languor and want of endurance so noticeable in tuberculosis, as well as in hookworm disease and a number of other systemic poisonings.

Pottenger, in his recent very able address on the perversions of the vegetative nervous system in tuberculosis, insists that none of them are peculiar to this disease, but are to be noted in many other dyscrasiæ and perverted or septic bodily conditions. However, one German writer has recently gone so far as to say that the enteroptotic diathesis and the tuberculous diathesis are one and the same. But in spite of these limitations any pediatrician will, I believe, agree that children presenting these characteristics described by Northrup are, in all probability, tubercular, especially if they have been exposed to tuberculosis in infancy or early childhood. In fact, tuberculous infection is so common that it is safe to assume that any delicate child, and most delicate young people, whose physical depravity cannot be otherwise explained, are infected with tuberculosis.

In examining the chests of such children we may or may not detect any definite signs of the tuberculous process, and the uncertainty and variableness of the physical signs in children make a positive diagnosis of tuberculosis in them, except after repeated and careful explorations, quite uncertain. The child's weight for its height and age, the shape of its chest, its posture, its complexion, etc., should all be given due consideration. If a cough is present, this may be due to enlarged tonsils, but more probably to inflamed and enlarged bronchial glands, which are so frequently the site of the first lodgment in the body of the tubercle bacillus. Enlarged and indurated superficial glands, while possibly due to bad teeth, lues, or Hodgkin's disease, are, if persistent, probably due to tuberculous infection, and if so are easily treated.

Now it is easy to demonstrate the fact that thousands of children infected with tuberculosis never come under treatment in childhood. When they reach adult life, as most of them do, albeit more or less handicapped by the infection present in their early years, a certain large but undetermined percentage of them develop pulmonary tuberculosis. It is quite evident that the golden opportunity to treat and cure these cases has passed. Dr. Hess, the director of the Farmingdale Preventorium, believes that practically all persons with tuberculosis have been infected with the disease before two years of age, and that if babies could be removed from their tuberculous mothers immediately after birth, and kept away from them and all tubercular people for two years, such babies would not contract tuberculosis in after life. Of course, this all sounds rather startling. We all think that we have seen cases in which adults have contracted the disease after exposure to the infection. On the other hand, there is an immense amount of proof that the average adult is, generally speaking, immune against tubercular infection; and the belief is constantly growing that tuberculosis is only developed in the human body after an incubation period of years, and that so-called acute miliary tuberculosis, for example, is never a primary form of the disease, as we used to believe. While the Bang system of segregation has eradicated tuberculosis from herds of cattle, we cannot tell until the experiment has been tried on a somewhat extensive scale that it might not prove equally efficacious in human beings. Naturally, if Dr. Hess's contention is well founded, and he is, of course, only one of many clinical observers who hold the same view, our problem in the eradication of the great white plague is certainly simplified. The carrying out of the scheme in an effective way calls for an expenditure of resources almost beyond our imagination. Still, we shall never conquer this destroyer of our race until we fully understand the magnitude and scope of the problem before us; and this paper is written chiefly as a humble contribution to the problem of how best to descover and handle as many cases of tuberculosis as possible, and what steps we as physicians and philanthropists should take to hasten the consummation of the good work.

My own belief is that every child born into the world should be periodically weighed and measured, and its teeth, bones, special senses, etc., carefully examined. And generally speaking, the child should be submitted to the Wassermann or luetic test, as well as to the von Pirquet or subcutaneous tuberculin test. The feces, urine, blood and saliva should also be examined from time to time, as well as the child's rate of growth, consumption of food, etc. In short, the infant and young adult should be tested out just as an automobile or a ship is tested before it is pronounced perfectly sound. And whatever defects, if any, are noted should be rigidly inquired into in the human being as well as in the machine, and, if possible, rectified in their incipiency. We may not be able to add a cubit to our stature by taking thought, after we have reached adult life, but we can do almost anything to improve the physique, health, beauty and efficiency, both mental and bodily, of our children, by taking thought at the right time. And there is no question that as physicians we shall soon be called upon not alone to prevent disease, malformation, and improper development in growing children, but to give such advice and direction as will insure a better, stronger, and healthier race of men and women than the world has seen since the days of the ancient Greeks.

Just at this writing it would seem that the clinicians and research workers who are fighting tuberculosis are doing more than any other class of workers to improve the human race. We must not wait for the tubercular patient to come to us for treatment; we must seek him out and teach him that every sin against his body tends to put him in a condition where the tuberculous infection which he already harbors in his system will crop out and begin its deadly work. Every one should be warned to keep his or her weight at or near the normal. Obesity, while not so inimical to recovery from tuberculosis as emaciation, is by no means a favorable condition, the popular belief to the contrary notwithstanding. Hence children and adults should be regularly weighed and measured, and any excess or deficiency in bodily weight should be, so far as possible, rectified.

In the von Pirquet tuberculin test in children up

to three years of age, and in the subcutaneous test in all human beings over that age, we have a nearly absolute diagnostic test for the presence of active tuberculosis. These tests should be tried in every case that presents any suspicious symptoms whatever.

If the test is positive, tuberculin treatment should be begun at once. Tuberculin, moreover, if properly used, affords the only absolute means of diagnosis in incipient cases, and in such cases, in the hands of an expert, a cure can be usually guaranteed if the surroundings of the patient are reasonably favorable and if the patient and his friends will heartily co-operate with the physician in carrying out the details of the treatment.

The success of the Bang treatment in eradicating tuberculosis from a herd of cattle has already been adverted to in this paper. It is perhaps needless to remind you that the subcutaneous tuberculin test is absolute in cattle. It is not so generally known, however, that many young cattle recover spontaneously from tuberculosis. Efforts, however, to immunize them by attenuated cultures of human or bovine tubercle bacilli have not, so far, been successful, at least to any marked degree. Further experiments, however, carried out upon similar lines, are urgently needed. Prof. Theobald Smith informed the writer that he intended to institute such experiments in the Rockefeller experimental station at Princeton. He recommends that in the treatment of tuberculosis with tuberculin, reliance be not entirely placed upon O. T. (Koch's old tuberculin). This point is mentioned here to show how extremely careful one should be in using any form of tuberculin. Some operators prefer the O. T., others the T. R., and still others the B. E. A consideration of the merits of these and other preparations of tuberculin would take up too much of our space at this time. In point of fact, the choice of the best form of tuberculin rests largely with the operator, and the results depend chiefly upon his judgment and skill. A plowboy cannot, as a rule, successfully run a steam engine, nor a woodchopper play a church organ. It takes much technical skill as well as extensive reading and trained judgment to use tuberculin properly. Eminent practitioners and good clinicians have turned away from tuberculin treatment with sorrow and disappointment. They had set out to build their tower without counting the cost. It takes a man with the proper temperament, as well as the necessary skill and experience, to use tuberculin successfully.

Nor should any one expect a half-fed worker in an unwholesome trade, who is an excessive user of tobacco and spirits, to prosper under tuberculin treatment. Nothing must be left undone to place the patient in the most favorable position, mentally, morally, and physically during his whole treatment, if a favorable result is to be expected.

Klebs says tuberculin (properly used, of course) will do no one harm who is well fed. Lowenstein saw 20,000 single injections without a bad result or a single death. And Beck states that in Koch's Institute for Infectious Diseases at Berlin 2,508 cases received tuberculin treatment, and no inconvenience or bad results were observed.

Having then this practical diagnostic agent and this invaluable method of treatment, why do we delay, linger, and wait before putting it into use? Pottenger has used it twenty-five years, and told the writer only last week that he has not discontinued its use. Von Ruck, Longstreet Taylor, Solis-Cohen, and our own Doctors Gray, Twinch, Scheppach, and Banks have not lost their interest or enthusiasm in this method of treatment as their experience and knowledge have increased. Personally, I am free to say that I look upon Dr. Ellis Bonime, who has perfected and amplified the treatment of tuberculosis by tuberculin and by vaccines, as a genius, and a man whose name will be revered in the annals of medicine when his detractors have been forgotten.

The first three questions in the published synopsis of my paper have been measurably answered in the contex:

Tuberculin is unquestionably the best test for the early diagnosis of tuberculosis.

In the writer's opinion, it should always be used in cases of tuberculosis which are not so far advanced that tuberculin may be actually harmful, because the body cells are so completely exhausted that they cannot respond to the stimulus of the injected tuberculin and throw out the antibodies which finally overcome the infection from the tubercle bacilli already present in the body.

In a lecture before the Orange Mountain Medical Society, May 18, 1917, Prof. Richard Weil advised the use of tuberculin, saying that it immunizes the cells to the toxins of the tubercle bacillus, and although it does not and cannot produce absolute immunity against the disease, it places the patient in the most advantageous position to withstand the infection.

If, then, for the sake of argument, we admit that tuberculin, properly administered, is an invaluable aid in the war against tuberculosis, is there any prospect that it can be so generally employed as to reach even a small percentage of those infected with the disease?

There seems to be no efficient method of accomplishing this except by the general establishment of tuberculin dispensaries all over the country, in the proportion of one dispensary to every 30,000 inhabitants. Most encouraging reports are received from England and Germany regarding the good results of dispensaries that have been established in those countries. Simon, in his well-known work on "Infection and Immunity" (page 213), in speaking of the general treatment of tuberculosis by tuberculin, states that: "Treatment with old, followed by new tuberculin, was mostly used in advanced cases, and seems to have furnished the best results, as gaged by the disappearance of the bacilli in thirty-eight of sixty-nine cases; *i.e.*, in 55.07 per cent. Considering the advanced character of the lesions in these individuals, this is indeed quite remarkable. If we contrast these findings with the results of a purely expectant (*sc.* hygienic-dietetic) plan of treatment, where only 20 per cent. of the cases show loss of bacilli, no further argument in favor of the tuberculin treatment is required."

He goes on to state: "Of late, systematic efforts have been made to improve the hygienic condition of the tubercular poor and to give these also the benefit of the tuberculin treatment when living

in their own homes. . . . As a consequence, the outlook for these unfortunates has been materially improved. Friedrich thus records that of 700 cases of early tuberculosis that were treated in this manner the disease was arrested or the patients much improved in 51 per cent. of the cases. Similar results have been reported from other sources."

That over half of the cases of tuberculosis (taken, we will assume, by and large) should have been arrested or much improved by any method of treatment is a better showing, so far as the writer knows, than has ever been made by any sanatorium, where the patients have been properly followed up and their ultimate fate ascertained. And as all sanatoria select their cases with considerable care, rejecting in some instances, as Dr. Trudeau tells us in his delightful autobiography, five-sixths of all the applicants, their figures must be judged accordingly; and, inasmuch as they claim only one-third of arrests in all their cases, the advantage of using tuberculin seems indisputable, as Simon said in the passage just quoted.

The enormous amount of good which the sanatoria have accomplished in showing that tuberculosis is curable, as no one believed fifty years ago, we thankfully acknowledge. That, however, a large percentage of consumptives cannot possibly have the advantage of sanatorium treatment is but too obvious. The general plan of tuberculin dispensaries with good follow-up work, the systematic testing of practically all children for the detection of tuberculous infection, and the training of a large corps of tuberculin experts and good and efficient nurses for follow-up work, have at last brought within sight the conquest of the great white plague.

LESIONS OF THE POSTERIOR URETHRA: THEIR SYMPTOMATOLOGY, DIAGNOSIS, AND TREATMENT.

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THE lack of adequate recognition and employment of proper therapeutic measures in lesions of the posterior urethra is still surprisingly general. Individuals presenting symptoms that direct attention to the deep urethra, and in whom the objective findings confirm the cause of their trouble comprise a very appreciable number of the male patients seen by either the general practitioner or the man doing exclusively urological work. Oftentimes the duration, discomfort, and gravity of the symptoms bear no direct relation to the size and extent of the lesion found, and, in turn, relatively simple but well-directed efforts to relieve may bring about marked alleviation of symptoms and unquestioned cures in many instances. As a class, these men form a group of the most appreciative patients when relief is obtained, for they not infrequently have borne with physical discomfort and mental unrest for long periods of time. The routine use of the microscope, the cysto-urethroscope, and the endoscope has done much to bring the study and therapy of these conditions under a clearer light, and to establish them on a plane of definite entities where they can be handled in a logical, approved, and scientific manner.

Perhaps the most common pathological condition met with in this group is a catarrhal inflammation of the posterior urethra. This very often follows an acute anterior urethritis caused by the diplococcus of Neisser, by any of the large group of staphylococci or pyogenic organisms, or by other extraneous bacteria which may be introduced or find their way into the urethra, and through trauma, lowered resistance, and their large numbers grow there. Symptomatically a slight burning about the neck of the bladder with a feeling of soreness and tenderness, though not acute, associated with more or less urinary frequency, ushers in the progress of the infection as it passes posteriorly beyond the anterior layer of the triangular ligament. Objectively the urine becomes generally cloudy in the three glasses voided, where previously when the anterior urethra only was involved the first glass specimen was cloudy and the second and third glasses relatively clear. Microscopically pus cells are found in large numbers in the centrifuged specimen from the third glass, and early in the infection the offending organisms may be demonstrated in the stained smear from the third glass, though they frequently cannot be found after the infection has persisted for some time.

In these cases irrigations with the silver salts have universally proved the most beneficial. A ten per cent. solution of silver nitrate, of which 6 to 10 drops are added to a quart of warm sterile water, forms a most suitable medium for irrigation. In the absence of a urethral discharge this may be allowed to flow back under pressure by gravity past the two sphincters into the bladder and then voided by the patient, in this manner the bladder, posterior, and anterior urethra are thoroughly washed. Dakin's solution 1:1000 has not been found by the writer to possess any advantage over silver nitrate, and, in fact, it seems less efficient in rendering the urethra germ free. After irrigation the instillation of a half ounce of 10 per cent. argyrol by means of a bulb syringe into the posterior urethra and bladder, this solution to be retained by the patient for 1 or 2 hours, if possible, is an excellent proceedure.

With every posterior urethritis there is always a certain amount of inflammation in and about the prostatic ducts, of which there are many opening along the prostatic urethra. According to Lowsley[1], who has studied many autopsy specimens in serial sections, these ducts number 50 or 60 and are considerably more numerous than has been generally supposed. The resulting inflammation of the prostate gland itself from this infection is a variable matter. With the clearing up of the urinary infection, as noted in the three glass specimens with microscopic studies from the third glass, the degree of prostatic involvement may be accurately determined. When the prostate becomes involved there may be at first no definite symptoms if the infection is of low grade. After a time, a feeling of discomfort may be noted characterized by a slight, dull ache about the neck of the bladder, with intermittant smarting and burning, sometimes associated with urination, but sometimes not so described. Occasionally there are periods of increased frequency of urination, with a dull ache localized by the patient between the rectum and urethra. In the more

advanced cases a moderate backache, frequently termed by the individual a "lumbago," with occasional pains down the legs, is noted.

Per rectum the palpation of the prostate reveals a certain bogginess and lack of elasticity with more or less diffuse firmness which is characteristic of an inflammatory process. The gland is thus rather generally indurated and about it are adhesions which render it more fixed than normal, and attempts to determine its mobility elicit more discomfort than is normally the case. The prostatic secretion in these cases, when examined microscopically, shows an increase in the number of pus cells present; normally about 2 to 3 per cent. as estimated in relation to the number of lecithin bodies found, in inflammatory conditions they may frequently reach as high as 50 to 60 per cent., with no appreciable change in the number or character of the other constituents of the prostatic secretion.

In the therapy of chronic prostatitis massage of the gland per rectum has been found to yield highly satisfactory results in the true inflammatory and also in the congestive conditions. The massage should not be violent and should be done in a circular or rotary manner over several selected areas on each side, rather than by a stroking or rubbing movement. Following this, a deep urethral irrigation of a weak solution of nitrate of silver and an instillation of argyrol are of benefit. In the more resistant cases with no organisms present, periodic dilatation of the urethra with the Kollman anterior-posterior dilator is a decided aid in opening the prostatic ducts. In certain sensitive conditions the deposition of strong solutions of argyrol into the prostatic urethra by means of the deep urethral instillator is of unquestioned benefit.

Of more or less coincident occurrence, though of less frequent clinical recognition in infections of the posterior urethra and prostate, are the various infections of the seminal vesicles. The openings of the ejaculatory ducts, situated as they are on either side of the verumontanum within the posterior urethra, are frequently with their lymphatics the path of entry for a persistent inflammation in the vesicles themselves. The symptoms of vesicular infection are varied. In one group there is slight urinary frequency, occasional smarting and burning on voiding with an uncomfortable feeling between the rectum and bladder. These cases usually have some prostatitis and which symptoms are essentially vesicular in distinction to those that are prostatic it is difficult to say. Another group comprises those with no urinary symptoms but with joint involvement, indicating that the vesicular condition is simply a focus of toxemia or bacteriemia which keeps up the arthritis. A third group embraces those with a bacilluria or a pyuria or both as presenting symptoms, occasionally with fever and rarely with recurring epididymitis, but with practically no other urinary or generalized symptoms. The diagnosis of seminal vesiculitis is not always easy and it may be said to be arrived at largely through the elimination of other possible foci along the urogenital tract. After massage of the prostate and thorough irrigation of the posterior urethra, the vesicles can be examined per rectum. In certain inflammatory conditions they are found to be enlarged and definitely indurated, making their consistency more firm and less resilient than normal. Also the amount of perivesicular adhesions may be increased as determined by the thickening about them and too by their "fixedness" to the posterior bladder wall and upper border of the prostate. The degree of adhesions also alters their position somewhat and frequently they are drawn outward toward the pelvic walls. In some cases, however, there are practically no abnormalities noted in the palpation of the vesicles per rectum, particularly in the older cases in which several years have elapsed since their initial infection. The vesicular secretion may be obtained after urethral irrigation by gently stripping the vesicles by the finger from their tip inward and downward toward the ejaculatory ducts, the secretion being obtained as it emerges from the meatus for microscopic study, care being taken not to press the prostate during this maneuver. In cases with pyuria or bacilluria as an objective finding, a possible pyelitis should always be ruled out by ureteral catheterization and microscopic studies of the urine from the separate kidneys.

In the care of inflammatory conditions of the vesicles a course of vesicular emptying through massage per rectum and deep urethral irrigation followed by instillations of argyrol should always be advised before anything more radical is advocated. When the vesicles have been definitely established as foci of infection their injection through the ejaculatory ducts with weak solutions of argyrol (3 to 5 per cent.) or silver nitrate (0.5 per cent.) by means of Geraghty's utricle syringe may be tried. In the writer's hands, however, this method has seemed to possess no additional merit over the deep urethral instillations of the solutions. Many cases of vesicular infection will be cleared up by the above means but the more resistant ones show no improvement or at the most very little following such treatment. For these, vaccines and surgical intervention are the means at hand. Seminal vesiculotomy and partial seminal vesiculectomy, with incision and drainage of the ampulla of the vas on each side, holds out a hope of very definite value in certain suitable cases. The most benefit from this procedure has been obtained in individuals with seminal vesiculitis associated with early joint involvement (beginning ankylosis),[2] and, too, those with a bacilluria or pyuria[3] of vesicular origin.

Another group of cases the study and therapy of which is assuming in recent years a more rational basis is the one of inflammatory lesions of the verumontanum. Through the use of the modern cysto-urethroscope and endoscope it is now possible to recognize and treat this large group of conditions with great efficacy. The common lesions of the verumontanum are of two types: (*a*) the infectious inflammatory, and (*b*) the congestive. The former follows recent or old infections of the posterior urethra, at least these individuals give a history of a specific urethritis. Symptomatically these men have usually sexual disturbances, *i.e.*, nocturnal emissions more frequently than normal with at times a diminution of sexual powers. In addition, there may be present symptoms referrable to the general irritative condition of the prostatic urethra such as a feeling of pressure or fullness about the bladder neck frequently described as a "tightness" about the deep urethra. Sometimes

there is present a sensation of pain in the perineum which is occasionally referred to different sites along the penile urethra. The congestive conditions occurring in individuals who give no history of a previous urethral infection but who often give a history of sexual excesses and abuses are not much different symptomatically from the true infectious type. These occur as a rule in men of early middle life, and in addition to the symptoms of decreased sexual power (practically never emissions) and occasional pain following coitus, have also some slight urinary frequency. This last symptom, however, may be due to prostatic changes such as a "median bar" formation and in men at this time of life this condition must be ruled out by careful cystoscopic study. By means of the endoscope the lesions of the verumontanum can be studied with great accuracy and the resulting condition of the infection or congestion as evidenced by hyperemia, irregularities, and hypertrophy with also the degree of involvement about the mouth of the utricle and openings of the ejaculatory ducts may be treated most advantageously. Occasionally the dilatation of the ejaculatory ducts with suitable small probes may relieve the most annoying sexual symptoms which have persisted for years. For most hyperemic, infectious, and congestive conditions the application of a 10 per cent solution of silver nitrate through the open-air endoscope direct to the verumontanum is the most valuable remedy. The injection of the utricle with a weak solution of silver nitrate (0.5 per cent.) and at times the deep urethral instillation of the same by means of a syringe of the Keyes-Ultzmann type is also of great value. In the more irritative conditions periodic dilatation of the posterior urethra and the deposition of a suitable ointment[4] (lanolin and phenol 2 per cent) is of real benefit.

Under the term "Urethritis chronica cystica," Buerger[5] some years ago described a not uncommon lesion of the posterior urethra in the nature of single or multiple small cysts. These he believes are of two varieties, viz., those following an inflammatory process (Neisser infection), and those which are simple mucous retention cysts. The symptoms of this condition may be nil, but when present are usually a slight discharge, increased urinary frequency, and rarely pain in the perineum or along the urethra. Through the endoscope or cystourethroscope these lesions may be quickly and readily recognized by their shape, contour, translucency, and mobility. Their location may be practically anywhere between the two sphincters and frequently along the sphincteric margin of the bladder, and at times the colliculus may be involved.

Therapeutically the incision or excision of the cyst wall by means of the special endoscopic instruments or the application of the high-frequency current is usually sufficient to cause their complete destruction.

Somewhat akin symptomatically to the foregoing lesions are the benign polyps of the posterior urethra which have been described in some length recently by Randall.[6] These are essentially of the same nature as certain polyps occurring on the mucous surfaces of other portions of the body, and so far as we know are absolutely benign. A chronic discharge, some urinary frequency, occasional pains, local or referred, with not infrequently abnormal seminal emissions, but only rarely bleeding, comprise the usual symptoms. Enodscopically they are seen as typical small, rounded, pedunculated elevations covered with mucous membrane.

The most effectual and satisfactory method of treatment of these growths is the high frequency current, one application of which is often sufficient to cause the complete disappearance of a single polyp.

Of only occasional occurrence among the lesions of the posterior urethra, yet of great importance in making an early diagnosis are the congenital malformations. Examples of these reported recently by Knox and Spunt[7] and Lowsley[8] enable us to appreciate the great impotance of their early clinical recognition. These are on the order of a "valve" or membrane extending from the verumontanum to the sides of the urethra and so from birth materially interfering with urination. Individuals with such a malformation rarely live beyond the second decade because of the secondary renal impairment dependent upon the urinary obstruction with back pressure. In the case of children with great frequency, dribbling, and a palpable bladder above the symphysis, one should always consider the possibility of urinary obstruction from a congenital fold in the posterior urethra. Endoscopically the diagnosis in children is impossible, but in young adults it may be accomplished. One case of this sort (Irvin) was seen by the writer while on the wards of the Brady Urological Institute in the service of Dr. Hugh H. Young, and the "valve" removed by the familiar punch operation.[9] As a usual thing in children a suprapubic operation is advisable with thorough exploration of the posterior urethra and the removal of any constricting bands followed by continued vesical drainage (suprapubically) to try and revive the renal parenchyma impaired by long-continued back pressure.

BIBLIOGRAPHY.

1. Lowsley: The Prostate Gland in Old Age. *Annals of Surgery*, Vol. LX., p. 717, December, 1914.
2. Fuller: The Cure Through Genito-urinary Surgery of Arthritis Deformans and Allied Varieties of Chronic Rheumatism. Trans. Amer. Asso. G. U. Surgeons, Vol. VIII. 1913.
3. Geraghty: The Role of the Seminal Vesicles in Persistent Non-gonorrheal Infections of the Posterior Urethra and Prostate. *Jour. A. M.A.*, Vol. LXVIII., p. 757. March 10, 1917.
4. Young: A New Instrument for the Deposition of Ointments Into the Urethra or Bladder. Trans. Amer. Asso. G. U. Surgeons, Vol. II. June, 1907.
5. Buerger: Urethrocystitis and Urethritis chronica cystica. *Internationales Archiv für Harnorgane*, Folia Urologica, Bd. 5, p. 21. 1910.
6. Randall: A Study of the Benign Polyps of the Posterior Urethra. *Surg. Gyn. and Obstet.*, Vol. XVII., p. 548. Nov., 1913. Clinical Manifestations of Polyps of the Male Urethra. *Annals of Sur.*, Vol. LX., p. 325. Sept., 1914.
7. Knox and Sprunt: Congenital Obstruction of the Posterior Urethra: Report of a Case in a Boy Aged Five years. *Amer. Jour. Dis. of Children*, Vol. IV., p. 137. Sept., 1912.
8. Lowsley: Congenital Malformation of the Posterior Urethra. *Annals of Surg.*, Vol. LX., p. 733. December, 1914.
9. Young: A New Procedure (Punch Operation) for Small Prostatic Bars and Contracture of the Prostitic Orifice. *Jour. A. M. A.*, Vol. LX., p. 253. Jan. 25, 1913.

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THE SPLENIC REFLEXES OF ABRAMS IN THE DIAGNOSIS AND TREATMENT OF SYPHILIS.

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THE heart and lung reflexes of Abrams are familiar to the average clinician but little is known of the splenic reflexes despite their importance in diagnosis and treatment.

The Spleen.—This enigmatical viscus of the physiologist contracts and expands synchronously with the digestive periods. In its contractions it loses 18 per cent. of its volume. The volume changes are akin to the peristalsis of the gastrointestinal tract and are caused by rhythmic contractions of the smooth muscle tissue in the capsule and trabeculæ. It is the popular belief that the spleen is influenced by the nervous system and Botkin asserts that depressing emotions increase and exhilarating ideas diminish its volume.

Tumefaction of the spleen occurs in practically all acute infectious diseases.

Splenic Reflexes.—The visceromotor centers in the cord may be stimulated so that one may at random either contract or dilate the spleen. These reflexes* are known respectively as the splenic reflex of contraction and dilatation. In the norm, the reflexes are of short duration (not in excess of 2 minutes), and, in their objective demonstration by radiodiagnosis and percussion, one must expedite the latter maneuver. It has been determined empirically that the elicitation of the reflex of contraction is effected by concussion of the 2nd lumbar spine and the counter splenic reflex of dilatation by concussion of the 11th dorsal spine. An ordinary percussion hammer and pleximeter suffice to evoke the reflexes. The pleximeter is placed on either spinous process and then struck a series of moderately vigorous blows with the plexor.

Reflexodiagnosis and Reflexotherapy.—The reflex of contraction is employed in the treatment of splenomegaly.

In latent malaria, one may precipitate a typical paroxysm by discharging the splenic reflex of contraction (concussion of the 2nd lumbar spine). It is assumed that the paroxysm is provoked by the mechanical extrusion into the circulation of the plasmodia which have lodged in the organ.

In suspected malaria, one may find plasmodia in the blood after evoking the reflex of contraction even though absent before this maneuver is executed. Hematological investigations by the writer show the following: (1) Average increase of erythrocytes after concussion of the 11th dorsal spine (which increases the splenic volume), 300.000 and an average increase of hemoglobin of 5 per cent.; (2) average leucocyte increase after concussion of 2nd lumbar spine (decreases splenic volume), 2.800; (3) average increase of red cells after alternate concussion of 2nd lumbar and 11th dorsal spines, 650.000 with an average hemoglobin increase of 10 per cent.

Diagnosis and Treatment of Syphilis.—The frequency with which the writer encounters syphilis by aid of the electronic reactions of Abrams,* emphasizes the dictum of Fournier—general pathology should be made a mere annex to syphilography.

In congenital syphilis where the reaction may be absent in the blood, it may be invariably elicited from the same fluid after evoking the splenic reflex of contraction. It has occurred to the writer that evocation of the reflex in question might be of value in the serological diagnosis of syphilis. In his earlier investigations this was apparently true relative to the Wassermann test but subsequent tests with a larger number of patients did not justify this conclusion.

The Noguchi reaction, however, was modified as shown in the following tabulation, which practically summarizes many investigations:

	Noguchi reaction from blood before elicitation of the splenic reflex of contraction.	Noguchi reaction from blood after elicitation of the splenic reflex of contraction.
Case 1 =	—	+
Case 2 =	+	++
Case 3 =	++	+++
Case 4 =	+	+++
Case 5 =	+	+++
Case 6 =	—	++
Case 7 =	+	+
Case 8 =	+	+++
Case 9 =	—	—
Case 10 =	+	+++

After the blood was removed with the trocar in the vein, it was occluded by the finger and the 2nd lumbar spine was concussed for one minute, after which a second specimen of blood was allowed to flow.

The recognized uncertainty of the Wassermann is no doubt due to the fact that it is not dependent on syphilitic antibodies in the blood, but upon admission to the latter of abnormal products from morbid tissues.

After careful investigations, the writer has learned to recognize the value of eliciting the splenic reflex of contraction in the treatment of malaria in connection with its specific drug.

Laveran avers that the plasmodia find protection in the spleen from destruction in the circulation. In every case of suspected malaria, if elicitation of the splenic reflex of contraction does not cause a malarial paroxysm or some atypical evidence of the same, experience has taught me to exclude malaria. Furthermore, I have never permanently cured a case of malaria until the splenic reflex of contraction was employed in conjunction with quinine. We have shown that the splenic reflex of contraction causes a leucocytosis. Experimentally, it has been demonstrated that intravenous injection of splenic extract evokes a like condition. Wells has shown that the splenic pulp contains the greatest number of leucocytes. This concentration is evidently the result of the fixation in the spleen of morbid products which exert a positive chemotactic influence toward the leucocytes. Evocation of the splenic reflex of contraction is a valuable treatment for all infections.

Conclusions.—1. The usual depositories for the

*More fully described in Abrams' "Spondylotherapy," fifth edition, pages 351 *et seq.* and in the "Reference Handbook of the Medical Sciences," Vol. VII, third edition.

*Abrams' New Concepts in Diagnosis and Treatment, 1916, and *International Clinics*, Vol. 1, 27th series.

luetic virus are the spleen and liver, notably the former.

2. When the splenic and hepatic reflexes of contraction are evoked by the same maneuver (concussion of the 2nd lumbar spine), there is an immediate extrusion of the virus into the circulation.

3. Emotions, digestive disturbances, and other factors, by precipitating volume changes in the spleen, eliminate the virus of syphilis, causing an exacerbation of symptoms present or producing them if absent.

4. In parasyphilitic diseases, so called, the parasites are found in the "dead corners" of the organism and resist drug action. Similarly, virus lodged in the spleen is equally resistant. Elicitation of the splenic reflex is, therefore, a valuable adjunct in syphilotherapy.

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THE NECESSITY OF FURTHER ADMINISTRATIVE CONTROL OF SCALP DISEASES IN CHILDREN AND ADULTS.

WITH OBSERVATIONS ON THE RETAIL HAT TRADE.

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The object of this paper is to draw together certain data on the incidence and importance of skin diseases for the purpose of urging greater effort in the administrative control of such infections. As regards the incidence of skin infections among the general population, few positive data are available. For the reason that most of such diseases are not reportable, their incidence can be only estimated from the reliable statistics in the army and navy and from those obtained in the physical examination of schoolchildren. As regards the importance of further administrative control of skin infections, we believe that an inquiry into the causes of loss of time of pupils from school and damage to the personnel of the army or navy will demonstrate the value of increased emphasis on those measures calculated to prevent the dissemination of such maladies.

The large number of infections included under skin diseases has made it desirable to confine this discussion primarily to diseases of the face and scalp, particularly in view of their more frequent incidence and of the greater promise of success to the measures proposed for their control.

Pediculosis Capitis.—In the report of the Director of Child Hygiene of the Department of Health, New York City (Dec. 31, 1910), out of a total of 266,426 examinations, 153,797 cases of pediculosis were found, comprising nearly 59 per cent. of the children examined. In the report of the Head School Nurse (Philadelphia, 1910) out of 13,659 physical defects observed, 4,556 were cases of pediculosis comprising over 33 per cent. of the incidence of disease observed. As a cause of loss of school time, out of a total of 6,960 days lost for all causes in one school, 1,830 days were lost through pediculosis, whereas only 34 days were lost on account of diphtheria and contact with diphtheria, 60 on account of scarlet fever and contact with scarlet fever, 132 on account of measles, 380 on account of varicella, 85 on account of pertussus, or a total of 691 days lost on account of the epidemic diseases and contact with them as against 1,830 lost from pediculosis alone! If we add to the time lost from pediculosis that lost from the other scalp diseases, a really strong case is presented for the greater administrative control of such infections.

That pediculosis is not confined to school children but is pretty well distributed in the adult population is quite well known. It is one of the most frequent conditions observed in the admitting rooms of all hospitals. It is one of the most prevalent conditions met with in the physical examinations of recruits for the army and navy. Among less than 10,000 graduates of high school examined prior to entrance to college, during a period of 5½ years, 2,548 were infected with head lice. The incidence of this disease (or of any other) among high-school pupils generally in New York City is not known because the students are not given the benefit of periodical physical examinations. The experience of physical instructors in the high schools indicates the really enormous importance of the introduction here of a routine of physical examinations.

The well-known etiology of typhus fever (Brill's disease), which is spread by head lice (Anderson & Goldberger) as well as by body lice, and the almost ubiquitous incidence of this infection indicates the desirability of a more general concern for the suppression of lice. It is generally and probably correctly believed that many cases of Brill's disease pass unrecognized, receiving an incorrect diagnosis, and that the incidence of this malady is much greater than supposed. The disease, furthermore, is on the increase, and with the return of our troops at the close of the war, it is not unreasonable to suppose that the more virulent type (European typhus fever) will be introduced into our country.

The Syphilides.—The incidence of syphilis in the general population is variously estimated by the different authors from between 3 and 30 per cent. The opinions of the leading syphilographers in this country establishes 10 per cent. as the incidence of syphilis in the United States. Although the vast majority of syphilitics acquire the disease through sexual intercourse, a considerable number of infections are innocently acquired, as demonstrated by the large number of cases of extragenital chancres reported in the literature.

D. W. Montgomery (*Jour. Cut. Dis.*, 1905, p. 342) gives a table of the percentage of the occurrence of extragenital chancres to all chancres as observed by various authors both here and abroad. The table follows:

	Per Cent. of extragenital chancre.
Montgomery (California)	5.5
Krefting (Christiania)	15.6
Fournier (Paris)	9.0
Broich (Bonn)	9.0
Van Walsen (Amsterdam)	8.5
Mracek (Vienna)	7.5
Bulkley (New York)	5.5
Finger (Vienna)	1.3

In Russia, Metchnikoff has stated, from 75 to 80 per cent. of all chancres are extragenital, due, not

to perversion of sex, but to insanitary and unhygienic practices generally.

The course of extragenital chancres is short and usually mild, and it is fair to assume that the majority of patients with this malady never consult a physician at all. Indeed, Pellizzari states that the physician sees only 1/10 of such cases. Consequently when secondary syphilis breaks out, the physician often erroneously ascribes the cause to sexual intercourse. Montgomery, summarizing his experience and that of Bulkley, states that at least 10 per cent. of all syphilis in this country is extragenitally acquired.

In the United States, therefore, if we accept the foregoing figures, 10,000,000 individuals are infected with syphilis, one million of whom became infected innocently. New York City has a population of 600,000 syphilitics, 60,000 of whom acquired the disease out of venery. If these facts were emphasized in our campaigns of public-health education, the lay disapproval attaching to the proper administrative control of syphilis would vanish.

Since the later stages of syphilis almost invariably result in skin lesions (the syphilides) the previous discussion properly falls within the realm of this paper. The pustular syphilides, while they attack any portion of the integument, are most marked on the scalp, forehead and face. "Acne syphilitica" and "impetigo syphilitica" represent forms of unusual importance in this connection. The *Treponema pallidum* is present in the discharges from the pustules and the dissemination of such matter from one person to another must occur in numerous ways. We will refer later to a hitherto entirely neglected mode of transference of scalp diseases in the retail hat industry, but before advancing to the other details of this paper it is well to remark that of the vast majority of syphilitics presenting skin lesions, many present lesions of the forehead and scalp. We submit that the trying on of hats by such individuals is a mode of transmission of syphilis which is entitled to administrative control not only because of the seriousness of the malady but because of its widespread prevalence.

Miscellaneous Diseases.—In order not to prolong this paper unduly we will group together a few more scalp diseases and discuss them briefly. *Acne* is an exceedingly common malady, the discharges from the pustules of which contain infective organisms (*Staphylococcus albus*, streptococci and possibly Gilchrist's bacillus of acne (?)) which are frequently transmitted to individuals fitting hats. While this disease is considered to be constitutional in origin, the facts of its widespread occurrence and location on the face, argue for the suppression of the modes of dissemination of its infectious discharges.

Impetigo Contagiosa.—In New York City out of 266,426 children examined, 9,052 showed impetigo contagiosa. In Philadelphia, out of 6,960 days lost from all causes (in one school) 432 were lost on account of this disease.

Ringworm represents another common affliction. Out of 266,426 children examined (New York report) 4,805 children were infected. In Philadelphia, in one school 448 days out of a total of 6,960 were lost on account of this disease.

Leprosy is a disease which is considered to be on the increase in this country. S. Pollitzer (*Jour. Cut. Dis.*, 1916, Vol. 34, p. 55) claims that there are between 500 and 1000 unrecognized cases in the United States, and that the number is gradually increasing. Cases are being admitted to the great ports constantly. He states, "The state of New York virtually ignores the disease, with the result that according to the best authorities there are probably 150 lepers in the city of New York and its environs." "The free admixture of this element of contagium among our people constitutes a menace which at any time, if we read history aright, may become imminent." Since this disease breaks out on the skin, and since it can probably be contracted through the introduction of the leprosy bacillus into fissures of the skin, its consideration properly belongs here.

Erysipelas is due to the introduction into the skin of streptococci. The infective organism, it is well known, after passage through the human being, is more infective to a second person. This disease also frequently attacks the face and forehead.

Numerous other infections, some entirely confined to the scalp, forehead, and face, and others occasionally present there, might be considered. Enough have been mentioned, however, to indicate the high degree of prevalence of such infections among the general population.

Gatewood ("Naval Hygiene," 1909) in his illuminating report on vital statistics in the navy makes the following statements: "Diseases of the cutaneous apparatus, non-parasitic and non-venereal, caused as a class about 5 per cent. of the total damage from diseased, greatly exceeding the damage from diseases of the visual apparatus and nearly equaling that from diseases of the respiratory apparatus. They were responsible for loss equal to 45 per cent. of that caused by all diseases of the nervous system, to 62 per cent. of that from all diseases of the digestive apparatus, and to more than 81 per cent. from diseases of the circulatory apparatus. They had an importance equal to 67 per cent. of that of tuberculosis and caused damage considerably greater than typhoid fever and pneumonia together." "The epidemic diseases have claimed the attention of mankind and great advances have been made in their prophylaxis but the naval record emphasizes the importance in the service of the study of diseases of the skin." "For it is the *constantly acting and often small adverse influences* that cause the greatest loss, rather than the striking and crippling effects resulting from the occasional visits of epidemic diseases." If we add to the above estimates of Gatewood, the loss and damage due to skin diseases, parasitic and venereal in origin, a really strong case is made out in favor of the greater administrative control of these maladies.

Transmissibility of Infection Through Hats.—Because of the obvious connection of the retail hat industry with the dissemination of pediculi and of all types of infectious discharges, and in the light of the prevalence of scalp infections and their importance to the health and vitality of the people, a study of infections traceable to this source was conducted.

During the height of the busy season a great many hat stores were inspected and subsequently

numerous retail hat salesmen were interviewed. While no observations could be made in the prevalence of pediculosis capitis under the conditions of the inspection, nevertheless, in the community where these inspections were made, that disease is known to be common. By actual count, over 2 per cent. of the men trying on hats had noticeable eruptions on the face or forehead, although, of course, the exact nature of the eruptions could not be ascertained.

Results of an inquiry among the hat salesmen as to the presence of lice in their own merchandise and in hats discarded by patrons, was not very satisfactory, although a number of the more intelligent salesmen admitted that they had observed such conditions. It was pretty generally confessed by all the men interrogated that no prospective hat purchaser would be denied the privilege of trying on hats, even though he exhibited noticeable discharges on the forehead. Furthermore, although the sweatbands of the hats frequently become soiled they are rarely changed, unless in very bad condition. Few hat purchasers try on less than four hats during the process of fitting, while the majority try on even more. A large proportion of the new hats, therefore, must become infected with the discharges which accompany numerous forms of scalp and skin diseases.

In the better class stores a head conformator is used so as to shape the hat properly on a block. This head conformator is used on all customers and must of necessity become contaminated. This has already been recognized by the hat trade, and accordingly in the better class stores small paper scull caps have been provided for the protection of the head. It was found that these skull caps do not interfere with the fit of the hat and for this reason the high-class establishments have provided their customers with skull caps to be used while fitting on hats in addition to their use with the conformator. The skull cap is made of paper, and is consequently so cheap that it can always be discarded after individual use.

Unfortunately, this practice is at present confined to high-class establishments, although the need of it in the poorer class of store is notoriously much more urgent.

When the common drinking cup was abolished it took years to get the public used to the desirability of individual drinking cups. One of the most important results of the abolishing of the common drinking cup has been the educating of the public to the mode of transfer of diseases through saliva. May not a provision requiring the general application of paper skull caps while fitting hats have a similar educational advantage? Is it not proper to obtain for the poor people by law what is gratuitously provided for the better class of people in the community? We believe that the prevalence and importance of scalp and face diseases makes imperative the promulgation of an ordinance requiring the providing of paper skull caps and their use by the people. The trifling cost of the article (it being less than 0.5 per cent. of the average cost of the hat) would amount to practically nothing compared with the benefits derived. The salutary and educational results of such an ordinance should be sufficient reason for its enactment.

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THE TREATMENT OF LOBAR PNEUMONIA.

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With the approach of winter, it is advisable that we take an inventory of the agents in our remedial armamentarium for combating lobar pneumonia. In taking stock of such agents, we find that we have saveral very useful means of treating this most fatal of the acute infectious diseases of temperate climates. In the sense that quinine is specific in malaria, or thyroid extract in myxedema, there is yet no specific remedy in the treatment of croupous pneumonia. However, the profession is making progress in the search for such a specific.

In prescribing any form of treatment, it is absolutely necessary to keep in mind the fact that this is an acute infectious disease, caused usually by the pneumococcus, whose chief local manifestation is a consolidation of more or less pulmonic tissue, and which is accompanied by pyrexia and toxemia, the latter of which has a specially harmful action on the cardiac muscle. For convenience, the treatment may be considered under several subdivisions, as follows:

1. Prophylactic.—All measures which keep individual resistance at a high level will help to prevent pneumonia. Good food, plenty of sleep, an abundance of fresh air, proper clothing, a cool sponge bath every morning, are excellent prophylactic measures. The very young, the very old, and anyone with impaired resistance, especially those having respiratory or cardiac lesions, should not be allowed to visit patients having pneumonia. Nurses, or other attendants upon pneumonia cases, should have everything mentioned in the second sentence of this paragraph. The sputum of a patient should be expectorated into a sputum-cup or other receptacle containing 1-20 carbolated water; it is advisable to empty such a cuspidor several times daily and to burn the sputum.

2. Hygienic.—The sickroom should be light and airy, and should contain only the most necessary articles of furniture. The temperature should be that of the outside air. The patient should not be burdened with excessive covering and should be protected from draughts by screens. The patient should have complete mental and physical rest, as well as expert nursing. The diet should consist of easily-digested, easily-assimilated, non-fermentative foods of high caloric value. Small amounts of nourishment should be given every two or three hours. The patient should be urged to drink freely of water. And he or she should have *fresh air in abundance.*

3. Symptomatic.—Hot drinks and hot water bottles will lessen the discomfort of the initial chill. The fever does not usually call for treatment. If the temperature is above 104° F., a cool sponge bath should be given. If there is any serious cardiac disturbance accompanying such fever, the warm, instead of the cold, sponge bath should be given. Tub baths have no place in the treatment of pneumonia.

The pleurisy, which almost always accompanies this disease, is best relieved by strapping the affected side, from the sternum to the vertebral column and at right angles to the sternum, with adhesive

plaster. If this does not relieve the pleuritic pain, heroin gr. 1/12 or codein gr. ¼ to ½ should be given. It is true that mustard plasters tend to lessen this pain, but "the notion that the course of an acute infective inflammation in the alveoli can be modified by doing something to the skin of the chest is pathologically untrue and physiologically impossible."[1]

The toxemia is best overcome by an abundance of fresh air and water. Water, by mouth, by the rectal drip, by hypodermoclysis, or injected directly into a vein, should be given in a quantity not less than three pints daily. For severe toxemia, Fussell[2] recommends, in addition, large doses of alcohol. An ice-cap to the head tends to lessen headache and delirium, and to promote sleep.

The lesser degree of delirium may usually be overcome by bromides in gr. xx doses q. 3 h. The severe types call for morphine in ¼ gr. doses.

Abdominal distention is best relieved by eserine sulphate or pituitrin hypodermically, terpentine stupes, and asafetida enema.

A frequent, painful cough may be relieved by either heroin gr. 1/12, or codeine ¼.

Since it is the air sacs and not the bronchi which are affected, expectorants are unnecessary. In fact, "the use of expectorants in pneumonia is, in the great majority of cases, entirely useless and often harmful."[3] However, ammonium chloride, in 5 or 10-grain doses, is efficacious in relieving a persistent bronchitis during the stage of resolution.

Drug habitués should not be deprived of their drug during an attack of pneumonia.

Cardiac Symptoms.—The pneumonia poisons produce a very harmful effect on the heart muscle. As a result, the condition of the heart usually necessitates some form of stimulation. Valvular pathological conditions which indicate the need of digitalis should have this drug,—even though the effect of digitalis, in the presence of fever, and upon the cardiac muscle fibers poisoned by the pneumonia toxins, is very feeble. In such patients, morphine in ¼ gr. doses has a beneficial action upon the heart.

When the pulse is fast and feeble, when the quality of the first sound is poor, or when the pulmonic second sound is accentuated, cardiac stimulation is needed. When the pulse is arrhythmic in any form and when the blood pressure, expressed in mm. of mercury, is less than the pulse rate, expressed in the number of beats per minute (Gibson's rule), the cardiac condition is very serious. Caffeine sodium benzoate is a very excellent stimulant. The compound spirit of ether and the aromatic spirit of ammonia are excellent rapidly diffusible stimulants. Camphor in oil is slower, but quite powerful. Strophanthin, given intravenously, is probably the most powerful stimulant of heart muscle known to man, but this agent should not be given following the administration of digitalis. Atrophine is a valuable agent in collapse. Only when the heart is laboring against increased peripheral resistance occasioned by the contraction of the arterioles, or when the blood pressure in an arteriosclerotic patient is ascending to unsafe levels, should nitroglycerin be given.

In empyemia, the pus should be evacuated.

4. Immunotherapeutic.—Cole and Dochez[4] have found that pneumococci are of four distince types (I., II., III., IV.), and that, so far as specific therapy is concerned, pneumonia is caused by four different organisms; that Types I. and II. are the most prevalent, and that each of these types yields a protective antipneumococcus serum, that of Type I. being much more potent. These two scientists found it impossible to treat pneumonia caused by either Type III. or IV., because in one type the organisms are of distinct varieties and the other type does not yield an immune serum. But there is much consolation in the fact that infection by either Type III. or IV. is relatively slight and rarely fatal. In all cases studied by Cole and Dochez, "the serum had an ultimate favorable effect in lowering the temperature and shortening the course of the disease." In all cases, one injection was sufficient to render the blood sterile.

The particular type of causative organism is determined by the agglutination test or Blake's precipitin test[5] on a culture obtained either from the blood, sputum coughed from the lung, or directly from the lung by means of a needle inserted into it. If the causative organism belongs to either Type I. or II., the treatment, with the appropriate serum in doses of 50 to 100 c.c. diluted one-half with normal saline solution, injected into a suitable vein, is begun immediately. The condition of the patient is used as a guide to further treatment. The total amount of serum used is from 190 to 700 c.c., and the dose should ordinarily not be repeated within 12 hours of the preceding one.

"The status of vaccination in pneumonia, both prophylactic and curative, is still very doubtful—and the evidence of clinicians in favor of vaccination as a therapeutic measure is insufficient to overthrow the general scientific arguments against the procedure."[4]

Hiss[6] reports very good results in the treatment of pneumonia with an extract of leucocytes obtained from rabbits, in doses of 20 to 60 c.c q. 4 h.

5. Chemotherapy.—At the present time, quinine and its derivatives are the nearest approaches to a specific chemical remedy. In 1901, Petzold[7] used quinine hydrochlorate hypodermically and considered it a specific. Later, Henry[8] enhusiastically reported using quinine hydrochlorosulphate on account of its greater solubility, hypodermically.

In 1912, Cohen[9] reported his use of a 50 per cent. solution in water of quinine and urea, given into the muscles, in doses totalling 90 to 150 grains within 48 to 60 hours, without cinchonism. As a result of this form of treatment, the symptoms are favorably changed, but the physical signs are uninfluenced. In a later paper,[10] this same author asserts his belief that quinine and its congeners are antitoxics or antidotes to the pneumococcic toxins; that often one dose is sufficient to insure recovery. In other cases, however, he says that the quinine and urea must be supplemented by heart stimulants. When the temperature is over 103° F., he gives, either orally or intramuscularly, 7½ to 15 grains every 3 hours until the temperature is reduced to 102.2° F. Commenting on this quinine and urea treatment, Billings[11] says the effect is solely from the quinine, which, if given in sufficiently large doses, will lower febrile temperature, but advises against combating high temperature in pneumonia with antipyretics.

At present ethylhydrocuprein, a synthetic quinine-like substance, seems to be the best chemical agent in treating lobar pneumonia. Ethylhydrocuprein was probably first used by Morgenroth and Levy[12] while they were working with various derivatives of quinine. Cole[13] says that this substance is 150 times as strong as quinine, and that it has the power, even in the dilution of 1 to 5,000,000, of killing pneumococci in the test tube, and that it seems to be effective against all types of pneumococci.

Both Wright[14] and Frankel[15] noted several cases of transitory amblyopia following its use, and the former was unable to observe any therapeutic effects whatever. Also Stuhmer[16] has reported a case of transitory total amaurosis following a total of 2.25 grams administered within 48 hours. These ill effects are probably due to the facts that the therapeutic dose is very near the toxic dose, and that these patients received too large a dose.

In a series of 20 cases, Becher[17] obtained most excellent results. He found that, when the drug was begun on the first day of the disease, the average time until the disappearance of fever was 2½ days; when begun on the second day, it was a little over 3½ days,—the time growing longer the later in the disease the administration of the drug was started. In addition to the prompt reduction of fever, Becher notes that the drug lessened the number and frequency of complications and averted serious cardiac manifestations. The untoward symptoms affect the eyes and ears particularly, and sometimes manifest themselves in nausea and vomiting.

Baerman,[18] who gave the drug in an oily suspension, thinks that this agent has an unmistakable curative action in pneumonia, especially when combined with immune serum.

Chesney[19] declares that a bactericidal action for pneumococci can be secured in the blood stream of patients if the patients are given 0.024 gram of ethylhydrocuprein per kilogram of body weight, per 24 hours. If at first a large dose is given and followed, at intervals of not more than 3 hours, by smaller doses, the appearance of this bactericidal action may be hastened.

Both Chesney and Cole recommend an initial dose of 7 or 8 grains, followed every 2 hours by 2½ grain doses. Becher gives 4 grains every 4 hours. The oral administration of the hydrochloride has given the best results.

REFERENCES.

1. Pye-Smith and Beddard: in Allbutt and Rolleston's System of Medicine, 2nd Edition, V, 241.
2. Fussell, M. H.: *Penn. Medical Journal*, Feb. 1917.
3. Hare, H. A.: in Musser and Kelly's Practical Treatment. II. 282.
4. Cole, R. I., and Dochez, A. R.: "Pneumococcic Infections," in Forchheimer's Therapeutics, Vol. V.
5. Blake, F. G.: *Journal of Experimental Medicine*, July, 1917.
6. Hiss, W.: *Journal of Medical Research*, 1913, XIX. 385.
7. Petzold: *Deutsch. Arch. für klin. Med.*, Band 70, Hefte 30-31, 1901.
8. Henry: *Phila. Medical Journal*, Feb. 14, 1903.
9. Cohen, S. Solis: *Amer. Journal of the Medical Sciences*, Jan., 1912.
10. ——: *N. Y. Medical Journal*, June 3, 1916.
11. Billings, F.: Practical Medicine Series, 1917, I. 100.
12. Morgenroth and Levy: *Berliner-klin. Woch.*, 1911, II. 1560, 1979.
13. Cole: *Penn. Medical Journal*, Feb., 1917.
14. Wright, A.: *Lancet*, 1912, II. 1633, 1701.
15. Frankel: *Berliner-klin. Woch.*, 1912.
16. Stuhmer, A.: *Medizinische Klinik*, Dec. 3, 1916.
17. Becher, E.: *Ibid*, Oct. 29, 1916.
18. Baerman: *Zeitsch. f. exper. Path. u. Therap.*, 1914, I. 476.
19. Chesney, A. M.: *Journal of the American Medical Association*, Jan. 13, 1917.

SEVENTEEN CASES OF GOITER TREATED WITH INJECTIONS OF CARBOLIC ACID, IODINE, AND GLYCERIN.

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NEW YORK.

INSTRUCTOR IN DISEASES OF THE NOSE AND THROAT IN THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; CONSULTING EAR SURGEON, PORT JERVIS HOSPITAL, PORT JERVIS, N. Y.; ATTENDING EAR AND THROAT SURGEON, ST. MARY'S HOSPITAL, ORANGE, N. J.

I HAVE treated seventeen cases of goiter; seven were private patients and the remaining ten were treated at the various hospitals with which I am associated. All were in females. Of the seven private patients four were young women ranging from seventeen to twenty-five years old, who suffered with the ordinary enlargement of the thyroid gland without appreciable symptoms of thyrotoxicosis. They sought relief for the swelling of the neck only. Five injections at five-day intervals sufficed to effect a cure. The fifth case was that of a Sister of Charity, forty-seven years old, who suffered with an enlargement of the neck (goiter) for five years, and its swelling was so large that it produced some compression of the trachea, thereby causing embarrassment of breathing. She was injected over a period of a year at infrequent intervals, with the result that to-day the gland has quite subsided. Fifteen injections in all were given. Throughout the course of the treatment repeated uranalysis showed a percentage of sugar ranging from 0.5 to 4 per cent.

The sixth case was in a woman thirty-two years old, who suffered from swelling of the throat (goiter) for two years. She experienced difficulty in swallowing, particularly during the menstrual state. After seven injections, at five-day intervals, the enlargement of the gland entirely subsided and the dysphagia disappeared.

The seventh patient was an English woman who came here from London. I saw her February last. She was pale and anemic, and her breathing was greatly embarrassed; particularly was this true on exertion. A uranalysis showed 8 per cent. sugar with a high specific gravity. A nodular goiter, such as Kocher speaks of, obtruded itself on the right side of the neck, and there were evidences of the gland being cystic on the other side, with extension under the thorax, which she says began six years ago. There was not much evidence of thyrotoxicosis, the difficulty in breathing being the principal symptom, which was due to the compression of the trachea by the enlargement of the gland. Throughout a period of three months, injections at intervals of from five to eight days reduced the gland greatly until she left the city in May for the country, entirely relieved of the urgent symptoms. The reduction of the gland was so great the normal lines of the neck were clearly evident. The last uranalysis showed it to be free from sugar.

Of the ten cases treated by me at the hospitals all the patients were under twenty-seven years old, except one who was thirty-seven years old. Eight of these cases were of the ordinary enlargement of the goiter which is ordinarily found in young women.

Of the eight cases, five were entirely relieved with five injections at intervals of five days; two were greatly relieved with eight injections at intervals ranging from five to eight days; one is still under treatment, and is greatly relieved after eleven injections.

The ninth case was that of a woman twenty-two years old, who suffered from a diffuse enlargement of the gland, and who, after ten injections, covering a period of ten weeks, showed no appreciable effect in the reduction of the gland. Subsequently she was operated upon, and two days later died.

The last of the series of ten was a typical case of Graves' disease, with marked symptoms of thyrotoxicosis. I was rather loath to inject her, but as a matter of experimentation I started the treatment. To my great surprise, after the third injection the gland began to get smaller. The protrusion of the eyeballs began to recede, but the tachycardia still persisted. After the twelfth injection, covering a period of over two months, the enlargement of the gland has been very much reduced in size and all symptoms of Graves' disease have been greatly minimized, and the patient says the only thing she complains of now is palpitation of the heart and a sensation of nervousness upon forced exertion.

Method.—Five drops of equal parts of carbolic acid, C. P., tincture of iodine, and glycerin, are injected into the most prominent part of the goiter, usually at five-day intervals. In many of the cases five injections suffice, particularly in the ordinary enlargement which occurs in young women where there is no evidence of toxin absorption. If five injections do not suffice, many more can be given with perfect safety.

Action.—The object of the treatment is to cause a sclerosis of the gland, thereby modifying the abnormal function of this organ and alleviating any pressure symptoms which may be produced by the enlarged gland.

Carbolic acid and tincture of iodine cause an inflammatory reaction in the gland, followed by cicatricial adhesions and consequent obliteration of the cells. Glycerin is used as a solvent. After the injection the patient complains of pain and swelling, the pain of which terminates into soreness after twenty-four hours. If the swelling and pain continue, codeine in small doses, with ice applied over the goiter, will promptly give relief.

Conclusion.—1. Enlargement of the thyroid gland, particularly that form occurring in young women, can be cured, or at least the symptoms of the enlargement can be greatly minimized, by these injections.

2. No untoward symptoms have been observed by me from the injections. Neither is there any bad after effects from reducing the enlargements of the gland by this method.

3. Although only two cases of the graver forms of goiter have been injected with goodly effect, still the number of cases injected have not been sufficient to draw any conclusion in the efficacy of the treatment of these forms by this method. Certainly it is worth while trying in these severe forms, particularly so when the case is not a fair surgical risk.

4. It is well, when injection treatment is started, to combine it with a course of arsenic and with some form of the phosphates.

My method is as follows: Five drops of Fowler's solution is given in half a wineglass of water, three times a day—after eating each meal—for one week; then ten grains of calcium glycerophosphate is given for one week, alternating each one every week throughout a period of from eight to ten weeks.

24 East Forty-eighth Street.

REPORT OF FIVE CASES OF ACUTE STREPTOCOCCIC INFECTION.

By EDMUND G. ZIMMERER, M.D.,

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THE following case reports are interesting because they represent the large class of cases which are often unrecognized and which are diagnosed as rheumatism, grippe, etc., many times to the detriment of the patient.

CASE No. 430.—Female, æt. eight years, a patient of Dr. W. O. Colburn. Illness came on suddenly with a chill and high temperature, sore throat and joint pains. A culture from the throat grew streptococci. About the fourth day a mitral murmur was heard and the urine showed albumin and a few granular casts. Treatment consisted of salicylates and alkalies. The patient made a rapid and good recovery.

CASE No. 563.—Male, æt. 15. Had a chill in the night. Next day he developed a sore throat. Temperature 103.5 . On the following day his face was so puffed up that nephritis was suspected. Uranalysis showed a great amount of albumin and some hemoglobinuria. No casts. His nose bled and he complained of pain in the abdomen, which was somewhat distended. The temperature remained high and the following day he developed erysipelas. After this cleared up the patient passed from our observation and nothing can be said as to the outcome of the kidney affection.

CASE No. 440.—Male, æt. 16, was seen April 10. He complained of cold, chills, sore throat, and pain in the left shoulder. Temperature 103.5°, pulse 100. Chest negative, some abdominal distention. Culture from throat grew streptococci. Under salicylates the temperature came down and the symptoms improved to some extent. On the third day, however, the temperature rose to 104° and a roughened pulmonic second sound was noticeable. Urine was normal. On the fourteenth moist rales were heard over the base of the left lung, with a distinct increase of roughening of the heart sounds over the pulmonic area. He complained of pain in the shoulder and of abdominal distress. Next day there was consolidation of the lower lobe of the left lung, whispered broncophony, respiration 32, temperature 104°; white cell count 12,000. The lung cleared up promptly but the temperature continued high. On the twentieth he complained of pain in the shoulder and great tenderness over the head of the humerus. A diagnosis of acute periostitis was made and the joint was aspirated by Dr. Orr. The temperature dropped to 99° within twelve hours and he made an uneventful recovery.

CASE No. 150.—Female, æt. 2, was seen by Dr. Colburn February 28, after an illness of ten days, the history of which illness was suspiciously like that of scarlet fever. Patient had just had a convulsion. Temperature 104°, pulse 130, respiration 54. She was apparently unconscious, was restless and moaning. Examination revealed a consolidated right lung and a bulging of the drum membrane of the left ear. Para-

centesis was done and the following day the temperature was lower. The child refused all food and did not seem to notice anything. Spinal puncture was done and the examination of fluid was negative. Blood count showed leucocytes 12,000, reds normal. March fourth she became rational, took food and seemed in every way improved. Uranalysis at this time showed albumin but no casts. On the eighth albuminuria persisted, the temperature rose to 102° and the patient was becoming more restless. A waxy color at this time suggested another blood count, which showed hemoglobin 50 per cent. and red cells 3,000,000. Hypodermoclysis was instituted and the pulse improved. On the following day a transfusion was done by Dr. Hohlen and the patient reacted splendidly. The temperature rose to 104° but dropped in a few hours to 101°. On the thirteenth the temperature was normal and the pulse good. She took fluids eagerly. Red cell count was 3,500,000. Urine showed a trace of albumin. On the 14th a complete anuria began which persisted in spite of treatment and the patient died the following day. In this case the streptococcus could not be isolated from the throat or blood.

Case No. 395.—Female, æt. 18. Attended the case just cited during the last days of her illness. On March twenty-third she awoke with a severe chill, backache, and sore throat. Temperature 104°, pulse 120. Culture from the throat and later from the blood gave a growth of hemolytic streptococci. Uranalysis showed albumin but no casts. Leucocytes 7000, red cells normal. On the twenty-fifth the temperature rose and a mitral murmur was heard on auscultation. On the twenty-sixth she complained of pain in the right elbow joint. Temperature 102° and the patient was delirious. This delirium increased next day and the temperature rose to 105.5°. Albuminuria less marked but the urinary secretion was scanty. On the twenty-ninth there was marked abdominal distention of which she complained greatly. The blood count showed 15,000 leucocytes. She passed sixteen ounces of urine in twenty-four hours. The pain in her elbow increased. April first she was removed to the hospital where Drs. Orr and Hohlen drained the joint. A pocket of serum was found along the ulna. Drainage was inserted and the arm put up in plaster. She improved in every way until April 10, when an inflammatory spot was noticed over the middle of the tibia. This became worse and the other symptoms were aggravated until April 20, when an incision was made over the tibia and a quantity of pus drained therefrom, after which the temperature became normal. On the thirteenth another incision was made over the ulna, but no pus was obtained. Next day she complained of pain in the left knee, without tenderness. Blood count at this time showed red cells 5,000,000, white cells 12,000. Urine contained a trace of albumin but no casts. May 1 the blood count and uranalysis were negative. On the sixth she left the hospital and has since made a good recovery.

It is interesting to observe in these cases the marked similarity in their course. Most of them began suddenly with chills, high temperature, vague pains in the joints and all of them had sore throats. Another very constant symptom of the cases we have seen is the abdominal distention which in a number of cases gave a great deal of trouble and caused the patient much distress.

In the matter of joint involvement it will be noted that in several instances it was the diaphysis of the bone rather than the joint which was involved.

The heart in every one of these cases withstood the attack of the infection well and in no cases was there any remaining heart lesion or murmur.

The pneumonia which preceded or occurred in two of these cases is rather interesting.

Treatment in all cases consisted of salicylates in large doses, together with sodium bicarbonate by mouth, Fischer's solution by rectum, etc. Salicylates had but little affect on the temperature or course of the disease except that they relieved pain.

1010 Terminal Building.

HOT AIR AND CALOMEL VAPORS IN THE TREATMENT OF CATARRHAL DEAFNESS AND OTHER MUCOUS MEMBRANE AND SYSTEMIC CONDITIONS.

By EDWARD J. BROWN, M.D.,

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Following the publication of papers by me on the use of hot air and iodoform vapors (*Journal A. M. A.*, June 21, 1913), and calomel vapors in the treatment of constitutional and local conditions (*The Laryngoscope*, March, 1917), so many inquiries have come to me that a supplementary statement seems desirable.

I have found the hot air and calomel vapors incomparably superior to any other means of treatment of Eustachian and aural catarrh and other inflammations of the mucous membranes. In the treatment of catarrhal deafness a gentle current of the hot air is passed through the nares and the patient is directed to swallow every few seconds. In case the swelling of the Eustachian tubes is such as to prevent the sensation of air flowing into the ears upon swallowing, after a few minutes of the hot air, the nares should be closed and a sufficient current (minimum) permitted to pass to inflate the ears. The tubes are generally opened with slight if any extra pressure after one or two treatments. In some cases the catheter is used and the hot air applied directly to the tubes. The calomel vapors are then applied to the nasal chambers or directly through the catheter to the tubes and middle ears. My hot air apparatus is a section of half-inch gas pipe about a foot long placed vertically over my diagnostic gas burner, connected at one end with the compressed air service pipes and at the other with one-fourth-inch iron tubing and one-eighth-inch brass tubing bent as required to connect by rubber tubing with a glass nasal tube.

My calomel vaporizer is a three-inch section of half-inch gas pipe, over a Bunsen burner, connected at one end with the compressed air and at the other with a ten-inch section of quarter-inch pipe. The thread of both ends of the latter is filed off to make the ends slightly conical, one to fit tightly in the reducer and the other to serve as a nose piece. One having only electricity could have the tubing wound with a resistance coil, which would be as effective.

No current of air is required for ordinary use of the vaporizer, or a minimum at most. Two or three grains of calomel are sufficient for the usual local treatment, the dosage being regulated by the time spent in the inhalation, from one to fifteen minutes. A patient who may have an irritative cough from a one-minute treatment at first, will generally take from three to five minutes at the second or third treatment without complaint.

For constitutional treatment I have lately been using gray powder instead of calomel, as it is less irritating, allowing the patient to inhale the vapors from 15 to 30 grains for thirty minutes or more.

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Military Medicine.

ABDOMINAL DEFENSE IN WAR SURGERY.

WILLEMS (*Archives Médicales Belges*, May, 1917) refers to abdominal rigidity, so called wooden belly, a condition which the surgeon sees daily and which often furnishes indications for intervention. It does not, however, receive much special consideration in literature. We should examine for the presence of rigidity as a matter of routine after all lesions of the trunk. The patient lies flat on his back with head down and open mouth, thighs flexed on trunk at right angle, and knees separated. At first the hand makes slow, progressive pressure; and if this is quite possible to accomplish, then defence is absent. If the abdomen feels like a board as a result of muscular rigidity, then the abdomen is in a condition of extreme defence. Between these two extremes are other grades, as slight defence and partial defence. While extreme or major defence means peritoneal perforation, some of the intermediate degrees are less outspoken. When a hollow viscus ruptures and pours its contents into the peritoneal cavity extreme rigidity at once appears. It is, however, not necessary for a viscus to be opened for an effusion of blood into the cavity from a bullet wound will have the same effect; with this exception, that if the hemorrhage is not great the rigidity will be slight. Again, a retroperitoneal effusion will cause a kind of defence which will be mentioned later. Furthermore in wounds of the thorax with hemothorax there may be resistance. While major defence is explained readily by Stokes' law which governs the relationship of subjacent muscles to inflamed serosæ (for peritonitis is already beginning) this is not the mechanism of slight and partial defence, for here the peritoneum is irritated on its external surface, and not from within.

One may illustrate by examples. A man is shot in or near the abdomen. Within a short time the peritoneal reaction is intense and general. There is fluid in the cavity—is it blood or the contents of a viscus? Despite assertions to the contrary this question is not easily answered, for a free hemorrhage from a large vessel which floods the cavity will cause the wooden belly. In either type of accident intervention becomes urgently indicated, to ligate a vessel or suture a wound. In minor defence the smaller the resistance the less the diagnostic value and the significance for intervention. It is here that surgical second sight is called upon. A man is shot in the right hypochondrium, but shows no evidence of being seriously hurt. There is, however, a slight localized defence, which may reach down to the pelvis or across the median line. This man has been wounded in the liver and a certain quantity of blood has escaped into the pelvis. Should we open the belly? For what purpose? We know that the wound is not large. There is, of course, a possibility that bleeding will continue and the defence increase, and in such gravescent hemorrhage an exploratory intervention may be required. In every thoracic wound, as already stated, the abdomen should be examined, for the presence of resistance will throw some light on the character of the injury, but one must not hasten to do laparotomy in such cases. By the following day this resistance will probably have disappeared. In a wound of the loins with hematuria there is evidently a lesion of the kidney, although abdominal rigidity may coexist; but the indication for intervention will not proceed from the latter, but from the volume of blood which escapes by the urine. While the study of defence is illuminating one must not lay stress on it without comparison with the locality of symptoms.

Bearer Work on the Somme.—Sir Douglas Haig in a recent dispatch wrote that the losses entailed by the constant fighting threw a specially heavy strain on the medical services. Captain W. B. Jepson, referring to the subject in the *Practitioner* for September, 1917, says that in the Battle of the Somme all the orthodox methods of evacuating wounded were modified for the following reasons, among others: A continuous battle on an enormous scale was being fought over territory so heavily and methodically shelled that roads became impassable to vehicles; of shelter there was little or none, and water had to be carried up largely by hand. No buildings were spared by the enemy, so that advanced dressing stations were established in old trenches or dugouts, instead of the usual schools or churches. In spite of these difficulties, no blocking of the stream of casualties occurred within the knowledge of the writer.

The following notes, gathered as the result of some months' service in a field ambulance and a regiment may serve to describe how the exceptional conditions were met.

When a regimental medical officer became a casualty, his place was taken by an officer detailed from a field ambulance. Thus it occurred that Captain Jepson took over medical charge of a battalion, which was going backwards and forwards between the front line and rest. Under his charge were 16 regular stretcher bearers, eight reserves, a corporal, and his servant who acted as orderly. The stretcher bearers moved up to the trenches in rear of their companies, carrying, in place of rifles and ammunition, stretchers and haversacks of dressings. Each regular stretcher bearer wore on his left arm the S. B. or red cross brassard. The company stretcher bearers carried two stretchers, complete with slings, and a haversack. In the latter were carried first field dressings, shell dressings, compressed materials, large scissors, an iodine bottle with brush, and a reel of adhesive strapping. The regimental aid post had a surgical haversack containing chloroform, hypodermic syringe, morphine tablets, iodine bottle with brush, anchor pattern tourniquet, and instruments. In one handbag were kept the books of tallies, the tablet case, ammonia ampoules, a food warmer, "Tommies' cookers," and three electric torches. Reserve dressings were carried up in another handbag, with rations and medical comforts. A red cross directing flag completed the equipment of the aid post party, which consisted of the M. O., his corporal and servant, together with eight bearers under a non-commissioned officer. The bearers were temporarily attached to the battalion from the field ambulance. They carried their own rations, water, and haversack of dressings. This party moved up in rear of the regiment, clearing

any casualties which occurred before reaching the trenches.

The journey up was made before dawn or by night soon after dark. Any men falling out en route were seen at the end of the journey in the aid post, which was established in a dug out, shell hole, or by the roadside, sometimes with a neighboring medical officer; the advantage of this combination was that a rush of wounded could speedily be dealt with. In case of a casualty occurring, one surgeon could keep up the work of two until the relief arrived. The red cross directing flag was fixed in position on the nearest road, or at the mouth of the trench. The objection might be raised that this flag would draw fire, but it never did so in his experience. The aid post was usually near battalion headquarters, its position depending upon the available cover. The exact map reference was sent to headquarters, and an orderly was sent to each company to inform as to its whereabouts, and of the landmarks upon the way to it. The importance of stretcher bearers knowing their way, both by night and day, to the aid post cannot be emphasized too often. To this end, tape can be run out leading from battalion headquarters to the aid post if the way is very difficult to find.

At the bottom of the dugout a fire can be built, fuel being usually easy to find. Candles are put up in convenient places, and waterproof sheets and sandbags collected. In times of necessity, water, comforts, and waterproof sheets can be taken from the dead for the wounded.

When the battalion was ordered to attack trenches, the regimental bearers carried wounded from the new line to the starting off trench, whence casualties were removed to the aid post by the medical corps attachés. From here they were in the hands of bearers from the field ambulance post. At other times, the medical corps attachés carried as far as the bearer post, bringing back stretchers and slings always, and blankets, if available. From this post, extra dressings could be supplied. After an attack, all casualties should be cleared before dawn. In quiet times, a small party could often be sent out to search old trenches and shell holes. Great care should be given to this search. The party should turn over mackintosh sheets, stretchers, etc., for partly buried men, and should look for rifles reversed stuck in the edge of a shell hole. If a single bearer found a man, he should mark the spot carefully lest he should be unable to find the spot again. When dead of the regiment were discovered, their pay books were handed over to the adjutant, identity disks being left for the burial party.

The rescue of men lying out in No Man's Land should be effected with the minimum of exposure, for the loss of a trained stretcher bearer is keenly felt by his company. Abdominal wounds, head injuries and fractures were always passed on without delay. A man with fractured thigh was secured to the stretcher with bandages, sandbags being used to assist in the immobilization of the limb. Very slightly wounded men need not go down at once, but could assist their more seriously wounded comrades. Prisoners in charge of a guard cauld be made to carry down stretcher cases.

The stretcher bearers should be trained to mark their way across country, so that they do not lose themselves by night. They must beware lest they be put off the collection of their own wounded. Nothing disorganizes this so much as an order to collect a wounded man from a spot some distance away from the line held by the battalion. The collection of their own casualties is of the first importance. Dressings must be firmly applied, so that they do not slip down the limb. The use of adhesive strapping prevents this. They should be trained to economize in stretchers, that is, a slightly wounded man should not be carried down on a stretcher, when, with a helping hand, he could walk. Stretchers should be improvised from great coats, mackintosh sheets, etc. Messages from the front line telling of heavy casualties should be inquired into carefully before many bearers were sent up. Finally, constant evacuation was essential, so far as possible.

All the field ambulances of the corps were pooled and divided to form bearer camps, advanced dressing stations, a walking wounded camp, and a corps main dressing station. The motor ambulances became a circular service, running between the advanced dressing stations and the corps' main dressing station, and, lastly, the casualty clearing stations. By spreading the staff in this manner any abnormal pressure could always be adequately met. From the bearer camp, officers and other ranks relieved the bearer posts at regular intervals. At the advanced dressing stations walking cases entered one dugout, where dressings were renewed, if needed and tallies completed. To save unnecessary dressing some slight cases were labeled "No dressing required within twenty-four hours." They passed on to another dugout where tea and food were given. A record of all walking cases was preserved but stretcher cases were not recorded at the advanced dressing stations. For serious cases a larger dugout was set apart. They were carried in by one way and out to the waiting car by another. At night, the entrance to the dugout was marked by a lamp showing a red cross. Intercommunication by cycle orderly between advanced dressing stations insured a prompt supply of motor ambulances. At the walking wounded camp, antitetanic serum was given, together with food, and dressings again, if necessary. Walking cases were far more numerous than stretcher cases. All cases of shell shock were examined by a specialist at this camp. The corps' main dressing station was organized on a block system. Each block, consisting of four marquees, was independent of the others, being staffed by the tent division of a field ambulance. One block tended walking cases, another stretcher patients, and a third officer casualties. Officers and men were relieved regularly. Of the block the first marquee sheltered clerks, who filled in the medical cards; in the second, the wound was, perhaps, redressed; the third and fourth marquees served as mess tent and departure tent respectively.

The motor ambulances worked on a check system. Each loaded car en route for the main dressing station stopped at the motor transport headquarters, whence an empty car was sent off to replace it. It was found convenient to issue supplies of stretchers, blankets, dressings, and all medical

equipment from this headquarters. The ambulance drivers should know how to load up a stretcher case as well as how to drive a car. Others might be too busy to give assistance. The cars should be kept in good running order, but the maintenance of the full number of stretchers and blankets was of equal importance. If a car could transport eight sitting cases in times of pressure, it could certainly take four stretcher and four sitting cases. Of the latter, three sat down the center inside, and the fourth beside the driver outside. The weight was almost equivalent in both cases. Above all the chauffeurs should drive slowly when carrying serious cases, and know how to find their way by night.

Venereal Diseases in the Army.—Gaudy gives an extremely succinct account of venereal diseases in the European armies. The first point to be made is that warfare aggravates the course of these affections in addition to increasing their frequency. Among causal factors the youthfulness of the prostitute must first be mentioned, for youth connotes a recent, a contagious stage, and also ignorance of the nature of the diseases. Not only are there many very young girls engaged in prostitution, but many of the older ones are novices, and the results are the same. Absolute destitution is a factor, for some of these women, naturally virtuous, are menaced by starvation and exposure. Suppose that a woman in dire need solicits a soldier who has long been continent, and the outcome is not hard to predict. Statistics of value are very difficult to obtain, and some which the author cites are confessedly not reliable. This uncertainty holds good for attempts to show the amount of invalidism among soldiers with venereal diseases. There are numerous elements to be considered, such as neurasthenia provoked by chronic gonorrhea. Many soldiers with latent syphilis may seem in good health, but the disease may reawaken after the war.

In regard to preventive measures, Italy has been the most drastic country. A few brothels are tolerated for certain army units within the army zones. Civilians are forbidden access to these houses, which contain at most only 8 or 10 girls each. The latter have to accommodate an enormous number of men every day, but the small number of women makes rigid control possible. The men are made to use preventives of all kinds. With this plan is associated compulsory dispensary treatment by experts. All of these measures cause some diminution in the number of venereal infections—just how much is not stated. Germany and Japan have made use of similar plans.

In the Belgian army, lectures, talks and tracts are supplied, and a certain number of soldiers are favorably influenced thereby. But while the Belgians are not very religious or puritanical, harsh measures do not, for some reason, seem called for among Belgian soldiers; in fact, there is no widespread demand for them. There are few Belgian soldiers infected when at the front, and houses of tolerance in the war zone would only make matters much worse.—*Archives Médicales Belges*, June, 1917.

The Regimental Medical Officer.—The regimental medical officer shares the dangers common to the combatant officers and men, and stays with his battalion or brigade, as the case may be. His treatment can only be that of first aid, but he and his orderlies have saved innumerable lives, both by the rescue of wounded comrades from dangerous situations and by careful and rapid transport to the field ambulance sections in the support line.—*British Medical Journal.*

Conference of Presidents of Examining Boards.—A meeting of the officers and members of the various Examining Boards for the Medical Reserve Corps has been called at Camp Benjamin Harrison, Monday, October 8, 1917, at 11 A. M. This conference has the endorsement of the Surgeon General and already nearly one-half of the Boards have responded favoring the conference at that time. Important subjects will be brought before this conference and a large attendance is solicited. The call for the conference is signed by Dr. George M. Kreider, Springfield, Ill.

Mental Examination of Soldiers Begun.—The mental examination of every man in the Twenty-seventh Division has been begun with the examination of Company F of the Engineers. Every man will be examined as to his mental capacity, nervous temperament, peculiarities, etc. Men who give indication of being unable to stand the severest strain on the battlefield will be recommended for discharge. The work is to be conducted by Lieut. S. Leopold, who has just completed such an examination of the Pennsylvania National Guard.

Chloroform Chain Letter Banned.—A chain letter soliciting contributions to a fund for the purchase of chloroform has been sent out containing the following clause which the Committee on Public Information finds objectionable: "Owing to the scarcity of anesthetics, operations which cause indescribable pain have to be performed daily without their aid to mitigate suffering." The letter containing this clause has been submitted to representatives of both the French and British governments, who state positively that the statement upon which this appeal is based is absolutely without foundation, and object to solicitations for such a fund under false pretenses.

Bravery of American Surgeons Commended.—A recent cablegram to the Associated Press from the British Front in France and Belgium pays the highest tribute to the American surgeons in the advanced casualty clearing stations. It is reported that at Ypres-Menin several surgeons and assistants have been working steadily for several days while shells were breaking about them. Those who have witnessed the scene say they have never beheld a demonstration of greater coolness than has been shown by these men.

Airplane Ambulance a Success.—A recent cablegram from Paris describes the testing of an airplane fitted with two stretchers for carrying wounded soldiers. The airplane ambulance has been constructed by the French Army aeronautic service and during a twelve minute flight covered the equivalent of a fifteen mile journey. Dr. Chassaing of the Army Medical Service expresses the opinion that this method of transportation will be more suitable for the severely wounded than the ordinary ambulance owing to the fact that equilibrium of the airplane is so perfect that there is no unnecessary pain to the wounded passenger.

Women's Hospital Unit.—The French Govern-

ment has accepted the mobile hospital unit of the New York Infirmary for Women and Children for work in France. This unit was offered to the United States Government in July, but as women are not eligible to the United States Medical Reserve Corps could not be accepted. The unit will be composed of a hospital with 100 beds and small flying auxiliary units. It will work primarily among French women and children, but will also accept calls for the care of wounded soldiers. Dr. Caroline Finley is director of the unit and expects to go to France early in October to make preparations for the reception of the unit. Preparations here are in charge of an executive committee composed of Dr. Anna I. Von Sholly, Dr. Mary Lee Edward, and Dr. Alice Gregory. The expedition is backed by the National American Woman Suffrage Association.

Malicious German Rumor Disproved.—A recent cablegram from the British headquarters in France and Belgium states that German agencies have made special efforts to disseminate reports that serious differences have arisen between the British Army Medical Service and the American surgeons and physicians who have been working with the British forces in France. For the purpose of proving or disproving these reports a correspondent of the Associated Press has made a careful investigation of base hospitals and clearing stations in which American surgical staffs are working, as a result of which it can be confidently asserted that all these rumors are absolutely without foundation. On the contrary, it is stated that the utmost cordiality has and does exist between the British medical service and the Americans who are working with them. The reasons for circulating these reports are obvious. The object is to create among the Belgian and French civilians a contempt for America and Great Britain and consequently a hostility against these two nations.

Welfare Doctors for France.—A second Infant Welfare unit under the direction of Dr. Charles Ulysses Moore of Portland, Ore., has recently sailed to join the first unit which is under the direction of Dr. William Palmer Lucas of the University of California. The American Red Cross Commission announces that a third unit will shortly sail which will be under the direction of Dr. J. H. Mason Knox of Baltimore. With Dr. Knox's unit will go Dr. John S. Manning, Seattle; Dr. Florence Chapman Child, Philadelphia; Dr. Edmund J. Labbe, Portland, Ore.; Dr. Ethel Lyon Heard, Galveston; Dr. Helen H. Woodroffe, Ocean Park, Cal.; Dr. Dorothy Child, Philadelphia; Dr. O. H. Sellenings, Columbus, Ohio and Dr. Hugh Heaton of Melstone, Mont.

Cerebrospinal Meningitis at Camp Mills.—A death from cerebrospinal meningitis at Camp Mills, Mineola, N. Y., has lead to an investigation by Dr. Meader of the Surgeon General's Office. Cultures taken in the One Hundred and Sixty-seventh Infantry have shown quite a number of meningitis carriers. These have, of course, been isolated and a further spread of the disease is not anticipated.

Free Clinic for Speech Defects.—Among the plans being made for fitting wounded soldiers to occupy useful positions in civil life is that of establishing a free clinic for the treatment of speech defects. European experience has shown that the number of soldiers suffering from such defects, both as a result of wounds and in consequence of shell shock, is considerable. The institution has been incorporated as the New York Clinic for Speech Defects, with Dr. Herbert L. Wheeler, a member of the Medical Board of the Council on National Defense, as president. The clinic will be located at 143 East Thirty-seventh Street, New York, and will be open to the public early in October. It will be under the direction of Dr. James Sonnett Greene. The project is being financed by private philanthropy. Others actively identified with the conduct of the clinic are Dr. Abraham Jacobi, Thomas A. Edison, Dr. John MacKenty, and Dr. George M. Parker. It is stated that attention will also be given to teaching foreigners to speak English without a foreign accent, the accent being treated as a speech defect.

Sir Berkeley Moynihan, senior consulting surgeon to the Royal Army Medical Corps of the British army, and inspector of army hospitals in France, has been delegated by the British government to come to America to aid in the war preparations of the medical corps of the United States Army. He will take part in the war session of the Clinical Congress of Surgeons, to be held in Chicago the week of October 22, and will deliver the convocation address of the American College of Surgeons on October 26, bringing an official message of the Royal Army Medical Corps concerning the work of the surgeons on the battlefields and in the reconstruction hospitals of France and England. He will explain the needs to-day of the allied armies to save a maximum of the wounded, and will describe the notable advances in war surgery since the beginning of the war.

Clean Bill of Health for Spartanburg Camp.—Col. H. C. Fisher, Chief Sanitary Inspector of the Army, after a two-days' inspection of the training camp at Spartanburg, officially reports that the camp is in good sanitary condition, and that every precaution possible has been taken to protect the health of the troops quartered there.

Lieutenant George P. Howe of the U. S. Medical Officers' Reserve Corps was killed in action September 28, while on duty with the British forces in France. He was born in Lawrence in 1878, and was graduated from the Harvard Medical School in 1904. He was a member of the Massachusetts Medical Society and of the American Medical Association.

Medical Students to Continue Studies.—Announcement comes from Camp Upton that medical students sent by their local boards to the Seventy-seventh Division will be mustered out of the National Army, and will be permitted to continue their medical studies providing they enlist in the Medical Reserve Corps of the United States Army. Several medical students have already been mustered out.

Poets' Ambulance.—The American Poets' Committee which is providing ambulances for General Cadorna's army, instead of providing 50 ambulances, as originally announced, proposes to furnish 100. A unit of $2,000 provides one car. Twenty-eight cars have already been bought by cable, and 12 more are to be added with funds now in the hands of the committee. Reports from Italy state that ambulances are greatly needed on the Isonza front.

MEDICAL RECORD.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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New York, October 6, 1917.

CHOLECYSTECTOMY VERSUS CHOLECYSTOSTOMY IN GALLSTONES.

DURING the past decade the development of gall-bladder surgery has been very rapid. Ten years ago cholecystostomy was almost universally employed in cases of cholelithiasis and of most other diseases of the gall-bladder that came to operation; whereas cholecystectomy is now considered by many of the most prominent surgeons to be the operation of choice. The technique of cholecystostomy itself has undergone one radical change during the past few years. Formerly the fundus of the gall-bladder was usually brought up to the wound and stitched to the peritoneal edges. It was found, however, that this practice frequently led to late postoperative complications, due to adhesions and dragging on the attached gall-bladder; hence, unless unusually long drainage is desired, it has become the usual practice to anchor the drainage tube in the gall-bladder by catgut suture, invaginate this suture line into the gall-bladder by one or more rows of purse-string sutures, allow the gall-bladder to assume its natural position, and close the abdominal incision to the point of emergence of the drain. When long-continued drainage is desired the old method of attaching the fundus of the gall-bladder to the peritoneum or rectus sheath is still employed.

Cholecystectomy, however, is coming more and more into vogue; for it has been shown that while, in cases of cholelithiasis, removal of the gallstones and temporary drainage may result in a permanent cure, relapses are not at all infrequent since a diseased, infected gall-bladder is left behind. Then, too, it has gradually become recognized that cholecystitis is the disease and that gallstones are merely secondary; hence in a large percentage of the cases the gall-bladder itself must be removed if permanent cure is to be obtained.

We do not wish to be understood, however, as recommending cholecystectomy in all cases, nor is this the suggestion of even the radical exponents of that operation. There are certain cases in which prolonged drainage is essential, notably in those with marked concomitant pancreatitis; and in these drainage of the gall-bladder is vastly superior to cholecystectomy with drainage of the common duct. Then again, the amount of experience which the operator has had in gall-bladder surgery must be taken into account; for while simple drainage of the gall-bladder is usually a comparatively easy operation, cholecystectomy is often extremely difficult. Even in the ordinary cases of cholelithiasis, and with men of approximately equal skill, opinion is divided as to whether cholecystectomy or cholecystostomy should be the method of choice; while in the face of complications of one sort or another the question is still more undecided.

To get, if possible, a crystallization of opinion on this matter Guthrie sent out a questionnaire to forty-five experienced abdominal surgeons; and recently (*Interstate Medical Journal*, August, 1917) he has again taken up the subject under the title: "Cholecystectomy, a better but a more dangerous operation than cholecystostomy." The questions submitted to the forty-five representative surgeons were as follows: (1) What percentage of cases of cholecystostomy have had a recurrence of trouble following operation? (2) Are you performing cholecystectomy more frequently than in the past? (3 Have the results been better than when simple drainage was used? (4) In what cases do you consider cholecystectomy the operation of choice? (5) What are the contraindications to its employment? (6) As a rule how do you treat empyema of the gall-bladder? (7) How does the mortality of cholecystectomy compare with that of cholecystostomy in your work?

The average percentage of recurrences after cholecystostomy reported by 29 men was 9.5 per cent. and varied in individual cases from 1 to 33 1/3 per cent. Thirty-six of the 45 surgeons reported that they were doing cholecystectomy more frequently than formerly. To the question whether the results were better with cholecystectomy than with simple drainage 36 answered "yes," 7 "no," and 2 did not answer. Answers to the question, "In what cases do you consider cholecystectomy the operation of choice?" are given at considerable length and can hardly be satisfactorily abstracted. However, Guthrie says: "The chief indications for removal given by the majority are any disease of the wall of the gall-bladder itself or damage to the cystic duct. . . . Eighty per cent. advise removal when any disease of the gall-bladder wall, with or without stones, is found." In the compilation of contraindications for cholecystectomy Guthrie finds the chief ones to be: Inexperience of the operator; inexperience of the anesthetist; desperate condition of the patient, which will not permit prolonged operation; extreme obesity, where good exposure cannot be obtained; perihepatic adhesions which make it impossible to draw the liver well down and rotate it outward through the wound; pancreatic disease and acute empyema. Thirty-three out of 44 men who replied to the sixth question favored treating acute empyema of the gall-bladder by drainage. Some of the others advise primary drainage, followed later by cholecystectomy; while six favor primary cholecystectomy. In

answering the question as to the comparative mortality of cholecystectomy and cholecystostomy, two men stated that the difference was not known; four had a lower mortality for cholecystectomy than for cholecystostomy; 18 reported the mortality the same, and 21 had a higher mortality for cholecystectomy than for cholecystostomy, the difference ranging from 0.5 to 3 per cent.

Guthrie's summary and conclusions are as follows: "Reports show that recurrences happen in 9.5 per cent. of cases that have have had cholecystostomies performed. The recurrence of trouble following cholecystectomy is certainly small; the exact percentage is not known. Cholecystectomy is employed much more frequently than in the past and is a better operation, but it is attended with many more operative difficulties and dangers than simple drainage. The gall-bladder should be removed when its wall is diseased or the patency of the cystic duct is in question, provided the patient's condition will permit it. The contraindications for the operation are critical states of the patient, acute empyema, infection of the ducts, and pancreatitis, where drainage is desired. It is safer to treat acute empyema of the gall-bladder with simple drainage, and only proper to explain to the patient that a second operation may be necessary. Two safe operations are much better than one dangerous one, and in case of doubt simple drainage should be employed, especially by those inexperienced in gall-bladder surgery."

This certainly seems a fair statement of the case. The advantages of cholecystectomy over cholecystostomy as regards permanent cure are quite evident, and professional opinion seems to be inclining to the view that as soon as the operator acquires adequate experience and technical skill cholecystectomy should be the operation of choice in a large percentage of gall-bladder cases.

THE ETIOLOGY OF GOUT.

SINCE the discovery by Scheele in 1776 of uric acid in urine this substance has always been associated more or less with gout and with the so-called gouty diathesis. But while the association between the two is still held there is now a great deal of doubt as to the exact causal relation. Indeed, there is little more than conjecture on the pathological aspect of uric acid in gout. The pathological romances woven around this substance are not borne out by experiment, yet the purin bases, of which class uric acid is a derivative, are probably at the bottom, chemically at least, of the gouty condition. Purin itself has not been discovered as such, but in the body it forms the bases for the so-called purin bodies—hypoxanthin, xanthin, adenin, guanin, and uric acid. The purin base is ingested with a number of foods, particularly those rich in nucleoproteins, and the treatment of gout even now includes the prohibition of such foods. But Magnus-Levy, Voigt, and others demonstrated that even the administration of foods very rich in nucleoproteins, such as thymus gland, liver, and pancreas do not increase the uric acid excretion, at least no more in gouty persons than in normal ones. Spitzer believed that there is present in the organism, probably in the liver, pancreas, and spleen an enzyme which oxidizes and converts the purin bases into the component derivatives.

There is much doubt whether uric acid is present in any considerable quantity in the blood. The amount present itself does not account for the deposit of urates. In leucemia, for example, there is a great deal of uric acid yet no deposit of urates. The blood is always able to dissolve more uric acid than it contains. Nevertheless, an accumulation of uric acid in the blood is still believed to be a constant accompaniment, if not the actual cause, of gout. On this theory an acute attack of gout is the unsuccessful attempt of the organism to rid itself of this accumulation. Bearing upon this view there is a suppression of uric acid elimination before an attack and an increase during and immediately thereafter. Whatever accumulation of uric acid there is in the blood with the lessened excretion, it is due in all probability to some disturbance of renal function brought on in some manner by the presence of uric acid in an abnormal chemical combination. The same condition has been credited to an unusual behavior of the uric acid in the metabolism of the nuclei of the cells that hold and keep in solution the purin bodies. Except where there is palpable renal disturbance in gout the ingestion of increased amounts of nucleoproteins is held not to affect the amount of uric acid. Primarily it must be an organic disturbance which causes the metabolic changes and biochemical peculiarities of this disease.

Minkowski suggests that the whole matter of purin action in gout is the result of an individual or hereditary intolerance for purin bodies; and that this tolerance or intolerance is brought about through the presence of the ferments especially purposed for the oxidation of these bodies. The tolerance or intolerance is constitutional in a great many individuals. Gout is more common than is usually supposed. Most cases of so-called chronic rheumatism are gouty. Indeed, by many it is maintained that there is no cause for believing there is any such disease as chronic rheumatism, this affection being either gout or arthritis deformans in varying degrees of mildness. Probably also traumatic, toxic, and infectious elements play an important part in provoking the organic and metabolic disturbances that set up an attack. The tissue changes in and around the gouty deposits are purely local, the result of chemical, vasomotor, and mechanical action of the deposits.

In the treatment of gout the hypothesis that intolerance of the organism to purin is marked is still adhered to, and foods rich in these bodies are strictly interdicted. Alcohol in general is prohibited because it is believed to have an adverse influence upon the oxidizing power of the ferments acting upon the purin bodies. In the case of beer the interdiction is based upon the fact that the

brewer's yeast which enters into the manufacture of this product is very rich in nucleoproteins. It is not at all improbable that all the present theories on this disease will become obsolete on the advent of the newer developments in biochemistry.

THE ELECTRICAL STERILIZATION OF MILK.

Boiling and even pasteurizing milk is believed to destroy to a greater or lesser extent some of its nutritive properties, and although pasteurization has been of almost inestimable value in saving the lives of young children it is not an absolutely perfect method. Therefore any means whereby milk can be freed of disease-bearing bacteria, while, at the same time, its chemical constitution is unaltered, is worthy of consideration.

According to Dr. Joseph Priestley, writing in the *Practitioner* for September, 1917, an interesting series of investigations has been carried out recently in Liverpool with regard to the value of the use of electricity as a milk sterilizer as compared with the more usual methods of heating. The results and conclusions to be drawn from the investigations into this method are best given in the words of Prof. J. M. Beattie, the investigator, in his report, published in the *British Journal of State Medicine*, as follows: (1) The electrical method of treating milk will destroy the disease-bearing bacteria present in it; (2) the usual milk souring bacteria are either completely destroyed, or, if some members of this class are left, they may be neglected so far as the keeping properties of the milk are concerned for ordinary household use; (3) the milk is not sterilized in the strictest sense of the word, but there is a reduction in the total number of bacteria by 99.9 per cent.; (4) the milk will keep perfectly sweet for, at least, three or four days after treatment; (5) the chemical constitution of the milk is, so far as can be ascertained by chemical analysis, unimpaired and the taste is not in any way altered; (6) the milk is not only rendered non-pathogenic as regards ordinary bacteria, but, in cases in which the control supply was tuberculous, the electrically treated milk is free from tubercle bacilli; (7) the milk, after treatment, is perfectly satisfactory as a food for infants.

If the results of the above investigations are confirmed it would seem that electrically treated milk has some points of superiority over pasteurized or boiled milk.

Rats.

For many reasons, economic and hygienic, even apart from their pernicious agency in the spread of bubonic plague, the extermination or reduction in numbers of rats on shipboard is a matter of great importance. The measures most commonly resorted to as giving the best results are trapping and fumigation. Trapping is effectual, but to be of service, according to Drs. Creel and Simpson, writing in the Public Health Reports of September 7, 1917, must be done by skilled men specially selected for their efficiency. Fumigation of vessels is another means by which the rat population is kept within bounds. There is a difference of opinion as to which are the best fumigating agents for this purpose, whether sulphur dioxide or cyanide gas. According to the report of Creel and Simpson, based on actual tests made with these two gases, cyanide would appear to be more effective in the fumigation of loaded holds, but in empty vessels there is no material difference in the results obtained. One disadvantage of sulphur dioxide is that on account of its odor it may give warning to the cunning rodents and enable them to secure greater protection. On the other hand, cyanide, with less obtrusively unpleasant smell, and without the physically irritating properties of sulphur dioxide, will often kill the animal before it can find a safe haven. The strength of the gas and the length of the exposure appear to depend largely, if not entirely, upon the lading of the vessel. If a hold is filled with cargo, a greater strength of gas and a more prolonged duration of exposure are required. No method of fumigation as yet tested has shown absolutely perfect results, nor can any such method be expected to bring about so ideal an end, but cyanide gas, employed with intelligence and with regard to the safety of humans, appears to be the most effective agent for ridding vessels of the menace of the rodent.

Return of Menstruation at the Age of Ninety-two.

Many so-called curiosities of medicine as told in past years become in part intelligible to-day because of our acquisitions in the new science of endocrinology. But owing to the imperfect character of many of these reports conjecture must take the place of demonstration. In the *Revista de Medicina y Cirugia* of August 25, De Jong narrates a case of the return of the menses in a very old negress, who in other respects did not differ from others of her race and time of life. According to the testimony of her relatives she had first menstruated at 10 years and had borne her first child when 15. She had had eight children by the time she was 29. At this period her menses ceased for several years. At 34 they reappeared and persisted for an indefinite period—somewhere between 40 and 43, during which interval she had a miscarriage. Up to the age of 60 she retained her habitual vigor, but soon afterward began to show evidences of senile involution. At 92 she experienced swelling and tenderness of the breasts with inflammation of the vulva and an acid discharge from the vagina. She then developed pain in the ovaries and an abundant metrorrhagia. During an observation period of five months she menstruated quite regularly, the discharge lasting five days. The menstrual period was, moreover, attended by a sexual reaction toward the men of her acquaintance, although in the intermenstrual cycle she was wholly indifferent.

Attempted Suicide with Adrenalin.

At a recent session of the Société médicale des hôpitaux (*La Presse Médicale*, August 9), Grasset related the case of a man of 26, in advanced con-

sumption, who drank 35 c.c. of a 1 to 1000 solution of adrenalin in two successive doses with suicidal intent. Although the man seemed to be in no danger of his life he was treated with emetics, amyl nitrite, venesection, hypodermics of camphor and caffeine, and an infusion of 250 c.c. of artificial serum. In two days he was free from symptoms. The tolerance shown in this case suggested that in subjects with supple arteries the ordinary dose of adrenalin could properly be increased. As a typical case the observation is a failure, however, because the victim swallowed one or more other substances of unknown nature which may or may not have excited a toxic action. Professor Sergent, in discussion, explained why the use of adrenalin solution by the mouth is relatively contraindicated. In doses too low to cause vasoconstriction it is, he states, quite inert; and to produce vasoconstriction the hypodermic route is much the best. If given per os the small, fractional, repeated dose is superior to the massive dose for producing vasoconstriction; besides, the latter is also able to set up certain undesirable congestions.

News of the Week.

France Puts Ban on Drunkenness.—The Chamber of Deputies has passed a bill forbidding drunkenness in public places. The bill provides that any one found intoxicated in the streets, in saloons, or public places shall be fined from one to five francs for the first offense and imprisonment for three days as the maximum penalty for the second offense. The penalty for the third offense within a year from the second is a fine of from sixteen to three hundred francs, in addition to imprisonment from six days to a month. Those incurring four convictions within three years may be deprived of civil rights and of parental rights over children.

Anthrax in California.—An epidemic of anthrax in Yolo County, California, has reached an alarming stage, being the worst in the history of the country. The disease has spread to the adjoining county. The State veterinarian, according to press reports, makes the statement that he feels confident that the germs are being spread by agents of the enemies of the United States. Evidence has recently been brought to light showing that German agents have been guilty of spreading anthrax germs among cattle in Roumania and Bulgaria.

Cornerstone of Randall's Island Building Laid.—The cornerstone of the first of eleven new buildings now in the process of construction on Randall's Island was laid on September 24. This building is to be known as the Institution for Feeble Minded Children. Mayor Mitchel was the principal speaker. The other speakers were Commissioner of Charities John A. Kingsbury and Dr. Walter F. Fernald.

Educational Agencies of New York State Department of Health.—The September Bulletin, issued by the State Department of Health, gives a full description of the educational agencies of the Department, and a summary of information regarding the exhibits, slides, films, charts, models, and other educational equipment of the department for the convenience of public health workers, organizations, and communities contemplating public health work. These exhibits cover practically every field of public health work even including a number of motion picture scenarios. The Department is always ready to loan these exhibits and invites correspondence with reference to special problems or subjects, or more detailed advice as to methods of conducting a health campaign than is embodied in the Bulletin.

Hospital for China.—The cornerstone of the $2,000,000 hospital and medical college which the Rockefeller Foundation is establishing in Pekin, China, was laid on September 24 by Fan Yuen-lien, Minister of Education. Dr. Frank Billings of Chicago, who is returning from his work with the Red Cross Mission to Russia, made the principal address.

New Course in Health Study.—A Department of Vital Economics has been established at the University of Rochester in connection with the Department of Household Economics of the Mechanics Institute. The course is arranged to give instruction in more rational physical living and to prepare young men and women for positions in public health offices. Dr. John R. Murlin, for eight years professor of physiology in the Medical School of Cornell University, has been appointed director of the department. The organization of this department has been made possible by a bequest of $800,000 under the will of Lewis P. Ross, the income of which is to be used "to the end that human life may be prolonged with increased health and happiness."

New York "Springs" a Source of Typhoid Fever.—A small outbreak of typhoid fever in the Borough of the Bronx has led to the interesting discovery that infection was probably conveyed by the drinking of water from an infected spring fed by the drainage from fertilized fields in the vicinity. Further investigation has made it evident that the water of other springs in that part of the city is unfit for drinking purposes. The Department of Health warns against the drinking of water from any springs located within the city limits.

Universities Open.—Columbia University and New York University opened on September 26. The main theme of the various opening addresses was the opportunities for national service. It was forcibly impressed that while every man was called to the service of his country, university men were called with a double insistence.

Civil Service Examinations.—The Civil Service Commission of the State of New York announces the following examinations for November 3, 1917: An examination for Assistant Bacteriologist, State Department of Health, open to men and women between the ages of 21 and 35 years. The salaries range from $1200 to $1800 a year. Candidates must be graduates of a college maintaining a standard satisfactory to the Civil Service Commission, must have a thorough knowledge of the principles of bacteriology and considerable laboratory experience. Non-residents and citizens of other countries, except those at war with the United States, are eligible. An examination is also announced for the position of assistant physician in the State hospitals and for other positions of a similar nature in various State and County institutions. The salaries in the State hospitals are $1200 the first year with an annual increase of $100 each year to $1600, with maintenance. The examination is open to men and women, licensed practitioners of New York State, with one year's experience on the residential medical

staff of a general hospital. Applications must be filed not later than October 24, 1917.

The Washington County Medical Society at its annual meeting held in Montpelier, Vt., September 12, elected the following officers: *President*, Dr. C. H. Burr of Montpelier; *Vice-President*, Dr. M. L. Chandler of Montpelier; *Secretary and Treasurer*, Dr. H. A. Whitney of Northfield.

The Utah State Medical Association at its annual meeting held in Salt Lake City, September 12 and 13, elected the following officers: *President*, Dr. Fred Stauffer of Salt Lake City; *First Vice-President*, Dr. A. J. Stewart, Provo; *Second Vice-President*, Dr. Edward I. Rich, Ogden; *Third Vice-President*, Dr. Ernest Van Cott, Salt Lake City; *Secretary*, Dr. W. Brown Ewing, Salt Lake City; *Treasurer*, Dr. F. A. Goeltz, Salt Lake City.

Obituary Notes.—Dr. AUGUST GEORGE HORSTMAN died at his home in Brooklyn, N. Y., on September 26, aged 40 years. He was a graduate of the Cornell Medical School, in 1906, and was formerly connected with the staffs of the German and Jewish hospitals of Brooklyn.

Dr. JAMES H. WILLIFORD, a graduate of the Medical College of Ohio, in 1874, died of heart disease at his home in Dawson, Ga., September 11.

Dr. THOMAS J. SHREVES, a graduate of Rush Medical College in 1857, and for sixty years an active practitioner of medicine, died at his home in Des Moines, Ia., September 7, aged 82 years.

Dr. L. M. ANDREWS, a Confederate war veteran, and for many years a practitioner of Greene County, Ga., died September 15, aged 82 years.

Dr. CHARLES GENNERICH, a graduate of the New York Homeopathic Medical College, in 1896, and a member of the American Institute of Homeopathy, died at his home in New York, on September 14.

Dr. JAMES C. BYRNES, retired, died at the home of his brother-in-law, Dr. R. B. MacGruder, in Brooklyn, N. Y., September 15, aged 66 years. Dr. Byrnes was in active service for forty-three years. He was an assistant surgeon during the Indian wars and served on the *Cincinnati* during the Spanish-American War. Later he was fleet surgeon of the Pacific squadron. In 1909 he was appoinaed to command the Naval Hospital at Newport, and in 1910 became director of the naval hospital in Brooklyn, retiring in 1913. Dr. Byrnes was a graduate of the Georgetown, Md., School of Medicine, in 1870.

Dr. AUGUSTINE B. LIBBY, a graduate of the Baltimore University School of Medicine, in 1894, died at his home in Smyrna Mills, Me., on September 6, after a long illness, at the age of 60 years.

Dr. WILLIAM ANDREW BINDEWALD, one of the oldest physicians of Louisville, Ky., died in that city on September 15, aged 76 years. He was a graduate of the University of Louisville Medical Department, in 1871.

Dr. CHARLES W. NUTTING, a graduate of the Atlanta, Georgia, Medical School, in 1876, died at his home in Etna, Cal., about September 18, aged 65 years.

Dr. JOHN SWOPE MATHIAS, a graduate of the University of Maryland School of Medicine, in 1879, formerly of Westminster, Md., died at the home of his son in Kansas City, Mo., on September 17, aged 62 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

AEROPLANES ARRIVING—HOSPITALS ATTACKED—VARIOUS EFFECTS OF THE EXPLOSIONS.

LONDON, September 8, 1917.

ENEMY aeroplanes in considerable numbers have come across the channel. Some traveled singly, others in groups of two or three, so that it is difficult to estimate their total number, but it is thought twenty or more machines took part in a raid. Some forty bombs were dropped in this district and others at various places on the coast. The material damage was less than might have been expected. The bombs dropped were not more than about 15 inches long and about as thick as the top of a half-pint glass. Three distinct attacks extending altogether over two hours were made; after the third, which kept droning in the neighborhood above a quarter of an hour, all was quiet for a time; then thousands of people poured into the raided district as soon as the news got abroad and passed in a ceaseless procession along the streets where the raiders had dropped their bombs; broken windows and shattered walls testified to their activity. A hospital, too—the Huns' favorite prey—narrowly escaped demolition. A nurse, describing the raid, said she heard a whizzing sound followed by a loud explosion and felt a choking sensation; she thought a bomb had fallen on the hospital, but that was not the case; the only part of the building sustaining damage was the front door and some windows which were blown in. Yet so fierce was the explosion that a block of wood paving from the road was hurled right over the building. Another nurse, who at the moment was in a distant part of the hospital, was whirled round by the force and flung against an opposite wall. Three American doctors who were present rendered first aid where needed. A canary in a gilt cage meanwhile sang merrily amid the débris.

OUR LETTER FROM PARIS.

(From Our Regular Correspondent.)

THE REDUCED BIRTHRATE IN FRANCE—CRIMINAL ABORTION—CARE OF INFANTS—FETAL DEATHS FROM SYPHILIS.

PARIS, Sept. 3, 1917.

AT the latest bimonthly meeting of the Academy of Medicine, Dr. Pinard, the veteran professor of obstetrics, presented the second report of the Commission appointed by the Academy to study the question of abortion in France and particularly how to encourage the birth of children among the women who seek to rid themselves of their embarrassment when so unfortunate as to become enciente.

The medical situation in France in relation to this question is strangely curious. Any doctor who is found party, directly or indirectly, to abortion is relentlessly prosecuted, as he should be, but there exists a legalized body of women, as a sort of department of the practice of medicine, called sage-femmes (midwives), handed down from the practice of the Middle Ages, who specialize in the care and delivery of women in childbirth, particularly those of the poorer classes who cannot afford to em-

ploy a regular physician. These women in many instances have one or more bedrooms to let to women expecting to be confined and can receive them as boarding patients. Many of these sage-femmes make a specialty of taking in women and performing an abortion for them and the fact that they do this is an open secret. Many of these patients, as soon as they have their miscarriage, are put into a cab and sent to the hospital for care through their convalescence, and one part of Dr. Pinard's report deals with this feature.

The Commission was asked to study the causes of the depopulation and make recommendations for combating it. Their first report gave rise to a discussion which showed wide divergence in the views of the members of the Academy and especially among the members of the Commission with the result that they were requested to consider further the questions brought up and make a new report.

The second report renewed the demand made in the first one that the women admitted to the hospitals suffering from the effects of miscarriage be reported to the authorities for an inquisition as to the cause, and those connected with it. It also insists upon the prompt and proper protection, before and after birth, of the infants born at term, relieving the mothers wholly of their care, if requested, and furnishing to each mother who elects to charge herself with the care of the child a daily allowance by the State of sufficient to sustain or bring it up; this allowance to be duplicated for each child born to her.

The question of the reduced birth rate in France has been constantly before the public since the wars of Napoleon the First, and is as far from solution to-day as ever. It is almost as difficult and delicate a question to solve as that of regulating the venereal diseases; no matter what is proposed, at once an army of objectors come forward with as many varieties of objections. No sooner does the recommendation of this Commission become public than Dr. Rochard of l'Hôpital St. Louis appears in print with a long letter protesting that to carry into effect the report of the Commission is to invade the sacred province of professional secrecy and that the effect of such action by the hospitals would be to prevent the women from seeking medical aid, leaving them to die from infection or neglect, which would serve to increase rather than decrease the depopulation.

I have heard it stated that there are in Paris five abortions to every birth at term. In my hospital service I have more than once been told by a young woman that she would willingly bear her child if she could be protected from disgrace and relieved of the burden of care and support of the child. Any one who can propose an acceptable solution to this complex question will render an inestimable service to France.

Professors Girauld and Tissier reported their statistical studies showing that not only does syphilis cause the frequent death of the fetus *in utero* but that it greatly diminishes the birth of masculine children.

Dr. Vaumezon, at the same meeting of the Academy, presented a paper treating of the paratyphoid and colon bacilli as found among the troops at the front, stating that the first named shows the greatest resistance to all of the agents employed against pathogenic germs in general.

146 Avenue des Champs Elysées.

"RESEARCH WORK INTERRUPTED."

To the Editor of the Medical Record:

Sir:—In his explanation of my dismissal, in the Medical Record of September 22, the Commissioner of Health gives a new version which is not only at variance with the facts but also contradicts his own statement in the *New York Times* of September 16, which reads, "The reason for his discharge was in connection with a report which he prepared on the effect of whooping-cough vaccine." Dr. Emerson apparently feels that such a statement in the Medical Record, whose readers are not laymen, but physicians well acquainted with my work on pertussis, would not hold and he therefore makes the vague accusation of "insubordination and disobedience." Furthermore, he seeks to hide behind the Board of Promotions. He endeavors to give the impression that the Board wanted me dismissed and that he had simply carried out its request. To those unacquainted with the organization of the Department this might appear plausible, but the well-informed know that the Board of Promotions is merely a "rubber-stamp," composed of the Commissioner's assistants who do as they are instructed.

I challenge Dr. Emerson to publish the specific charges of "disobedience and insubordination," as I can easily prove with witnesses and documents to any impartial committee that they are absolutely false. I repeat that the Commissioner ordered me to stop my research work on alcohol or resign and that upon my refusal to do either, he determined to dismiss me. It is not true that Dr. Emerson wanted me to control, verify, or controvert what had been written on alcohol. What he wanted me to do was to bring in a report sustaining his public lectures on prohibition. He had not enough patience to wait for a complete report and kept on pestering me for a preliminary résumé, which I finally submitted to Dr. Williams, who was in charge of the Laboratory during Dr. Park's absence. The latter, therefore, could not have passed upon the scientific value of my work, and Dr. Emerson constituted himself its only judge. This he admits in his statement to the press in the following words (italics mine): "I looked it over *myself*, and from *my* knowledge of Physiology *I* saw that it was a bad piece of work."

As to the "freedom and facilities" given me in carrying out this research work, your readers may form the right conception from the fact that I was allowed only one-third of the time of a single assistant, that the munificent sum of $9.00 was allotted for the purchase of alcoholic liquors, and that I had to devote the largest part of my time to routine work in the meningitis department.

Paul Luttinger, M. D.

Inversion of the Uterus in Holland During the Past Twenty Years.—De Lint tabulates an analysis of twenty-nine cases. But six ended fatally, and save for a decease from cancer one year after the accident there is no record of further death.—*Nederlandsch Tijdschrift voor Geneeskunde.*

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 20, 1917.

1. Hemorrhage: Accidental, Inevitable, Postpartum. Robert L. De Normandie.
2. Chronic Valvular Heart Disease in Pregnancy and Labor. Foster S. Kellogg.
3. The Technic of Abdominal Cesarean Section, and a Report of Sixty Cases. Robert C. Cochrane.
4. Bleeding in Pregnancy. Raymond S. Titus.
5. The Management of Labor. C. P. Twitchell.

I. Hemorrhage: Accidental, Inevitable, Postpartum.—Robert L. De Normandie says that until the laity is educated to the fact that bleeding during pregnancy is abnormal and calls for immediate and careful diagnosis as to its cause, until all physicians take this definite stand and act accordingly, we shall have a large mortality, some of which is nothing short of criminal and some of which, however, will always be unavoidable. There are two types of accidental hemorrhage characterized by the presence or absence of external bleeding. The diagnosis of accidental hemorrhage may be made on sudden pain, alteration in the feel and size of the uterus, pain on palpation, pallor, prostration, normal lower uterine segment. The treatment without a question is to empty the uterus with all possible speed with due regard to the patient's soft parts. The method to be used for this purpose depends upon a number of variable factors. In marked contrast to the onset of an accidental hemorrhage a placenta previa announces itself by bleeding without pain, without apparent cause, not infrequently while the patient is sitting or lying down. This one sign, in a woman pregnant more than three months, of bleeding without pain or cause should make any thinking physician suspect even before he saw the patient that a placenta previa was present. Palpation of the uterus with this condition shows it to present the normal uterine feel either of a uterus in labor or not in labor. The presenting part not infrequently is quite high. Bleeding without accompanying pain and the presence of a boggy mass in the lower uterine segment are the necessary points upon which a diagnosis is based. In a suspected previa one should never attempt a cervical examination until preparations have been made to do more if necessary. Though the need for immediate delivery in this condition is not so imperative many times as in accidental hemorrhage, no unnecessary delay is permissible. The condition of the cervix is the underlying point determining what treatment had best be given the individual problem, whether the gauze pack the Voorhees bag, Braxton Hicks version *accouchement forcé* (not a ruthless divulsion, but a gentle manual dilatation) or a cesarean section. This latter should, however, not be undertaken unless the mother is in good condition, her soft parts rigid, and the baby in good condition. The third type of hemorrhage considered—postpartum—is usually caused by some error of the physician, frequently by his having hurried the third stage of labor. Another cause is that many physicians fail to inspect the membranes and placenta. If the membranes are lacking or only partly lacking the writer never goes after them unless the uterus shows signs of inefficient retraction and therefore a tendency to bleed. If the placenta is not complete, especially if a placenta succenturiata is diagnosed, then the interior of the uterus should be explored under the strictest aseptic precautions. Never fail on any obstetric case to be prepared to meet a postpartum hemorrhage. The writer says that he seldom used an intrauterine douche to stop a hemorrhage, but gives preference to pituitrin, ergot, and ice to the fundus. If these are not effective the gauze packing is indicated.

2. Chronic Valvular Heart Disease in Pregnancy and Labor.—Foster S. Kellogg has made a study of the records of 30,000 cases as follows: 7,200 pregnant women observed in the Prenatal Clinic at the Boston Lying-in Hospital, 22,055 pregnant women entering the Boston Lying-in Hospital for delivery or care in pregnancy from January, 1913, to June, 1915. He finds that one-half of 1 per cent. of pregnant women have chronic endocarditis. Fifteen to 20 per cent. show some decompensation under prenatal care; half of these show a first degree compensation and one-half a second degree decompensation. Cases with stenosis of the mitral valve, with or without insufficiency, are far more likely to decompensate in pregnancy than cases with simple insufficiency. The maternal mortality of chronic valvular disease in pregnancy is 2 per cent. The maternal mortality of cases showing second degree decompensation requiring induction, and second degree decompensation in labor is 45 per cent. Mitral stenosis is almost always present in fatal cases. The fetal mortality runs from 10 per cent. in a series including all cases to 40 per cent. in cases with second degree decompensation. Chronic valvular heart disease complicating pregnancy is, in view of these figures, potentially a very serious condition for mother and child. One-half or these cases not under good previous care for their heart condition, which show decompensation, will recover sufficiently under medical treatment, rest, and proper regulation of their lives, so that they do not again decompensate, and so that they will stand any appropriate method of delivery at term. Normal delivery and *accouchement forcé* have no place in the treatment of chronic valvular heart cases in pregnancy and labor. It is not justifiable to attempt to carry a woman who is decompensated to term for the sake of her baby unless she reacts favorable to treatment almost immediately. "Cardio pregnancy literature," as a whole, is inadequate because no classification is used to determine the factors in the cases under discussion. Some classification is deemed necessary which will visualize, at least, the period of pregnancy, the degree of decompensation, and the character of the cervix, and whether or not the patient is in labor. The author presents such a classification and his beliefs as to the proper obstetrical handling of these cases.

The New York Medical Journal.

September 22, 1917.

1. The Question of Blood Pressure. Robert Franklin Ives.
2. Physical Measures for the Treatment of Abnormal Blood Pressure. William T. Johnson.
3. Seasickness and Internal Ear Stimulation. Lewis Fisher.
4. Rheumatism. Henry K. Craig.
5. Goiter. Leigh F. Watson.
6. Sinusitis in Children. Kenneth A. Phelps.
7. Bilateral Choked Disc Following Thyroidectomy. Frederick Krauss.
8. Hygiene of Rural Schools. J. A. Nydegger.

1. The Question of Blood Pressure.—Robert Franklin Ives presents a résumé of recent studies in reference to the significance of variations in blood pressure from which he draws the following conclusions to be accepted as suggestive and not as dogmatic: (1) The pulse pressure is always large in aortic insufficiency. In fact it is the largest seen in any disease. (2) In chronic nephritis the pulse pressure is always high in the stage of compensation, and in decompensation must be restored to maintain the circulatory balance. (3) In pulmonary tuberculosis the pulse pressure is low in advanced cases. (4) Hypotension with decreased pulse pressure is a bad omen in acute myocardial degeneration, a subsequent rise restoring the prognosis for immediate recovery. (5) When the systolic pressure is normal and the diastolic low, increased pulse pressure means peripheral relaxation or splanchnic dilatation. (6) When the systolic pressure is high increased pulse pressure is normal if the ratio is maintained. When the systolic pressure is very high and the diastolic unusually low, giving a very large pulse pressure, the condition of complete heart block is suggested. (7) With low systolic pressure, increased pulse pressure occurs in one condition only, and that is aortic insufficiency. (8) With normal systolic pressure a gradually decreasing pulse pressure means the gradual onset of cardiac failure. (9) With low systolic pressure decreased pulse pressure means general cardiac weakness, as seen in convalescence from long illness. (10) With high diastolic pressure a gradually falling pulse pressure means cardiac failure, as seen in the secondary low pressure of chronic nephritis. (11) With a high diastolic pressure and a moderate systolic pressure and the signs of cardiac decompensation, a rise in the systolic pressure is imperative to prevent failure. (12) With a high systolic, diastolic, and pulse pressure, arterial relaxants or vasodilators are imperative to relieve the symptoms of hyperplasia, *i.e.* hypertension, if symptoms manifest. (13) A rise of blood pressure is as surely a symptom demanding attention as a rise of temperature. (14) In the majority of cases

of shock a rapid fall of the arterial pressure occurs, and this is the best sign of shock, and a danger signal which cannot be safely ignored. (15) The best anesthetic is that which maintains the blood pressure at or near the normal level, with the least variation during the operation. (16) A high and rising blood pressure is an invariable and often the earliest sign of toxemia in the latter half of pregnancy. A pressure of 160 mm. systolic should always be regarded as highly suspicious. (17) In hemiplegia due to hemorrhage the blood pressure is always high; if due to thrombosis it need not be and seldom is high. (18) Perforation in typhoid fever causes a rise, hemorrhage a fall in pressure. (19) The early recognition of a rise in blood pressure is important in later life before any organic change has occurred and, therefore, while the case is amenable to treatment.

5. Goiter.—Leigh F. Watson presents an analysis of 125 cases of goiter together with a note on the treatment. He finds that both nontoxic and toxic goiters occur later in life in nongoitrous localities than in sections where the disease is prevalent. In this group of 125 patients the majority noticed increased symptoms of intoxication as the goiter became more chronic. Eighteen per cent. of the mildly toxic patients become exophthalmic after an average period of five years. In exophthalmic goiter 45 per cent. of the patients cured by quinine and urea injections gave a history of acute onset of symptoms while 54 per cent. had had goiter for some time previous to the exophthalmic symptoms, which were noticed at an average age of 37 years. The average time elapsing before the disappearance of the goiter was five months. In toxic nonexophthalmic goiter those patients who were cured by quinine and urea injections noticed symptoms of intoxication 1.7 years before examination, at the average age of 33.5 years. The goiter disappeared within from one to twelve months, the average period being four months. The number of patients cured was highest in the group of those who came for treatment early in the disease; the benefit received by those who came later was in proportion to the degree of damage done the circulatory and nervous systems. A goiter which has disappeared under this treatment has never recurred. The majority of patients in this group were under observation for from two to four years. Quinine and urea injections were used in treating 100 of these patients; in the remaining 25 this treatment was not judged to be suitable. This form of treatment is not suited to all types of goiter, and unless used discreetly will be disappointing, if not disastrous. The treatment of the exophthalmic type in young adults is most difficult, and should be attempted only under the most favorable circumstances. If the best results are to be secured hyperthyroidal patients must have at least a year of mental and physical rest after treatment.

6. Sinusitis in Children.—Kenneth A. Phelps. (See MEDICAL RECORD, June 30, 1917, page 1160.)

Journal of the American Medical Association.

September 22, 1917.

1. Influence of Large Doses of Digitalis and Digitoxin on the Blood Pressure in Man. Cary Eggleston.
2. The Neurasthenic at the Threshold. Frank R. Fry.
3. The Psychoneuroses: How Shall We Look on Them Today? Theodore Diller.
4. The Traumatic Neuroses, with Special Reference to Their Medicolegal Relations. Edward E. Mayer.
5. Observations on Surgical Shock: A Preliminary Note. Yandell Henderson, A. L. Prince, and H. W. Haggard.
6. Botulism: The Danger of Poisoning from Vegetables Canned by the Cold-Pack Method. Ernest C. Dickson.
7. The Stiff and Lame Shoulder. C. Hermann Bucholz.
8. Preservation of Complement: A Preliminary Report. B. W. Rhamy.
9. The Retention of Devitalized Teeth Without Danger of Focal Infection. M. L. Rhein.
10. The Roentgen Ray Treatment of Acne Vulgaris. H. H. Hazen.
11. Coincident Pregnancy and Tabes Dorsalis. Edgar M. Allen.
12. Malignant Disease of the Throat and Sinuses: Review of Cases Treated by Radium and Roentgen Rays. Henry H. Pancoast.
13. The Truth about Radioactive Therapy in Malignant Growths. Arthur Fenwick Holding.
14. The Possibilities and Limitations of Roentgen Therapy in Malignant Disease. George E. Pfahler.
15. New Growths of the Mediastinum, with Special Reference to Their Treatment with Radium. Curtis F. Burham.

1. Influence of Large Doses of Digitalis and Digitoxin on the Blood Pressures in Man.—Cary Eggleston reviews the recent literature on the action of digitalis and digitoxin and submits his personal observations on a series of fourteen hospital patients who were under complete control as to the conditions under which these drugs were administered. The averages for the three days before and the three days after the administration of digitalis have been calculated for the systolic, diastolic, and pulse pressures, and the heart rate for each case. An analysis of the results, taking all the cases together, shows that the administration of large doses of digitalis or digitoxin has very little tendency to elevate the systolic pressure, this having been increased by 11 mm. of mercury in one and 15 mm. in a second case. In only one case was the systolic pressure materially reduced, and in that instance by 23 mm. of mercury. On the other hand the diastolic pressure was significantly lowered in seven, or 50 per cent. of the cases, while it was never significantly raised. It is evident, therefore, that digitalis and digitoxin have very little influence on the systolic pressure in either direction, and that they tend to produce a significant reduction in the diastolic and, more decidedly, to produce a material increase in the pulse pressure. Further observations on this series of patients show that alterations in the pulse rate do not explain the changes occurring in the diastolic pressure, and that there is also a similar absence of relationship between the changes in the diastolic and systolic pressures. In view of the facts thus brought out it seems that there is no evidence that either digitalis or digitoxin has any direct action on the vessels when given to man even in large therapeutic doses. This agrees with the results of animal experiments which show that these drugs produce no vascular changes unless given in amounts several times those which are promptly fatal, or perfused through the vessels in concentrations much greater than could ever be reached in man. A consideration of the cause of systolic, diastolic, and pulse pressure changes leads the author to suggest that (1) Digitalis, by improving the circulation, leads to improved pulmonary ventilation with the relief of cyanosis and the abolition of the vasoconstrictor effect of carbon dioxide on the center. (2) The improved circulation results in the more normal functioning of the various organs and tissues of the body, and tends to restore to normal the several mechanisms by which the circulation is maintained at its most efficient level. This hypothesis fits in well with what is observed clinically.

2. The Neurasthenic at the Threshold. — Frank R. Fry. (See MEDICAL RECORD, June 23, 1917, page 1116.)

3. The Psychoneuroses: How Shall We Look on Them Today?—Theodore Diller. (See MEDICAL RECORD, June 23, 1917, page 1116.)

4. The Traumatic Neuroses, with Special Reference to Their Medicolegal Relations. — Edward E. Mayer. (See MEDICAL RECORD, June 23, 1917, page 1116.)

5. Observations on Surgical Shock.—Yandell Henderson, A. L. Prince, and H. W. Haggard present a preliminary report undertaken at the request of the Committee on Physiology of the National Research Council in connection with a cooperative investigation of surgical shock instituted in a number of physiological laboratories throughout the country. These observers have chosen as their part of this investigation the following problems: (1) The bearing of excessive and prolonged secretion of epinephrin on the production of shock; (2) the relation of acidosis to shock, and (3) the oxidative metabolism in shock. They conclude that prolonged excessive secretion of epinephrin, if it occurs under pain, is not a critically important factor in the production of shock. It is therefore improbable that surgical shock is a result of the excessive secretion of the suprarenals secondary to sensory stimulation. In the investigation of the relation of acidosis to shock in all experiments with open ether anesthesia there was during the first hour the usual excessive breathing and a sharp fall both in the carbon dioxide content of the arterial blood and the carbon dioxide capacity of the blood, followed for several hours afterward by a less rapid but distinctly progressive and almost parallel fall in both measurements. The alveolar carbon dioxide also followed a closely similar course. There was a corresponding degree of shock as judged by fall of arterial pressure and absence of reflexes. In contrast to this in one experiment in

which ether was administered by a rebreathing method it was found that when excessive elimination of carbon dioxide was thus in part prevented both the carbon dioxide content and the carbon dioxide capacity (alkaline reserve of the blood) as well as the vitality of the subject were much less reduced than under "open" ether conditions. Facts brought out suggest that the acidosis of ether anesthesia is compensatory to or a result of the acapnia produced by the hypernea of ether excitement. In investigating the oxidative metabolism in shock the writers found that the condition of shock involves a profound depression of metabolism, the oxygen consumption falling 45 per cent. in one experiment and 50 per cent. in another. This depression of metabolism is progressive and ends in death. The introduction of the gas mask in warfare has accustomed men to a form of apparatus in which rebreathing can be readily arranged. By this means we may be able to get an adequate test of the very practical question, "Will rebreathing prevent or decrease the development of shock in severely wounded men as it does in animals under experimental conditions?" For those already in shock and breathing feebly, rebreathing involves a dangerous limitation of oxygen. In this condition the administration of normal percentages of carbon dioxide approximating the normal alveolar air is the measure which in the light of ten years' work in the laboratory is certainly worthy of trial.

6. **Botulism: The Danger of Poisoning by Vegetables Canned by the Cold Pack Method.**—Ernest C. Dickson, from a search of the literature and as a result of his personal investigations, finds that in all there have been at least twenty-two known outbreaks of botulism in the United States during the past twenty years, in which eighty-one persons have been ill and fifty-five have died, a mortality of 67.9 per cent. Of these twenty-two outbreaks eighteen have occurred on the Pacific Coast. The author believes that there have been many similar outbreaks of botulism which have passed without recognition. An important feature of these cases is the relatively small number in which the poisoning was caused by food of animal origin. He has examined a considerable quantity of fruit canned by the cold-pack method, in which fermentation has begun, and has found the *B. botulinus* present. Guinea-pigs inoculated with cultures from this source died within twenty-four hours. The symptoms produced were identical with those caused by the toxin of *B. botulinus*, which is formed in meat broth. The writer urges that, in view of the widespread advice to can all the vegetables possible, and the distribution of directions for cold-pack canning, all such products be thoroughly heated before being eaten or even tasted.

The Lancet.

September 1, 1917.

1. The Physiological and Antiseptic Action of Flavine (with Some Observations on the Testing of Antiseptics). Alexander Fleming.
2. Nervous Unrest in the Infant as a Cause of the Failure of Breast Feeding. H. Charles Cameron.
3. Some Principles of Plastic Surgery; Incisions, Contour, and the Suture. J. L. Aymard.
4. A Method of Applying Antiseptics to the Deeper Parts of Wounds. Thomas H. Kellock.

1. **The Physiological and Antiseptic Action of Flavine.**—Alexander Fleming sets forth in this article the result of some experiments which he has made with flavine in the research laboratory of a base hospital in France, which show that the claims that have been made that this substance approaches the ideal antiseptic are based on fallacious experiments, and that by altering the experimental conditions slightly the "therapeutic coefficient" can be altered to an enormous extent. He also shows that the action of flavine on human tissues (as exemplified by leucocytes) is far in excess of its lethal action on bacteria. In summarizing he states that flavine strongly agglutinates human red corpuscles up to a dilution of 1 in 3,200 and has a strong anticoagulant effect on human blood. In a concentration of 1 in 2,000 it completely inhibits leucocytic emigration. Flavine has a very destructive action on leucocytes, and if its action on leucocytes and bacteria be each tested for twenty-four hours its leucocidal action is far in excess of its bactericidal action. When many microbes are used it requires a much greater "lethal concentration" to effect sterilization than that given as the "lethal concentration" by Browning and his coworkers. In serum under certain conditions staphylococci will grow in 1 in 32,000 flavine, *B. coli* in 1 in 1,000, and *B. proteus* in 1 in 2,000. Flavine in 1 in 8,000 appears to aid the growth of *B. proteus*. Flavine in 1 in 500 is usually unable to sterilize in twenty-four hours an equal volume of pus from a wound. Injected intravenously in large doses it immediately disappears from the blood, which acquires no bactericidal power, and is taken up by the tissues, which acquire no inhibitory power on the growth of bacteria. Flavine 1 in 100 injected into the pleural or peritoneal cavities loses its antiseptic power within two hours. Flavine is rapidly absorbed by pus or muscle tissue. The socalled "therapeutic coefficient" can be changed with slight variations of the experimental method by at least 300,000 times.

4. **A Method of Applying Antiseptics to the Deeper Parts of Wounds.**—Thomas H. Kellock has made an attempt to improve on the Carrel method of irrigating wounds. He calls attention to the disadvantages of the Carrel method in that if there is much resistance to the exit of the fluid through the perforations in the tubes in the deeper portions of the wound the solution finds its way through the openings nearer the surface of the wound and hence the deeper parts are not reached. These tubes to a certain extent act as drains, and the pus finding its way into the tubes is washed back into the wound. Another disadvantage is keeping the patient still, since the slightest move on the part of the patient is apt to draw the tubes out of the wounds. Attempting to improve on this method the author takes a piece of drainage tube eight or ten inches in length and of a caliber about equal to that of a No. 8 catheter. The end is securely closed by a ligature and a small, oblique incision made with sharp scissors as nearly as possible to the closed end. The incision should cut a small valve with apex directed toward the closed end and should at its base divide one-third the circumference of the tube. The tied end should be inserted to the very depth of the wound and the free end of the tube left projecting through the dressings. The number of tubes used depends upon the size and character of the wound, but it will generally be found that one or two will suffice. In cases of a perforating wound of a limb or of a wound with two openings widely separated a very useful modification is to ligature the tube at its center and cut a valve on each side of the ligature and pointing toward it. This is passed through the wound and the irrigation done from both ends. In this way any fluid that is irrigated into the free ends of the tube must find its way to the very bottom of the wound and from there toward the surface. To secure the tubes in position a useful plan is to make a small, independent incision through the skin near the edge of the wound just large enough to grip the tube without occluding its lumen, and the free end of the tube is drawn through this. The free ends of the tubes are left outside the dressing, and the irrigating fluid is passed into them by means of a glass syringe.

British Medical Journal.

September 1, 1917.

1. Remarks on the Treatment of the Wounded Knee Joint. H. G. Barling.
2. The Early Treatment of Gunshot Wounds of the Knee Joint. H. M. W. Gray.
3. Results of Sixty Consecutive Cases of Wounds of the Knee Joint. W. H. Ogilvie.
4. The Treatment of Gunshot Wounds of the Knee Joint With an Analysis of Seventy Cases. C. Max Page.
5. On the Treatment of Certain Selected Cases of Septic Arthritis of the Knee. W. Rankin.

1. **Remarks on the Treatment of the Wounded Knee Joint.**—H. G. Barling discusses the general results of treatment of wounds of the knee in the Rouen area from June to December, 1916, the figures from all the hospitals being added together, so that average results are obtained. The cases operated on numbered 845. All cases in which owing to the healthy appearance of the wound and the quietude of the joint no operative measures were resorted to, and also those cases in which conservative measures were impossible and early amputation was imperative have been excluded. The first feature that strikes one in these figures is the very high proportion of cases in which excision of the wound, re-

moval of bone when necessary, removal of any retained foreign body, irrigation of the joint, and closure by suture, has been followed by a perfectly satisfactory healing without further interference. The proportion of these cases requiring further intervention was 25.5 per cent. In those cases in which infection occurs aspiration is rarely a wise measure; three other courses are open to the surgeon: (1) Free opening up of the joint; (2) excision of the joint, and (3) amputation. By free opening of the joint the author means a lateral incision on each side to the extreme limits of the great bursal pouch and well to its lateral margins. The division of the lateral ligaments may be reserved until a later stage of ill-doing in the septic joint shows that it is really called for, and is to be resorted to especially when drainage of the posterior part of the joint is required. Dakin's fluid gives greater promise of successfully combating septic joints than any other measure, but it does not seem necessary or desirable to retain the tubes for an indefinite time inside the synovial sac. Whatever the method adopted for the opening of the joint its success will in the end depend upon the constant watchfulness and personal care of the surgeon. Excision of the joint is a procedure that has not been much in favor in the hospitals in Rouen. The writer has collected forty-two cases in which it has been been resorted to. Of these eight were followed by amputation, and the deaths, either with or without amputation, were thirteen. If excision is to be considered at all it must not be as an alternative to amputation. If the joint is excised very early we may get an immediate satisfactory result, but we do not know what the final results will be, and we shall be excising joints which in a considerable number of cases may recover under conservative treatment, some with useful movement. If excision is practised at a later period the death rate may be considerable, and there will be a high amputation rate and uncertainty as to the final utility of the limb in the remaining cases. As to amputation no one will dispute that early amputation would result in a low death rate, but it must be remembered that an ankylosed knee or a shortened limb is far preferable to an artificial limb. On the other hand it is a sad epitaph for any patient that his surgeon deferred amputation too late to save the patient's life. The percentage of amputations has varied considerably at the different hospitals. The total mortality from all cases has been 8.5 per cent. The highest mortality, 38.4 per cent., occurred in that group of cases in which the wound was excised and packed and a secondary operation was required at a later period.

5. **On the Treatment of Certain Selected Cases of Septic Arthritis of the Knee.**—W. Rankin believes that the problem of dealing with cases of this class resolves itself into doing an excision of the knee joint in two stages in suitable cases. To be a suitable case the following requirements are essential: (1) The patient must be young; certainly under thirty years, probably best not more than twenty-five years of age. (2) The favorable cases are lightly built men with small bones and without great muscular development. Fat and flabby cases are unsuitable. (3) The past history as regards general health must be good. (4) Courage and cheerfulness and a strong desire to keep the limb are most important factors. Querulousness and want of interest as to whether the leg stays on or not are contraindications. Excision should only be undertaken when there is likelihood that the case can remain in the same hands until bony union has taken place. The treatment is therefore best suited to the base hospital. The operation itself needs no description, consisting in the excision of the bone ends and the fixation of the limb on a splint which will allow the broad bony surfaces to lie in good apposition. The points to be looked to are that there must be no overstretching of the popliteal structures and no tension left in the space. Sufficient bone must be taken, yet none unnecessarily sacrificed. The guide is the circulation in the foot and toes, and proper attention must be paid to alignment of the middle line of the thigh and the tibial ridge and an endeavor made to get just a shade of hyperextension. An average shortening of 2 to 2½ inches can be obtained even with cases in which the excision has to be delayed for some months. Twenty-seven cases have been attempted from the summer of 1916 to the spring of 1917. Of these thirteen have been sent to England with good union, three are almost ready to proceed, and eight have died. Three were in the end amputated, all living. The average stay in the hospital was about four months.

La Presse Médicale.

August 6, 1917.

The Cardiacs at the Front in 1917. — Aubertin mentions the fact that during the past three years of warfare large numbers of cardiac patients have been evacuated to the rear, from which the milder cases may be restored to the front after a brief course of treatment, while the organic cases are when possible utilized in auxiliary services. In this way the army has been largely freed from organically unsound subjects. There is a special type of soldier who appears at the heart station at the rate of about one a day. Some of these men even had their lesions before the war. This contingent seemed equal to full service at the front and their lesions escaped the regiment surgeons. Other members of this contingent who were probably more or less predisposed developed functional anomalies as a result of war hardships. In 100 of the combined group 30 were registered as having an aortic systolic murmur, while 28 others had tachycardia. As a matter of fact, only 21 of the 100 are recorded as having organic disease. In addition to the 100 cases the author considers 9 false cardiacs and 12 noncardiacs. The former are cardiophobes, robust men who fancy they have heart trouble, while by noncardiac is meant simply an error in diagnosis. Of the 100 patients, 6 had mitral insufficiency. These men were originally accepted after an "easy diagnosis" and later war hardships brought out the presence of the condition. Most of these men had, of course, been weeded out months before and were doing auxiliary duty. One man stayed at the front until dyspnea and edema developed. The small number of mitral insufficiency cases at the front is due largely to the fact that this affection is often badly compensated. There were 5 cases of mitral stenosis in the material which had originally been sent back as tachycardiacs. Other types of organic disease occurred only in isolated incidence. The 30 soldiers with aortic systolic murmur can be divided into two groups. One of these comprised but 5 cases in which some hypertrophy of the left ventricle was present with increased tension. In all of these subjects the murmur was loud. In the other 25 cases the murmur was slight and could readily escape the listener's attention. These men were sent back with the diagnosis of tachycardia or heart trouble, and only rarely of heart murmur. The murmur oftentimes could be heard only with patient recumbent, and over the ensiform cartilage. The blood pressure showed but slight variation and arrhythmia was not in evidence in the rapid pulse. After a few days of regimen these patients notably improved, although there was no change in the murmur. The nature of these murmurs is very obscure, but they are probably organic at least in part and the subjects will doubtless in time present ventricular hypertrophy, high blood pressure, and a loud murmur as in the group of 5 patients already indicated.

La Riforma Medica.

August 11, 1917.

Primary Tuberculous Ulcer of the Tongue. — These cases are sufficiently rare to be worth reporting. Amoroso's patient was a man aged 35, railway conductor. Parents healthy, but one brother died of tuberculosis. No history of syphilis. Wassermann always negative. About 4 years before, he had suffered from pleurisy. One year ago he noted the presence of a small vesicle on the left margin of his tongue. It resisted treatment and ulcerated, the sore gradually increasing in extent until treatment was sought. The lesion possessed all the qualities of a tuberculous ulcer, with but slight regional adenopathy, this excluding cancer. Without waiting for an exact diagnosis surgical intervention was practised. First the lingual artery was ligated above the level of the hyoid bone, while the enlarged submaxillary and precarotid lymph nodes were enucleated, much dissection being required to remove the deep submaxillary glands. The second stage

of the intervention consisted in excising a wedge from the tongue, including the ulcer-bearing area, in such manner that after suture the organ seemed almost intact. Studies of the ulcer showed the presence both of tubercle tissue and of Koch's bacillus. About 10 months later the patient was found to have pulmonary tuberculosis, as shown by sputum examination. He died in a few weeks of his disease, no particulars being related.

The Inventor of the Immersion Lens. — Ferrannini shows that Amici, an Italian, was the real inventor of this type of objective, for which Hartnach usually receives the credit. He was born in Modena in 1786. At the age of 22 he was professor of algebra and geometry in the local Lyceum. He had at the time the degree of laureate engineer architect, and soon removed from the Lyceum to the same chair of the local university. We next hear of him (1831) at Florence as astronomer to the Royal Museum of Physics and Natural History, and then as professor of astronomy at the University of Pisa. His work as an astronomer led him to a special study of optics and he superintended the manufacture of optical apparatus. In 1847 he was at work on homogeneous immersion lenses and in 1850 sent a specimen of one to Donders. He received due credit in several standard reference works of the day as the pioneer in this field. Chevalier of Paris, the well known discoverer of the achromatic microscope and local colleague of Hartnack, gave Amici full credit for the discovery of the immersion lens. The latter continued to work at the perfection of the microscope up to the time of his death in 1863. Despite all these data to support the priority claim of Amici several recent reference works award the honor to Hartnack.

Archivio per le Scienze Mediche.

July 15, 1917.

Supravital Respiration of the Tissues in Fever.—Vernoni sums up his elaborate study as follows: in fever artificially provoked with living virus (bacteria) and in infectious fevers the respiratory activity of the liver is always increased. In fever from other causes this constancy is not observed. The behavior of the liver is due less to the fever itself than to the process of infection. The hepatic reaction is evident when the fever is decreasing, also in low and brief pyrexias. If the virus is concentrated in the hepatic tissue the reaction likewise occurs and evidently stands in relation with the destruction of germs in the circulation. In any case this participation of the liver is an index of its protective influence. Evidently there can be no fever of bacterial origin without this behavior of the liver. In addition to the liver the muscles show an increased gas interchange, and experiment shows that in this case also the reaction is not due solely to the pyrexia; because the amount of oxygen (Pflüger) necessary to raise the temperature of the body 1° C. was very much larger in the author's experiments (from 3- to 6-fold). But Pflüger's law applies only to the results of disturbance of the heat center (his experiment animals were either curarized or subjected to spinal cross-section). To account for the excess of muscular combustion in his experiments the author is forced to set up hypotheses such as action of the bacterial toxins on the nervous system, etc. We only know that fever due to living germs increases muscular respiration in some way over and above mere action upon the heat center.

On the Presence of B. Paraanthracis in Human Circulating Blood.—Maymone, having made studies of two cases, sums up as follows: The two cases seem to be of different types. In the first a typhoid infection was simulated, but the serorcaction failed on several trials, the paratyphoids could be excluded and the *B. paraanthracis* was cultivated from the blood. It is also known that mild forms of intestinal anthrax can simulate typhoid. The second patient actually did have a typhoid infection, yet the *B. paraanthracis* was cultivated from the blood into which it may have gained access through a typhoid lesion in the intestine. The course of the primary infection did not seem to have been aggravated by the presence of the paraanthrax bacillus, so that as far as the latter was concerned, the case must be regarded as one of latent microbism.

Correspondenz-Blatt für Schweizer Aerzte.

August 11, 1917.

Dosage of Bromides in Epilepsy and Depressive Conditions.—Bernouilli calls attention to the comparatively recent use of bromides in melancholia, and to Ulrich's new method of producing a true bromide narcosis in depressive states. Under the influence of very large doses depression is changed to euphoria, whereupon the bromides are slowly decreased without relapse to the depressive state. Naturally a very precise technique is required lest the patient experience disaster. Our knowledge of the pharmacodynamics of bromides is imperfect in respect to the tolerance. Authorities tell us to increase the dose slowly up to a certain limit while keeping the patient on a salt-poor diet. Ulrich, however, has an entirely original conception of controlling the amount of sodium chloride ingested. He states this familiarly as follows: Suppose that the human body is represented by a bath tub, the bromide by the hot water supply and the chloride by the cold water supply. The tub is first filled to overflowing with cold water, after which cold water flows constantly in and out. The hot water faucet is now turned on with the cold, water continues to escape by the overflow pipe, but the temperature of the water slowly rises until a state of equilibrium is reached and the temperature now remains constant. This constancy is not affected by the amount of water which enters and leaves the tub, but if the hot water is shut off suddenly the temperature is slowly lowered until it reaches another constant level—that of the cold water supply. We wish to produce in the body a state of equilibrium between the two sodium salts which shall be analogous to the constant temperature of the bath tub water. To attain this result blood and urine analyses must be made at short intervals. The daily content of bromine in the urine furnishes a practicable control. The amount of sodium chloride ingested in the food is calculated from food analyses. To secure constant elimination of bromine by the urine, it is necessary to *increase* the amount of chloride daily for a certain period. On the first day the patient takes but 2 grams of salt in his food, but increases it progressively until on the tenth day he is taking 20 grams. The bromide is started at 0.6 gms. and increased in ten days to 6.2 gms. This gives a constant molecular concentration of bromine in the urine. If we begin with a larger dose—say 1.2 grams of bromide daily, increased in ten days to 11.8 gms., we obtain bromine equilibrium at a much higher concentration. When symptoms of bromide appear we then reduce the bromides and *reduce the chlorides*, too, at such a ratio as to keep the urinary bromine at an equilibrium. In other words the old ideas of salt deprivation are radically different in that they attempted to substitute bromides for tissue chlorides by reducing the latter at the expense of the former. With the old regimen, however, the aim was to prevent bromism; while Ulrich seeks to cause mild bromism, especially in depressive states. His bromine narcosis is characterized—in his depressives at least—by tipsy behavior, disturbances of coordination, vacillating gait, uncertainty in standing, disturbances in speech, writing and memory, and somnolence. This narcosis should not develop until several weeks of medication and should be allowed to reach a certain acme during which the withdrawal of bromide is begun. By cutting down the dose sufficiently the urinary bromine is seen to diminish, but should not leave the body entirely until after a long period of slow decrease.

Lichen Scrofulosorum from a Tuberculin Injection.—Brocq saw a well developed localized outbreak of this affection about the site of an intradermic injection of tuberculin.—*La Presse Médicale.*

Cerebrospinal Meningitis and the Weather.—Compton has shown beyond doubt that in saturation humidity with stable temperature and poverty of sunlight meningococcus carriers with germs in the rhinopharynx are prone to develop the disease.—*La Presse Médicale.*

Malarial Mammitis.—Carnot and Bruyère have seen five cases of this affection in malarial soldiers infected in Salonica. Its evolution is very slow and there seems to be no tendency to involution. The axillary glands show a reaction.—*La Presse Médicale.*

Book Reviews.

THE ROENTGEN DIAGNOSIS OF DISEASES OF THE ALIMENTARY CANAL. By RUSSELL D. CARMAN, M.D., Head of Section on Roentgenology, Division of Medicine, Mayo Clinic, Professor of Roentgenology (Mayo Foundation), Graduate School of Medicine, University of Minnesota; and ALBERT MILLER, M.D., First Assistant in Section on Roentgenology, Division of Medicine, Mayo Clinic, Fellow in Roentgenology (Mayo Foundation), Graduate School of Medicine, University of Minnesota. Price, Cloth, $6.00 net. Philadelphia and London: W. B. Saunders Company, 1917.

WITHIN the past few years the roentgenologic examination of the digestive tract has become a very efficient aid to gastrointestinal diagnosis; but, as the authors say in the preface, the extensive literaure of the subject has been widely scattered through periodicals and at the time preparation of this book was begun no effort had been made in America to collect the well-established facts into a single volume. Their aim has been "to select and arrange in a systematic manner those things which seem not only to be true but worth while, and especially those which we have verified by experience with a large amount of material." We may say at the outset that they have more than accomplished their aim as quoted above. They have not only collated all the essentials that could be drawn from the literature but have further enriched the subject by their contributions from material drawn from their own unusually extensive experience, and also have not hesitated to emphasize the lessons drawn from their own failures. Indeed, they have been especially frank in this regard, a fact which lends added credence (if that were necessary) to whatever statements they make regarding the more successful interpretations. There are twenty-eight chapters in the book, the first three of which are devoted to apparatus, general technic and interpretation. These are covered briefly, since there are other works devoted to this branch of the subject. The remaining chapters are devoted to the stomach, esophagus, and the individual portions of the intestinal tract, including chapters on the gallbladder and appendix. As many divisions of a field are made as seem necessary. Thus there are twelve chapters devoted to the stomach, so that besides considering the roentgen findings with the normal stomach and with the abnormal stomach in general, each special important condition, such as gastric cancer and gastric ulcer, is covered *in extenso*. The attitude of the author is eminently rational; for while properly interpreted roentgenologic examinations are of unquestioned value, the authors emphasize the fact that the roentgenologist is dealing with shadows and shadow defects and the dangers of faulty interpretation are great. There are few specialists in this line who could not profit by reading the short chapter on interpretation, for as the authors say: "The veteran roentgenologist, as well as the novice, is tempted to see too much rather than too little."

PRACTICAL MATERIA MEDICA AND PRESCRIPTION WRITING, with Illustrations. By OSCAR W. BETHEA, M.D., Ph.G., F.C.S., Assistant Professor of Materia Medica and Instructor in Prescription Writing, Tulane University of Louisiana; Formerly Professor of Chemistry and Professor of Pharmacology, Mississippi Medical College, etc. Second Revised Edition. Price, $4.50. Philadelphia: F. A. Davis Company, 1917.

THE chief value of this book is its essentially practical character, noticed especially in Part II, devoted to prescription writing—an art, incidentally, which is sadly neglected in these days of handy tablet preparations for every known human ill. Part I covers the field of materia medica with an alphabetical list of official and unofficial drugs, in the usual routine manner, taking up also their therapeutic action, uses, and customary methods of administration. In the case of the commoner and more widely used drugs, a variety of sample prescriptions are given, which we regard as a feature of value. In Part II the most approved methods of prescription writing are given, together with a discussion on the proper method of using the metric system, the employment of medical Latin, with correct abbreviations and other kindred topics, all of which is treated of in a clear, concise style, abundantly illustrated with appropriate examples. Part III takes up incorrect and correct forms in prescription writing and contains many good suggestions. An appendix is added which is devoted to problems and exercises regarding dosage, toxicology, etc.

The book covers 518 pages and is of a handy size. It is well printed and has a complete index arranged under two headings—Clinical and General. We recommend the book as a very satisfactory treatise on the subjects given in the title, being particularly adapted for student use and to the needs of the busy practitioner.

THE TREATMENT OF WAR WOUNDS. By W. W. KEEN, M.D., LL.D., Emeritus Professor of Surgery, Jefferson Medical College, Philadelphia. 12mo. of 169 pages, with 22 illustrations. Price, cloth, $1.75 net. Philadelphia and London: W. B. Saunders Company, 1917.

THIS book, compiled at the request of the National Research Council, gives a résumé of the most efficacious methods of treating war wounds. To a considerable extent it has been compiled from the writings of those in active service who have had unusual opportunities to note the value of the various methods.

After an introductory chapter devoted to certain general matters, including the arrangement of dressing stations, field and base hospitals, methods of transportation of the wounded, and treatment during transportation, the author proceeds with the discussion of special subjects. About twenty-five pages are given to the Dakin-Carrel method. Special chapters are also devoted to the removal of foreign bodies, tetanus, gas infection, and gas gangrene. Then follow chapters dealing with wounds of special regions, one on the treatment of burns and one containing extracts from personal letters from prominent surgeons who have had experience at the front.

The book should be of considerable value to surgeons about to have their first experience with war surgery, though it is far from being as exhaustive as might be desired.

DISEASE IN MILK, THE REMEDY PASTEURIZATION. The Life Work of Nathan Straus. By LINA GUTHERZ STRAUS. Second Edition, Revised and Enlarged to Commemorate the Twenty-fifth Anniversary of the Inception of the Work. Price, $2.50 net. New York: E. P. Dutton & Co., 1917.

THOUSANDS upon thousands of lives have been saved by the pasteurization of milk, and it may also be said that Nathan Straus by bringing pasteurized milk within the reach of the poor has saved a multitude of lives and greatly reduced infantile mortality in New York City. That Mr. Straus's work has been highly appreciated and its value recognized by men who have made a study of the milk question is demonstrated by the articles and letters which appear in this volume. It is eminently fitting that a comprehensive record of his beneficent labors should be presented to the public and to his wife all thanks are due for giving such a record to the world.

ASTHMA. Presenting an Exposition of the Nonpassive Expiration Theory. By ORVILLE HARRY BROWN, A.B., M.D., Ph.D., Formerly Assistant Professor of Medicine, St. Louis University. With a Foreword by GEORGE DOCK, Sc.D., M.D., Professor of Medicine, Washington University Medical School, St. Louis. Thirty-six engravings. St. Louis: C. V. Mosby Company, 1917.

THIS monograph is the result of nine years of study of asthma by Dr. Brown. He holds that the symptoms which are ordinarily observed in asthma are the outcome of the nonpassive expiration, of the factors that lead thereto, or of the conditions which result therefrom. According to the author, the strongest features of the theory are that preasthmatic states can be recognized thereby and successfully combated, and the treatment of asthma can be removed from the field of empiricism and put upon a rational and scientific foundation. The arguments in support of the theory are well propounded and the exposition of the methods of treatment is clearly and concisely set forth. The book throughout should prove of value to the active practitioner and medical student.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Stated Meeting Held March 8, 1917.

DR. ROGER H. DENNETT IN THE CHAIR.

The Emotional Life of a Child.—Dr. CLARENCE PAUL OBERNDORF read this paper. He said that many accurate descriptions of the emotional reactions of children had been written, but authors without attempting interpretations of their findings had been generally content with recording what they found. Broadly speaking, they all recognized that the emotional reactions in infancy were dependent upon pleasurable or painful sensations which the infant experienced as the result of his act. Thus Campayre wrote: "The first pleasurable sensations originate in the progressively moderate use of the organs of sense and the gratification of bodily wants." It was in the light of Freud's theories that they should view the emotional life of the child. Antedating Freud, in 1879, Linder called attention to the fact that the infant often practised suckling with an eagerness which completely absorbed its attention even though its appetite for food had been completely appeased. He also emphasized the fact that at times this suckling, independent of the appetite for food, was performed with a progressively increasing intensity, which culminated in a climax that resembled an orgasm. After such an episode the child often fell asleep, presumably as the result of gratification from this act in itself even when hunger was not in question. He even ventured the opinion that this act constituted a fleeting, transitional forerunner of future masturbation. Freud accepted this sexual conception of culminating suckling, but pointed out that the suckling was not primarily objective, that it was not derived from the action of the infant upon the mother, but was rather autoerotic, dependent upon the pleasure which the infant experienced from his own lip and mouth movements. The fulfilment of the culminative suckling was dependent upon the erogenous sensibility of the zone composed of the mucous membrane of the mouth and lips. Freud also agreed that the erogenous quality of the labial mucous membrane varied greatly in degree in individual children. He also described a double function to the evacuation of the intestinal tract. He asserted that the sensations which necessarily accompanied defecation were so agreeable to some children that they attempted to repeat them, or by "holding back" attempted to prolong the sensation. Dr. Oberndorf said it might be well to explain in discussing Freudian psychology that the term sexuality was used in its broad significance, and was not limited to the genital system. During the first months of life, according to the psychoanalytic school, the chief source of pleasure for the infant was almost exclusively dependent upon the movements of his own muscles, and from his own mucous membranes, and these latter were considered as of rudimentary sex significance. Intimately associated with skin and muscle eroticism, but appearing at a somewhat later date, was the pleasure won by the child from the earliest precursors of inflicting and submitting to pain, such as biting the breast, having its cheek pinched, etc. Although in very early life each of these tendencies was very meagerly developed, later they were definitely incorporated into the service of sex for the purpose of procreation. Perhaps if the baby could formulate its sensations after it emerged from the relatively undisturbed warmth and protection of the mother's womb, it would wish that "it had never been born." It was upon this basis that during critical emotional periods of later life the individual might be afflicted with pertinacious mother attachment, and might find definite fancies of solace and shelter which return to the mother's womb would afford. From these primarily instinctive processes were later developed acts of will. The will of the very young child always expressed itself in the act. Among the earliest expressions of infantile will was that of opposition to the will of his environment which so very soon clashed with his own. Even during the first year of life the child was compelled to suppress his will to such an extent that it was not surprising that outbursts of anger and defiance should appear. Here for the first time the parents came into contact with pedagogical problems, and it was evidently no easy matter to choose the correct balance between exaggerated strictness and excessive tenderness, both in the early years and in adolescent life. Children liked to be admired by their environment, and might be viewed in the light of an exhibitional trend, one of the most powerful traits of childhood. Another source of intellectual activity might be designated as sympathy or love. Intellect and emotion were especially closely connected in the child, and the sooner intellectual powers developed, the more intense was the emotional life. From the outline given it was evident that the child was occupied chiefly and unrestrainedly with the gratification of its own desires and necessities. It secured most of its enjoyment from the pleasurable stimuli it received from its own body or that was bestowed upon it by others. From the point of view of character development, this was of paramount importance, for it was very common to find this type of autoerotic emotional make-up persisting through late adult life, with the result that such individuals found themselves out of harmony socially with normal persons who had emerged from this stage through which all must pass. The cause of this maladjustment might remain quite unconscious to such persons, but their love life continued to center in themselves, or went one step further, and remained fixed on some one like themselves, that is, some one of the same sex. If this was true, it would seem from an educational standpoint that the early encouragement of responsibility for the child in contributing to as well as receiving from the family commonweal was desirable. What was new in this tiny phase of Freudian psychology was the complete conception of early acts in the pain-pleasure sense, their autoerotic value, and their precursory sex significance; also the persistent force in later life of early emotional impressions. Novelists from the early days of Fielding had hinted at many of these reactions, but perhaps nowhere had it been better expressed than by James Lane Allen, in his delightful idyll, "The Doctor's Christmas Eve," where he said: "The doctor wanted to be the first to talk with him (his son), the first to show the right suggestions." It was one of his sayings that the earliest suggestions rooted in the mind would be the final thing to drop from the dying man's brain—"What goes in first comes out last."

Dr. HERBERT B. WILCOX said that Dr. Oberndorf's remarks on emotion as applied to child life had rather inseparably coupled interpretation of such emotion with pleasure, in particular to pleasure of a sexual nature. Whatever the psychoanalytic interpretation of the term "sexual" might be, it must ultimately refer to elements which were, to his mind, as yet usually dormant in the patients of the age they were dealing with. Pure psychology had a small place in the activities of the pediatrician, excepting as it was applied by him to the parents with whom he dealt. Physiological psychology, as applied to the neuroses and habit spasms of children played a very important part in his work. Dr. Wilcox said he wished to take up the question of emotion in children and the influence upon their habits and routine life. Thumb sucking had really no relation to the question of food, or of sexual pleasure, or of emotion, although the child at first might suck his thumb because he unconsciously expected to get nourishment from the process. Before long, however, he learned the fallacy of this belief, and then the process of thumb sucking became purely a habit unassociated with the ingestion of food, and quite apart from any idea of erotic sensations. He had not seen the substitution of any of the less desirable habits for that of thumb sucking when the latter had been made mechanically impossible. The point had been raised with him at times by neurologists whose children he had treated as to the advisability of interfering with the habit of thumb sucking on account of the substitution of some other more serious habits in its place. It was, of course, quite possible that this occurred at times, but it had not been a factor in his experience. From our standpoint it was a question of the *abnormal emotion* influencing the *normal habit*. This applied directly to the suppression or prolongation of the act of defecation as being an emo-

tional element entering into and disturbing what should be an habitual response to a distended intestine, plus the increased peristalsis arising from the ingestion of food. It was clear that the matter of expulsion of the intestinal contents should be, and was under proper guidance, purely a matter of habit, occurring at a regular time, shortly after a meal, when, as was well known, peristaltic action was stimulated by a full stomach. The child up to perhaps eight years was, or should be, a creature of habit, a habit established from within; physiologically, from without governmentally. Habit and a more or less unquestioning submission to routine were the normal factors determining a child's reaction to his environment. When emotion entered too largely into his life, then he tended to become distinctly abnormal. There was no group of cases that offered more interesting problems of diagnosis, or presented more spectacular results, than those children who came to them because of a poor appetite, and suffering from constant irritation through urging, coaxing, and arguing at meal times, and who naturally presented as secondary symptoms bad assimilation, anemia, and digestive derangement. The basis of their trouble lay in the fact that they took their food under conditions of nervous unrest due to interference, and in the fact that they usually specialized on some type of food, thus throwing out of balance their food elements. Emotion had now entered meal time in this way. The child refused to eat from obstinacy, a very natural result of too much urging and coaxing, or later, because he emotionally enjoyed the attention he attracted. This illustrated the antipathy association spoken of by Dr. Oberndorf. So long as attention was attracted to him, so long he would strive to attract it and refuse his food. When the abnormal stimulus was refused, and he no longer seemed to know or care how much or how little he ate, he would find it dull playing the clown without an audience, and return to his habitual response to a physiological need.

Dr. WILLIAM B. NOYES said that two nights ago they had listened to a very remarkable paper by Dr. Glueck, who was making a study of the criminals at Sing Sing prison, and there was hardly a reference in the entire discussion to the development of the emotional life of the child. There were three methods of psychological study that they recognized: (1) The old-time method of distinguishing mental faculties as though they were in separate boxes, as attention, memory, judgment, emotions, volition, imagination, etc., a method which was less followed at the present time because they realized that all of the different mental faculties were so closely associated that they could not be thus separated. (2) The Simon-Binet method by which abnormal children might be distinguished from normal ones; by comparing the defective child with the normal standard for a given age we could tell what age the mind had reached. This method gave very brilliant results in young children, but after the child had reached the age of eleven or twelve years, it was not satisfactory. (3) The genetic method, or the study of the mind from the standpoint of development. All phases of delinquency, psychological and neuropsychological, were reviewed, but what was lacking and what the members of this Section would instinctively have grasped was a study of the characteristics in criminals and delinquents which every child, normal and subnormal, showed. In the criminal there were lapses or temporary returns to the mental characteristics of childhood. In the kleptomaniac or the person who played with fire we could trace the mental defect to a remnant of submerged sex conflict. Many of the mental conflicts that occurred after puberty might be traced by the psychanalyst to a submerged sex conflict, but there were many phases of delinquency which did not need the psychanalyst to interpret them; they were exaggerations of the emotional characteristics of the infant and the child with which every pediatrist was familiar. It was difficult to draw the line and to say just where certain characteristics ceased to be desirable and became abnormal. For instance, it was difficult to draw the line as to just where the spirit of loyalty to his friends in a boy ceased to be desirable, and degenerated into "gang spirit," which was the basis of much that was known as delinquency. Dr. Noyes stated that we were often hazy when it came to diagnosis, and we liked to follow sharp-cut labels. Thus frequently in discussing delinquency we used the term "instability." The French used the word "débile." A still broader psychological term was "psychological constitutional inferiority." While these terms might not be definite, they all harked back to the first three or four years of life. The unstable child might not be defective in brain structure and the essential mental faculties, but the unstable child would ultimately be shipwrecked if not controlled, and the time to control a child was about two generations back.

Dr. HORACE W. FRINK said he was much interested in Dr. Wilcox's remarks as to the necessity of establishing in the child proper habits of eating. From observations made from another angle, namely, the study of disturbances of appetite in the neurotic adult, he could confirm Dr. Wilcox's statements that every care should be taken to avoid getting the child in the habit of refusing food as a means of getting extra attention and sympathy. Dr. Frink said he wished to emphasize the fact that the term sexual as applied to such phenomena as thumb sucking and holding back of the feces had been given as the result of studies made upon adults who suffered from some evolution of the sex instinct—psychoneuroses or perversions. These infantile phenomena were named, not so much on account of what they displayed to the direct observation, as because of what in the pathological cases they might develop into. The term sexual as applied to them had, of course, a very different implication than was usually given to it in ordinary speech. The speaker also called attention to the fact that we need not be surprised by the statement that an organ, such as the mouth or anus, could serve two purposes, an alimentary and a sexual one. The same was familiarly true of other organs of the body, the eye, for instance, which, though it had a great many non-sexual functions, was nevertheless one of the most important sensory organs for the reception of sex stimuli.

Dr. FRANK WADE ROBERTSON said he might be old-fashioned, but he did not adhere so strongly to psychanalysis. He thought that in many instances we placed too much stress on apparently insignificant things. We could not always find out about the emotions of a child by judging them in accordance with the emotional standards of the adult. So far as the thumb sucking and the feces were concerned, he thought the thumb sucking was usually merely an incident in the child's life, and the questions brought up in connection with the feces he would explain by the fact that the child regarded defecation as a disagreeable duty, and put it off as long as possible, so as to continue his play, and he could not see the modern idea of sexuality in it. He said he had also another old-fashioned belief; he thought that probably sometimes a properly administered spanking would solve the problem and correct the bad habit. The parents were largely responsible for the emotional exacerbations of the child. If one took into consideration the emotional life of the present day, the absorption of the mother in social pleasure and excitement, and of the father in business, and the lack of cohesion or order in the family life, one would not be surprised that the child should manifest abnormal emotional traits. We should teach that there was no holier duty for a mother than to properly bring up her child and to impress her ideals on the child. We should remember that early impressions endured as long as life lasted, and it was most important that correct ideals should be cultivated from the first.

Dr. SAMUEL BANDLER said he had every intention of saying a few words, but the previous speaker in his last sentence had said everything he had in mind. The paper was very full of truths, some of which they had read and knew, and some that were new. This room should be full of physicians whose purpose it was to educate the public. Some were parents as well as physicians, and it was to the parents who were not physicians as well as to the physicians who were parents that a knowledge of the emotional life of the child was important, but he would like to ask if they were not failing to recognize the importance of heredity when they considered the emotional life of the child.

Dr. OBERNDORF, in closing, said Dr. Wilcox had brought up a question which was a very difficult one to solve in later life in people who showed neuroses, and that was the attitude of the parent. The parents of

the neurotic adolescent continued to be of the same mental caliber as when the child was born, and furnished the most difficult factor in the treatment of the young adult. The pediatrician had the opportunity to anticipate the psychiatrist and to instruct the parents in the dangers of excessive care early in the life of the child. Dr. Oberndorf again emphasized the point that thumb sucking was autoerotic, and cited an instance in which culminative thumb sucking was responsible for a tic later on in the life of a boy. In thumb sucking psychologically the pleasure was based on autoerotism; later on masturbation was a similar automanifestation, and he believed this was a normal transitional stage through which most children passed before reaching adult heterosexuality. Autoerotism varied with the individual, but he did not think heredity helped us to correct the present. So far as heredity was concerned, we must let that matter stand, and look to the future. What Dr. Robertson had said regarding the holding back of the feces as being an attempt to delay a disagreeable act, he thought that evacuation must rather be considered a pleasurable act. It would be a very unusual thing for a child to try to prolong a disagreeable act; children as well as adults usually avoided disagreeable acts. Concerning Dr. Noyes' reference to Dr. Glueck's work at Sing Sing, that would prove valuable principally as investigation rather than valuable in the sense of being beneficial to the individuals investigated. If Dr. Glueck's ability could be employed to help supposedly normal people solve some of their maladjustments, it would perhaps be of greater help to the community. The study of the criminal adult might yield some light on the best methods for meeting such tendencies in the very young. Dr. Oberndorf said that one of his favorite hobbies centered in the belief that the time would come when every high school child or even a common school graduate would be given a thorough overhauling psychologically just as he was now given a physical examination. This would be for the purpose of determining his fitness for a particular line of work, straightening out mental kinks, and of directing his future activities in life.

The Etiology of Mongolian Imbecility.—Dr. CHARLES HERRMAN presented this contribution. He stated that various authors had considered as important factors in the causation of Mongolian imbecility, worry, emotional shock, and disease of the mother during pregnancy. Many mothers of children showing those conditions, however, gave no such history, and a very large number of women who had trouble during pregnancy gave birth to perfectly normal children. Dr. Herrman presented the pedigree of a family which had come under his observation, in which the mother of the patients, J. G. and A. G., had been married twice. By her first husband she had one perfectly normal child; by her second husband, the first child was a Mongolian imbecile, the second a perfectly normal child, and the third again a Mongolian imbecile. The parents were both healthy, and the mother had been well during all four pregnancies; she experienced no worry or shock. Shuttleworth mentioned the case of twins, in which one child, the male, was normal, while the other, a female, was a Mongolian imbecile. In these instances it was hardly conceivable that a constitutional disease in the mother could be responsible either for the alternately normal child and the Mongolian imbecile, or that it could affect one of the twins and not the other. Immaturity or exhaustion of the generative organs, especially of the mother, had been given as a cause of Mongolian imbecility. It was true that a certain percentage of the mothers of Mongols were very young or very old; in about one-third the mother was over forty years of age. There were, however, about two-thirds in which the mothers were between twenty and forty years of age. On the other hand, large numbers of perfectly normal children were born to mothers over forty years of age, and there was no evidence to show that such children were weaker physically or mentally than those of preceding pregnancies. In about 50 per cent. of Mongols the child was the last of a series, though the Mongolian imbecile might come between two normal children, or be the first child. Adverse conditions affecting the maternal reproductive organs might possibly act as the predisposing, but they could not be the essential, cause of Mongolian imbecility. Pressure on the basal ganglia, as shown by the short antero-posterior diameter of the skull, the flat occiput, and the diminished weight of the cerebellum, pons, and medulla had been given as a cause of the condition, but here there was a possibility that there was a confusion of cause and effect. Congenital syphilis had been suggested, as a cause of Mongolian imbecility. The investigations of twelve authors representing a study of 3,872 cases of mental defectiveness showed 9.1 per cent. giving positive Wassermann reactions. There seemed to be no definite relation between syphilis and Mongolian imbecility either as regards the Wassermann reaction or the clinical evidence of the disease. Shuttleworth found clinical evidence of syphilis in only four of 350 cases. While frank cases of congenital syphilis were common, Dr. Herrman said he did not recollect seeing a single case which presented the manifestations of Mongolian imbecility, and he had had during the last eighteen years over one hundred cases of Mongolian imbecility under observation. Dr. Herrman discussed the possibility that syphilis might act primarily on some one of the endocrine organs, possibly the pituitary body, causing changes in the bones of the skull and face, but not all such changes were necessarily due to lesions in that organ. Postmortem examinations in Mongolian imbeciles had not shown any characteristic changes in the thyroid, thymus, or suprarenal bodies. The administration of these extracts in Mongolian imbeciles had not been followed by marked improvement. There was one feature upon which more emphasis should be placed, namely, the frequent association of Mongolian imbecility with other congenital anomalies. Besides the more common ones, congenital heart disease, strabismus, and anomalies of the palate, ears, fingers, and toes, Dr. Herrman said he had seen two cases of congenital cataract. There were comparatively few Mongolian imbeciles who did not show some anomaly. Many of these anomalies were known to be inheritable according to the Mendelian laws; many others were probably transmitted in this way. It was quite plausible that the association of these anomalies with Mongolian imbecility in the same individual was not merely a coincidence, but that the peculiarities of the brain, skull, and face were dependent on similar causes, and that they were inheritable according to the Mendelian principles. According to these principles, a "carrier" might be defined as an individual who had within him the peculiarity or unit character in a concealed, latent, or recessive form, so that, although apparently normal, he might transmit this characteristic to his offspring. Goddard's graphic charts had shown that the Mendelian theory had proven true as regarded feeble-mindedness. Goddard, however, did not include Mongolian imbecility in the hereditary form of feeble-mindedness, but thought its sole adequate cause was in the condition of the mother during pregnancy, yet it had been shown how unlikely it was that the condition of the mother during pregnancy was responsible. All observers had pointed out the difficulty of getting complete and accurate pedigrees. Dr. Herrman reproduced two pedigree charts of families with polydactylism. The first was that reported by Smith and Norwell (*British Medical Journal*, 1894, 11, 8); the second by Struthers (*Edinburgh New Phil. Jour.*, 1863, 28, 83). Polydactylism was an anomaly which would hardly escape notice, even though the child lived but a few days, and there would be no reason for concealing the fact that such a deformity had occurred, and still the two charts showed the greatest difference in demonstrating that polydactylism was an inherited unit characteristic. Two charts of Goddard's, an original and a revised form, showed how easily erroneous conclusions might be based on the original data in this instance. It must be remembered that abortions, still births, and deaths in early infancy, frequently occurred in the family history of Mongolian imbeciles, so that it was not at all unlikely that such a case was occasionally overlooked or unrecognized. In the 300 feeble-minded investigated by Goddard, 66 per cent. were classified as hereditary or probably hereditary, while only 11, or 3.6 per cent., were Mongolian imbeciles. These relative percentages corresponded well with those given by other authors, so that hereditary feeble-mindedness as classified by Goddard was about eighteen times as common as Mongolian imbecility. It was, therefore,

not surprising that the pedigree charts of Mongolian imbecility should not indicate inheritance so frequently or distinctly. The probability of the mating of two individuals who were carriers of this unit was much less than that of two individuals who were carriers of simple feeble-mindedness. It must also be remembered that one positive pedigree was more convincing and valuable than several negative ones. In one of Goddard's families and in three families which had come under Dr. Herrman's observations, there were two Mongolian imbeciles. Shuttleworth, Stevens and Hjorth (twins) had also reported cases. There was no positive evidence that worry, emotional shock, illness during pregnancy, or congenital syphilis were important or essential factors in the causation of Mongolian imbecility. The evidence that Mongolian imbecility was a unit character and recessive, although not conclusive, was suggestive.

Dr. CORA M. BALLARD said her observations in families in which there had been Mongolian imbecility was that in every branch of those families the majority of the children had various stigmata of degeneration. She felt that she could bear out Dr. Herrman's conclusions.

Dr. EDDY said he did not think that Dr. Herrman had proved much, because in looking through a family for any other condition, one always found some defect somewhere along the line. The mere association of Mongolian imbecility with those defects did not seem to him to prove anything.

Dr. WILLIAM B. NOYES said that Dr. Herrman did not mention hypothyroidism, and yet this condition was often marked in Mongolian imbecility. Many instances of cures were reported when thyroid extract was first used. This had been more recently tested out in Vineland, and while the hypothyroidism might be improved, the main condition of Mongolism remained unchanged. In general, Mongolian imbecility was a condition in which several stigmata of degeneration were in evidence in a definite and recurring combination in a low grade imbecile. Not all were present in every case. The slanting eyes, the brachycephalic head, the fissured tongue, short, pudgy, or pointed fingers, with the little finger abnormally short and crooked, were constant. Congenital heart disease and hypothyroidism were frequent. Sometimes two or three of these defects were present in a case distinctly not a Mongolian imbecile. The mentality might reach that of a high grade moron in rare cases. The figures quoted by Dr. Herrman were certainly quite convincing, and the association with the laws of heredity on Mendelian principles quite convincing also. The syphilitic origin as worked out in the Stevens list appeared plausible, but had not been confirmed in the cases seen in the Mental Clinic of the Department of Charities except in a few isolated cases.

Dr. HERRMAN, in closing, said that with regard to toxemia as a factor in the causation of Mongolian imbecility, about which he had been asked, he could not see how any toxemia could produce alternately a normal child and a Mongolian imbecile, nor could he see how it would be possible for toxemia to affect only one of twins. With regard to hypothyroidism and Mongolian imbecility, there was a time when these two conditions were confused, but we had now come to recognize them as two distinctly different conditions. There was no doubt but that in some cases of Mongolian imbecility a slight improvement had been brought about by thyroid medication, but such improvement was not marked or permanent. As to the fissured tongue, that was simply a question of sucking; excessive sucking first produced a prominence of the papillæ and then fissure. As to the last argument that there were defectives in all families, it might be said that the evidence in these instances presented was cumulative, and in time they might get enough to prove the position which he had taken; they had in one instance alternately a normal child and a Mongolian imbecile, and there were many defects in this family, among them three instances of congenital nystagmus and a case of deaf-mutism.

History of Pediatrics in New York. — Dr. ABRAHAM JACOBI presented this communication, in which he said that perhaps he had made a mistake in promising to prepare a history of pediatry in New York City, since he could not help speaking of himself in connection with that task, which included diet and hygiene predominately. Milk had been a serious study from the time we had nothing but the rotten milk of the Long Island manure heaps of sixty years ago, to the vastly improved secretions of to-day. Dr. Jacobi stated that the burning summer of 1854 furnished him with an experience which lasted forever in his memory. On leaving a dying baby, only one of his numerous victims of the murderous temperature, he met Dr. Joseph Kammerer and Dr. Henry Sweig, whom he asked in his despair what he was to do. Dr. Kammerer said: "You are killing your babies by feeding them on what we call milk; stop that." Dr. Sweig said: "Stop milk and everything else for twelve hours, or even a day; that is the only way for a possible recovery." He had learned from both men, and they had saved many babies for him The gospel of boiled milk had now found followers, and even prophets. We should not overlook the advantage pediatry, or rather one might say, the child world, owed to the indefatigable work of Mr. Nathan Straus, who in his own person had done more than he himself or any of us. Dr. Jacobi recalled his teaching with reference to cereal decoctions as an addition and corrective which had won many favorable criticisms and imitations. Likewise his teaching with reference to the use of cane sugar in the place of milk sugar was finding favor even in America. The gospel of fat feeding was no longer sustained by those who had a wholesome fear of acidosis, diarrhea, and indican; there were those who were satisfied with Jacobi's 2 per cent. fat mixtures, so long as the survival of the babies was the point to be sought. All these things Dr. Jacobi said he had taught in schools and papers and lectures long before 1870, and in a pamphlet which he prepared for the Board of Health in 1872; in a small book entitled "Hygiene of the Child," in 1874; in a larger book on "Intestinal Diseases," in 1887; in the first volume, 1875 and 1882, of Gerhardt's wonderful "Handbook"; in "Buck's Hygiene," etc. His treatise on "Infancy and Childhood" appeared in 1896, 1900, and 1903. He had been prevented from preparing new editions, and that was why he had stopped the sale of the book altogether. He was of the opinion that a few of the American textbooks that were really good satisfied the actual needs of the market. Personal ambition was not in his line; with the men who concocted books with the aid of other books he had little sympathy. Dr. Jacobi referred to the position he had taken with reference to the removal of tonsils. He had stated that tonsils were not always as dangerous as they were made out to be. Most of them might remain where they were. Too many tonsils were *exsected* in place of being *resected*. What was dangerous was the infection which took place from Waldeyer's ring. Dr. Jacobi said that he had taught sixty years ago, and was still teaching that children's noses and throats should be kept clean. Warm saline was the best cleanser. Boracic acid solution, rarely bichloride, 1:10,000, would sometimes take its place. No atomizer and no dropper, and only for certain indications a syringe, but rather a Whitall Tatum, No. 10 nasal douche, or for smaller children an E. Kretz Owen douche, was safe. There must be no snuffing up at any time; with these precautions the ear was not endangered. Potassium chlorate had been used and abused. Doses should be small and frequent. In stomatitis or in any of its combinations, even streptococcic, a child of three years might have from 15 to 20 grains in twenty-four hours. In diphtheria the same doses might be employed with tincture ferri chloride in water, and glycerin or syrup. Such combinations had long been sold as Jacobi's mixture by some apothecaries. The tincture should be administered in frequent small doses, ¼ to ½ to one drop, and not followed by water. Some had been studying infantile scurvy. But what he had often taught he had proved quite lately. He had taught that neither raw milk, nor boiled milk, nor pasteurized milk, nor carbohydrates, were the only or the prominent cause of scurvy; but what he had always urged was that the persistence of uniformity of food was responsible. Cow's milk and woman's milk were not uniform; proprietary foods were made to be so. Dr. Jacobi related a number of anecdotes showing the opposition that his efforts to improve infant hygiene met. The removal of heavy velvet curtains from the beds of babies, the advice to remove the clothing from babies while they were in the house in extremely hot weather, aroused a storm of protest. The recommenda-

tion to give babies one teaspoonful of whisky daily in a very hot summer was a crime from which he had never recovered, at least in the opinion of those who knew everything better.

SECTION ON SURGERY.

Stated Meeting, Held May 4, 1917.

DR. JOHN DOUGLAS IN THE CHAIR.

Metastatic Cancer of the Breast, or Axilla, Following Cancer of the Parotid Gland Six Years Ago.—Dr. ASPINWALL JUDD presented this patient, a woman who had been operated on six years ago for endothelioma of the parotid gland. She returned last August with a condition of the breast and axilla demanding operative interference. She had a high leucocystosis and a high polynucleosis. The glands of the axilla were broken down, soft and cheesy, but did not appear microscopically to be malignant. The report of the pathologist, however, stated that the condition of the glands was malignant, and of a rapidly growing variety. Last December the patient began to suffer with pain in her knee. When seen by the speaker the knee was enormously swollen and distended. A diagnosis of embolic process was made. The question that arose in this connection was whether the embolic process was also malignant and what relation it bore to the diagnosis of endothelioma. No malignancy was found in the breast.

Excision of the Hip Joint for Tuberculous Osteomyelitis; Conservative Method, Good Function.—Dr. JUDD also presented this patient, a boy, who he stated had no hip. This was one of a considerable number of operations of this kind which he had done. The boy had been operated on for a secondary infectious osteomyelitis. One by one, one ankle, one wrist, and one shoulder had been affected. He showed a high leucocytosis and was in an extremely emaciated condition. Dr. Judd stated that he had operated on one joint and then gone out of town, leaving the boy in another surgeon's care. When he returned he learned there had been no further operation, as the other surgeon considered the boy's condition hopeless. Dr. Judd then did a resection of the hip joint. The boy was now in good condition and had remarkably good function of the hip, though the joint had been entirely excised.

Excision of the Elbow Joint for Tuberculous Osteomyelitis.—Dr. JUDD presented a third patient, a young man, whom he stated had no elbow and who, nevertheless, had a strong grip and practically perfect function. There was nothing particularly new about the operative procedures in these cases. He did the simplest operation consistent with the removal of diseased bone, leaving the periosteum and the muscular attachments. The bone in such a tuberculous condition must be cleaned out thoroughly, but he was willing to take a small chance on the periosteum in order to conserve the muscular attachments. He endeavored to keep the fistula open, packing it with gauze and leaving it for five or six days, then removing the packing and repacking. This had to be done under anesthesia, as a rule. His object in keeping the wound open was to secure as much granulation tissue as possible. The *x*-ray showed the radius intact and that the end of the humerus had been removed. The important point in these operations was the conservation and adjustment in their proper relations of the muscular attachments.

Infection of the Knee Joint (Gas Bacillus).—Dr. JAMES W. JAMESON presented a man who had run a tack into his knee early in the morning. The same evening he was admitted to the hospital with a temperature of 102.8°, and pulse of 90. His right knee was swollen, hot, very tender on pressure and also in active and passive motion, and the joint contained considerable fluid. White blood cells were 15,800. He apparently had a severe infection. Under cocaine the joint was aspirated and about 75 c.c. of thin, turbid, yellowish fluid was removed, after which the joint was washed out with ½ per cent. carbolic acid solution. No traction was used. The patient's condition immediately improved, and his temperature gradually fell, in three days reaching 100° F. He was discharged at the end of ten days with a slight swelling of the knee, but complete function. Later he developed a phlebitis, which soon cleared up. The smear from the fluid showed many pus cells, Gram-positive diplococci possibly streptococci, and anaerobic cultures showed the *Bacillus aerogenes capsulatus*. *X*-ray was negative. Case was presented to show the excellent result of treatment in the presence of gas bacillus.

DR. E. BENJAMIN RAMSDELL said that gas bacillus infection was very prevalent in war surgery and that he had seen many cases in France. A culture was taken of every wound that came into the hospital and incubated in veal medium. If the gas bacillus was present it would be evident in a few hours. If the gas bacillus got into the muscle tissue the infection was likely to be more serious than elsewhere.

Bilateral Astragalectomy and Tendon Transplantation for Paralytic Club Foot.—Dr. ALFRED J. BROWN presented this case. He stated that the patient, 26 years old, was admitted to the hospital on May 12, 1916. He gave a history of having been able to walk normally until eleven years previously, when he had a sickness which he described as rheumatism. Following this he was unable to walk for a year. He entered the hospital because of great difficulty in walking and continuous pain in the ankles. The diagnosis made was talipes equino-varus, resulting from infantile paralysis. Both legs showed atrophy of both muscle and bone and disturbance of function. On May 18 an astragalectomy was performed on the left side. The procedure employed was as follows: An incision was made beginning beneath the tip of the external malleolus running forward and downward to the point of attachment of the peroneus tertius muscle. This was deepened down to the ligament of the ankle joint. The external lateral ligament of the ankle joint was divided, also the anterior ligament of the joint. The astragalo-navicular joint was opened and also the astragalo-calcaneal joint. The interosseus ligament between the astragalus and the os calcis was divided. The astragalus was lifted out of the wound, and the ligaments of the inner side divided in order. The astragalus was removed. Subcutaneous dissection was carried to the inner side of the foot and the tendon of the tibialis anticus muscle isolated and split longitudinally, the outer half of the tendon being divided at its point of insertion by a subcutaneous tenotomy and pulled over to the outer side of the foot and anchored beneath the periosteum of the cuboid bone. The skin was closed with silk, and a dry dressing applied. A plaster of Paris casing was applied from the toes to just below the knee, holding the foot at right angles to the leg and in a position of eversion. On May 25 a right astragalectomy was performed. The technique was the same except that the entire tibialis anticus tendon was transplanted. The plaster dressing was removed and reapplied on June 15 and July 13, the latter time with wooden soles. The patient was discharged on August 29. At the present time the patient walks fairly well. He has never worn braces. The joint on the right side was not as good as that on the left.

Dr. S. EPSTEIN said he thought if the cartilage had been removed from the under side of the fibula and tibia the joint would have been more stable.

Dr. BROWN said that he did not try to get an ankylosis and consequently he had not tried to remove the cartilage from the under side of the tibia and fibula.

Dr. A. SULLY objected to leaving in cartilage from the astragalus as Dr. Brown did not want to get ankylosis. He did not believe that Dr. Brown's procedure was one that should be repeated.

Appendicitis Recurring in a Stump after Operation.—Dr. ALFRED J. BROWN reported this case. He stated that the patient, a girl 15 years of age, was admitted to the hospital on November 22, 1916. She gave a history of having had an appendectomy performed in another hospital on August 4, 1913. She was discharged from the hospital two and one-half weeks after this operation, and a few days later was seized with an attack of sharp, sticking pain in the right side, radiating to the back and so severe that she was forced to go to bed. She remained in bed for a week. Two days after her recovery she was seized with another attack. Since that time these attacks have been intermittent and accompanied by vomiting. She was operated on December 9, 1916, in the first Surgical Division, Bellevue Hospital. The great omentum was found adherent

to the anterior surface of the cecum, causing an angulation of the right half of the transverse colon. The cecum was adherent itself by fairly strong membrane to the right abdominal wall. The appendix stump was approximately two and one-half cm. in length, turning backward and adherent to the inner surface of the cecum. From its tip there was a strong fibrous band of adhesion pressing to the iliacus muscle. The operation performed was as follows: A right rectus incision eight cm. in length was made and deepened through the peritoneum. The adhesions between the cecum and the great omentum were divided and the transverse colon freed. The adhesions between the cecum and the lateral abdominal wall were ligated and divided, freeing the cecum. The mesentery of the appendix was ligated with plain catgut. The band of adhesion between the appendix and the lateral abdominal wall was divided. A purse-string of Pagenstecher linen was passed around the base of the appendix. The appendix was crushed between Kocher clamps, removed, and the stump cauterized, inverted and the site of eversion protected by a continuous Cushing stitch of plain catgut, inasmuch as the mesentery was too small to allow of the usual technique practised by the reporter. The wound was closed. The patient made a rapid and uneventful recovery. The pathological diagnosis was chronic appendicitis. The patient was shown for the purpose of demonstrating the complication which might occur with that type of operation if one failed to invert the stump. Dr. Brown emphasized the importance of the following points: Crushing the stump of the appendix and cauterizing down to the proximal clamp, using a dull-red heat to close the stump. Placing a suture of Pagenstecher linen which passed beneath the vessels on the mesenteric side to control hemorrhage when tied. The knot of the Pagenstecher should be opposite the mesenteric border. The stump was here riveted without opening the lumen of the gut, and thus infection of the field was avoided. If the proximal ligature on the mesentery had been left long, tying this to the ends of the Pagenstecher linen pursestring suture would draw the mesentery over the site of inversion and protract it.

Dr. HENDERSON said he had seen three hemorrhages and thought it was better to ligate close to the base, no matter what technique was used. If that had been done there would have been no recurrent attacks.

Dr. JOHN C. A. GERSTER said he agreed with Dr. Jameson that this case showed an error in technique at the first operation. He had seen a similar case where it was reported that the appendix had been removed some time previously; the patient showed typical symptoms of an acute appendicitis and an appendix about two inches long was found beneath a pericecal membrane. This illustrated failure to trace the appendix down until it began to flare into the cecum. The simple ligation of the appendix with cauterization of the stump had been the routine practice at Mount Sinai Hospital since the very begininng of operations for this condition. Bad results have not been seen, provided the proper technique has been employed. In one instance the actual cautery was brought too near the ligature, it became cooked and gave way with leakage and fatal peritonitis. In another instance a ligature of heavy silk (instead of heavy plain catgut) was used. A few months later a band leading to this ligature caused an intestinal obstruction; at the time of its division the silk ligature was removed. Pure carbolic has satisfactorily replaced the actual cautery, thus eliminating the possibility of cooking the ligature.

Neurotization of Paralyzed Muscles by Implantation of Motor Nerves. — Dr. JOHN C. A. GERSTER reported having successfully innervated paralyzed muscles by implantation of motor nerves previously supplying other muscles. (See MEDICAL RECORD, August 11, 1917, page 223)

Dr. ROBERT T. MORRIS asked Dr. Gerster how he would account for the return of sensation in a case such as he had seen some time ago. In this instance a girl had had her arm and hand very badly crushed and he had implanted three fingers at about the middle of the forearm. Finally this girl developed sensation in these fingers, first for cold and after for heat. She knew when the fingers were touched but was unable to tell which of the three fingers had been touched. In what way were these fingers innervated?

Dr. BROWN asked Dr. Gerster if he had ever tried this on human beings, or if he had seen any cases in which it had been tried.

Dr. GERSTER, in closing, said Dr. Morris' case illustrated the return of sensory function. As to the possible clinical value of neurotization of recently paralyzed muscles, it would probably be of distinct value in selected traumatic cases not amenable to nerve suture, etc. In poliomyelitis certain difficulties presented themselves; first, the late recovery of muscles—orthopedists claimed that it was not possible to decide what muscles were paralyzed before 12 to 18 months had passed—some very atrophic muscles would begin to regain power as late as that; on the other hand certain neurologists had thought it possible to tell within 3 or 4 months which groups were going to recover. If one waited until the matter was absolutely decided, the far gone atrophy furnished less favorable conditions. If one operated before then, it might be said that recovery had occurred in the natural course of events and had no relationship with the operation. In addition to this one would be taking away a part of the healthy nerve supply (lessening it) to give a paralyzed group function. In case of failure, the limb would be even weaker than before. The clinical reports so far were inconclusive. The speaker said he had had no experience with innervation by contact of paralyzed muscular tissue with normally innervated muscle—the so-called muscular neurotization. Such a procedure would be far less risky in poliomyelitis cases, for a simple removal of intermuscular septa between healthy and paralyzed muscles might permit of nerve fibrils growing into the non-innervated muscle. There would be no disturbance of normal innervation. Failure would entail no additional loss to the patientt.

Books Received.

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ORTHOPEDIC SURGERY. By ROYAL WHITMAN, M.D. 906 pages, illustrated. Published by Lea & Febiger, Philadelphia and New York. Price, $6.50.

EXAMINATION OF WATER. By WILLIAM P. MASON. 186 pages, illustrated. Published by John Wiley & Sons, Inc., New York. Price, $1.25.

THE CHILD IN HEALTH AND ILLNESS. By Dr. CARL G. LEO-WOLF. 297 pages, illustrated. Published by George H. Doran Company, New York. Price, $2.00.

DELUSION AND DREAM. By Dr. SIGMUND FREUD. Translated by HELEN M. DOWNEY. Introduction by Dr. G. STANLEY HALL. Published by Moffat, Yard & Co. 243 pages, illustrated. Price, $2.00.

DISEASES OF THE SKIN. By RICHARD L. SUTTON. 1,021 pages. Published by C. V. Mosby Company, St. Louis. Price, $6.50.

THE PRESCRIPTION. By OTTO A. WALL. 274 pages. Published by C. V. Mosby Company, St. Louis. Price, $2.50.

MEDICAL WAR MANUAL, NO. 1. Sanitation for Medical Officers. By EDWARD B. VEDDER, M.D. 211 pages, illustrated. Published by Lea & Febiger, Philadelphia and New York. Price, $1.50.

THE BATTLE WITH TUBERCULOSIS AND HOW TO WIN IT. By D. MACDOUGALL KING, M.D. 258 pages, illustrated. Published by J. B. Lippincott Company, Philadelphia and London. Price, $1.50.

AN INTRODUCTION TO THE PHYSIOLOGY AND PSYCHOLOGY OF SEX. By S. HERBERT, M.D. 136 pages, illustrated. Published by A. & C. Black, London; The Macmillan Company, New York. Price, $1.25.

CLINICAL CARDIOLOGY. By SELIAN NEUHOF, B.S., M.D. 302 pages, illustrated. Published by The Macmillan Company, New York. Price, $4.00.

THE PRINCIPLES AND PRACTICE OF DERMATOLOGY. By WILLIAM ALLEN PUSEY, A.M., M.D. Third Edition. Published by D. Appleton & Co., New York and London.

AN EPITOME OF MENTAL DISORDERS. By E. FRYER BALLARD. 211 pages, illustrated. Published by P. Blakiston's Son & Co., Philadelphia. Price, $2.25.

Miscellany.

Suicide Mortality Among Wage Earners in the United States.—The Metropolitan Life Insurance Company has recently completed a study of suicide as a cause of death among the Industrial policy-holders of the Company. According to this study there has been a marked decrease in the death rate from suicide during the last few years. Among four million insured white males the number of suicides in 1916 was 620, or 15.3 per 100,000. In 1915, the rate was 19.6 per 100,000. The most frequent form of suicide among these white males was by firearms (31 per cent.). Among nearly five million white female policyholders, there were 308 suicides in 1916, or 6.3 deaths per 100,000 insured. In 1915, the rate was 7.5 per 100,000. Poisoning was the most usual method of suicide among the white females—more than one-third having been so accomplished. The death rate from suicide among negro males is a little over one-half as high as among white males. In 1916, the rate was 8.2 per 100,000 insured. Negro females show the very lowest rates of any of the groups studied. The rate was 3.4 per 100,000 in 1916, the total number of suicides being only 22 among over 650,000 insured colored women.

Rat-bite Fever.—The febrile condition occasionally following the bite of the rat is of special interest at the present time, when the rat is a constant companion of the man in the trenches. Dr. T. J. Horder, in the *Quarterly Journal of Medicine* for January, 1910, described three cases of irregular periodic fever following the bite of a rat, and to these Dr. G. S. Middleton added a fourth in *The Lancet* of June 11, 1910. In a brief note on rat-bite fever in the "Medical Annual" for 1913 Dr. F. J. Charteris describes the characteristic sudden attack of fever repeated at intervals of a few days, each attack being ushered in by a rigor. He states that in a number of cases salvarsan was used with apparent benefit, seeming to cut short the disease.

Dr. Herbert French, in a later number of the "Annual," also calls attention to the periodicity of the febrile attack, which recalled to him some of the characters of relapsing fever. We shall hardly be wrong in assuming that rat-bite fever is in fact due to an infecting organism, although as yet no one has succeeded in isolating it. We should like, however, to suggest that the type of temperature chart in all the cases we have cited of this fever is curiously reminiscent of the charts of trench fever given by Major Arthur F. Hurst, R.A.M.C., in *The Lancet* of October 14, 1916, and of the charts of the Volhynian fever, described as occurring in the German trenches, especially on the Russian side, of which we gave examples in *The Lancet* of March 3. No one, as far as we know, has claimed that trench fever is due to the direct bite of the rat, but the opinion is gaining ground that it is a spirochetal disease conveyed indirectly by a parasite from animal to man, and that the rat is the animal to blame. Rat-bite fever and trench fever may differ only in the presence in one case of an intermediate host. There should be opportunity in the trenches for a comparative study of the two fevers.—*The Lancet.*

Therapeutic Hints.

Malaria in Children.—William H. Deaderick states that in the treatment of this condition in children the best practice is to administer the quinine at short intervals, every two or three hours. While children bear quinine in relatively large doses better than adults, the size of the dose should be regulated by the severity of the attack and the age of the patient. In average cases children from six months to two years of age may be given from one-half to one grain of quinine every three hours; from three to five years, one to two grains; from six to ten years, from two to 2½ grains. These quantities may be increased in severe attacks. The drug is usually given by mouth and where capsules cannot be used, the drug must be given in a tasteless preparation or a disguising vehicle. Euquinine and tannate of quinine are the best tasteless preparations. The former must be given in slightly larger doses, the latter up to double the dose indicated above. The most efficient liquid for disguising the taste of sulphate of quinine is syrup of yerba santa, at least one dram to be given for each two grains of the quinine. In pernicious malaria the drug should be injected intramuscularly in dilute solution and the best salt for this purpose is the dihydrochloride. Intravenous injection is preferable but the veins of young children are often difficult to penetrate. Rectal administration of the solution or suppository may be employed to supplement other methods, and the buttocks should be pressed together for one-half hour after insertion to aid retention. Inunction of quinine and lard, as employed in the South, may be used as an additional means.—*Interstate Medical Journal.*

Paludism.—Green offers the following formula for use in malaria:

℞ Acidi arsenosi .....0 grams .10
Quininæ sulphatis .....4 grams.
Confectionis rosæ .....2 grams.
M. et ft. in pilulæ No. xxx.
Sig.: Two pills to be taken each day.—*Bulletin Général de Thérapeutique.*

Vomiting of Pregnancy.—C. R. Hannah considers the following measures decidedly beneficial in this condition: In the reflex type correct any malposition of the uterus, remove tumors, or a troublesome appendix and treat and restore to normal function any offending organ. In the neurotic type, ascertain home surroundings and endeavor to correct difficulties, improve home hygiene and put into practice rigid suggestive therapeutics. Cooperation of family and firmness of doctor are needed here. Elimination by bowels and free use of water per anum are excellent; also dilatation and application to the cervix are means of good mental suggestion, when needed. In the toxic variety, drugs have often failed. Adrenalin sometimes gives relief. Hannah has had greater success by insisting upon the patient taking her breakfast in bed and remaining there for one or two hours; eating whatever she wants at any time during the day and even immediately after vomiting; giving large doses of sodium bicarbonate (one dram to eight ounces of water) six times a day, and by making a thorough vaginal examination, and, if normal, letting the patient alone.—*Texas Medical Journal.*

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OSMOSIS, AN IMMUNIZING FACTOR IN TUBERCULOSIS.

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THEORIES, speculations, hypotheses, are started; in exceptional instances only are they deemed worthy of prolonged or permanent adoption. And so it is that while offering the following interpretations of the osmotic phenomena and attempting to indicate those phenomena as immunizing factors in pulmonary tuberculosis, I am perfectly conscious that such a thesis may be beset with many snares.

However, if we start from fixed points, making our ground good as we go, by collecting only the best of evidence, new lines of thought or conquest may be suggested and I conceive we shall arrive at values of no inferior kind.

A little difficulty may attend an effort to coordinate sufficient evidence in a limited paper to illustrate clearly a probable relation between such complex and imperfectly understood phenomena as osmosis and immunity in pulmonary tuberculosis, and yet, that osmosis might be, and probably is, the value to assign the several unknown quantities in the perplexing equation of immunity in tuberculosis, there is no substantial fact which I am able to discover that can be adduced to prove the contrary.

That the phenomena of osmosis should be assigned by nature to the important task of largely maintaining the processes of growth, reproduction, assimilation, and repair, or in a single word, life, and yet are not in some manner endowed with potential energies to counterbalance and resist invasions against life, would indeed be a biological paradox. The truth is, as we shall discover, there is considerable evidence to sustain in whole or in part the theory of an intimate dependency of immunity upon osmosis in pulmonary tuberculosis.

To qualify properly the several points which are to follow, it may not be out of place here to present a few of the more essential facts concerning our accepted ideas of immunity. The magnitude of the subject, however, combined with a necessity for being brief, makes it impossible to consider anything more than a relatively incomplete, elementary review. For a more extensive study of the subject reference must be made to more complete sources.*

*Consult: "Studies on Immunity," by Ehrlich; "Studies on Immunisation," by Wright; "Immunity in Infective Diseases," by Metchnikoff.

The almost universal attention which is centered upon the perplexing problems of susceptibility and immunity, natural or acquired, in tuberculosis, is evidence of the fact that there is no more interesting or more important question in the whole domain of biology.

Immunity may be broadly defined as the state of physical security possessed by individuals or species whereby they do not give evidence of a reaction or disease when the poisons which cause such reactions or diseases in other individuals or species are introduced within their organisms.

Immunity should be accepted rather as a relative term, for all organisms are more or less susceptible to reaction under certain circumstances to some form of bacteria and their poisons. Conversely, all animals manifest a tendency to resist bacterial invasion and it frequently happens that this resistence is sufficiently effective to secure the body against many specific forms of bacteria which succeed in entering the organism. Not infrequently an entire race of people have manifested this quality of resistence to certain pathogenic microorganisms; yet, again, there may be an unusually high degree of susceptibility in a people even to the less harmful forms of bacteria. Racial immunity is probably acquired only after repeated or prolonged exposure through several successive generations to the same pathogenic bacteria. As an instance of this racial susceptibility and immunity, the once powerful Indian nations which flourished in early colonial days, in New England, may be mentioned. The Indians perished by thousands from a fever to which they were formerly strangers and which the Europeans who nursed them never contracted.

In so far as individuals are concerned, resistance to bacterial infection seems to be a very variable quantity. Every physician is quite familiar with many instances, even in the same family, of individual tendencies either to resist prolonged exposure to infection or in other cases to evince a marked susceptibility.

Together with the differences in racial and individual immunity and susceptibility, the various organs of the body are influenced in varying degrees by the controlling factors of resistance. No satisfactory explanation has as yet been given for these apparent differences. The lungs, especially in the instance of tuberculosis, are undoubtedly the organs of least resistance. The other organs of the body, more particularly the muscles, seem to possess a relatively high degree of immunity to tuberculous infection. That the lungs are the first to manifest the presence of primary tubercles there can be no doubt; yet the other organs of the body

rarely, or only in extreme cases, evidence tuberculous involvement.

Resistance or susceptibility to pathogenic bacteria may be either a natural inherent quality of a race, individual, or organ, or this natural immunity or susceptibility, as it is respectively designated, may be increased or lessened by various causes, and in such instances it is usually known as an acquired immunity or susceptibility as the case may be.

There are many reasons for believing that the factors which influence these transformations are not the same in all cases, for they frequently are known to vary for the same or different individuals from time to time under conditions which, in the instance of tuberculosis, are quite imperfectly understood.

It is probable that these essential differences depend in most instances upon conditions which tend to encourage or to prevent the development of pathogenic bacteria; or upon the destruction of those bacteria by some property residing in the tissues or fluids of the body; or upon a neutralization of their toxic products by certain substances in the bodies of those individuals who have sufficient immunity to overcome infection.

It is of some importance to distinguish the difference between natural and acquired immunity. Certain defensive proteins of germicidal power seem to be found only in the blood serum of the naturally immune; they have been designated as alexins to differentiate them from the antitoxins of acquired immunity which they somewhat resemble.

The simple fact that pathogenic bacteria not infrequently find unsuitable metabolic conditions in some individuals or species would seem to account in some measure for the natural immunity in these cases; while again, successive accidental inoculations in some animals may also be a possible factor. Examples of such instances may be mentioned in the extreme immunity to tuberculosis evidenced in fish, frogs, turtles, etc., while the larger carnivora are also notably immune. The supposition in the latter instance is that the carnivora which quarrel over the dead bodies of herbivora which are especially prone to tuberculosis have, through the infliction of wounds in combat, successively inoculated themselves for many generations and are in consequence thereof no longer susceptible. As an example of marked susceptibility the inevitable guinea pig may be mentioned.

Instances of a natural individual susceptibility to tuberculosis are frequently seen when, from among several children of equal inheritance in a family, and similar environment, one of the children only will evidence insufficient immunity to resist the disease.

However, no individual, race, or species is known to possess absolute immunity to the tubercle bacillus.

Acquired immunity may be either active or passive. Active acquired immunity is induced by a direct stimulation of the cellular elements of the organism through the introduction of a specific reaction by inoculations, one or several, with virulent bacteria, bacteria attenuated in virulence, dead bacteria, or the products of bacterial proliferation. Such specific reactions are probably induced at some expense to the whole organism for they are quite the same as the disease against which protection is desired, although more mild in degree. Nevertheless, in the special instance of vaccination against smallpox, all of the facts certainly do not seem to justify the misinformed forces leagued against this valuable measure.

Passive acquired immunity neither induces a specific reaction nor the stimulation of the organism to the production of its own protective substances. On the contrary, these reactions and substances are simply produced in the body of another animal and from this the individual to be protected is subsequently injected with the immunizing serum thus formed. The production of diphtheria antitoxin by means of inducing the specific reaction in the horse and later transfering a small quantity of the serum to the individual requiring that specific immunization is an illustration.

The researches of Pasteur, Toussaint, Koch, and other investigators in this field of biology constitute the foundation of our present knowledge of bacteriology, protective inoculations, serum-therapy, and the mechanism of immunity.

Originally it was supposed that the specific reaction or disease which was manifested when pathogenic bacteria in sufficient numbers formed a focus in the body, was directly due to the presence of the bacteria themselves, but later researches have shown that such reactions are induced by the action of chemical poisons known as toxins which are produced by their respective bacteria whenever they find a suitable medium for their growth. For evident reasons, these interesting substances have attracted no little attention in efforts to properly analyze them.

That many of the true bacterial toxins are extremely powerful poisons there can be no doubt, especially when we consider the fact that some of them are approximately twenty times more potent than cobra venom and 200 times more so than aconitine, the acknowledged leader among drugs in this respect.

Toxins are not only elaborated when bacteria are growing immediately within the tissues, but they are also believed to be a product of saprophytic bacteria acting upon decomposing organic matter in the intestinal tract.

Considerable research has been attempted to definitely determine the composition of the complex toxin molecule, but as yet its chemical structure is almost entirely unknown, although there is good evidence to support the supposition that a toxin consists of two parts, a toxophore to which its toxic effect is due, and a haptophore which theoretically unites with its corresponding antitoxin.

In the main, this is nearly all we know about the bacterial toxins, and even so, these observations cannot be applied to the primary causative microorganism of tuberculosis, the *Bacillus tuberculosis*, for the cogent reason that this particular bacillus does not form toxins so far as we know. Many elaborate and skillfully contrived experiments intended to define this property of the tubercle bacillus have in all instances demonstrated a total absence of toxins. This fact, together with the further fact that tuberculous foci in the lungs, in many instances remain quiescent over long periods of latency and give no evidence of toxic disturbances in the body, justify the supposition that the tubercle

bacillus tends to localized processes only. Besides, the *Bacillus tuberculosis* is not saprophytic in the restricted use of the term, and neither is it a true pus-former.

The question of additional infection with symbiotic bacteria in pulmonary tuberculosis is no longer problematic or experimental. The widespread prevalence and almost universal infection by pus-formers is quite generally recognized and with this knowledge is gradually coming a true interpretation of the destructive processes in tuberculosis and their attending toxemias. Koch's bacillus alone is seldom very destructive of tissue until the biological balances are overthrown by the symbiotic factor which is added when the streptococcus and other pus-formers engraft themselves upon the latent, original primary tubercle. The truth is tuberculosis would be a comparatively mild disease were it not for the streptococcus-pneumococcus group of pyogenic microorganisms.

All of these facts are in harmony with the osmotic theory and tend to sustain the view that pulmonary tuberculosis originates primarily through a loss of natural immunity because of certain metabolic disturbances, the indication of which is the purpose of this paper.

The specific reactions produced in the body by infective viruses stimulate the organism to the formation of the so-called antibodies which confer an active immunity on the individuals against the particular antigen or virus which causes the reaction.

The antibodies now recognized are the antitoxins, bacteriolysins, opsonins, agglutinins, and precipitins; the last two, however, so far as known, have little immunizing action, although of considerable value for certain diagnostic purposes.

The exact nature of the antitoxins is, like that of the toxins, not very clearly defined. As the name implies, their immunizing value lies in their power to neutralize the poisonous properties of the toxins. Much of our knowledge of this complex reaction of the antitoxins upon the toxins is rather in a theoretical state of evolution, although the naure of the reaction, in so far as it relates to pure chemistry, has been quite clearly shown. Just how this reaction is brought about in the fluids of the body is not definitely known, and yet that such reactions are accountable for a considerable degree of our immunity to various diseases there can be but little doubt.

The antitoxins are believed by some investigators to be a product of certain chemical actions wherein the toxins are converted into the antitoxins or, as it were, into modified toxins. Again, there are reasons for believing that the antitoxins are, to some extent, at least, generated by the cellular elements of the tissues. It is also quite probable that defensive proteins are thrown out by the leucocytes which tend to neutralize the toxins and to destroy their bacterial sources. Those which destroy bacteria are called alexins and those which react against the toxins, as might be supposed, are antitoxins.

The antitoxins are highly specific and in consequence thereof, are effective only against that particular toxin which induces the primary reaction resulting in their generation.

As just intimated, the blood not only contains substances to neutralize the toxins, but also can destroy the bacteria themselves through the agency of bacteriolysins. These antibodies which occur in the blood in response to the reaction induced by the presence of an antigen or virus, owe their bactericidal action to their power of dissolving cellular elements in the presence of their complement (alexin) and their amboceptor or immune body. This in analogous to hemolysis in the Wassermann reaction, in which blood cells, the complement, and amboceptor form the hemolytic system. The absence of any one member of the system will prevent the process of hemolysis or bacteriolysis, as the case may be.

The last of the antibodies which may be of interest here are the opsonins. These chemical substances seem to play the very important part of preparing bacteria for assimilation by the leucocytes and in consequence thereof necessarily precede in the process of phagocytosis.

The phagocytes, as everyone knows, are white blood-cells, and possibly to some extent, endothelial cells, which gather at a point of infection and by means of their remarkable property of ameboid movement pass through the vessel wall and engulf bacteria by chemiotaxis to effect their removal; or as we have just observed, these cells may generate antitoxins and also complete the necessary system for bacteriolysis, the dissolution of bacteria.

From this rather rapid review, it is evident that a remarkable progress has been achieved in a general way in our studies on immunity, and yet it seems a little discouraging that more is not known about tuberculosis. Many thousands of experiments have been undertaken to help solve the riddle and we have tuberculin in twenty-two varieties at our disposal; nevertheless, one-seventh of all deaths are due to tuberculosis and this "Captain of the Men of Death" stalks on unavenged.

Continuing along the lines of the osmotic theory, suggested by the writer in a previous communication (MEDICAL RECORD, July 14, 1917), the following considerations are submitted in that they might throw some light on this maze of obscure phenomena in so far as pulmonary tuberculosis is concerned.

These observations lie in the broad biological base of the imperfectly understood metabolic phenomena depending on osmosis. Some of the observations necessary for a more perfect knowledge of the ultimate exchanges between the bodily fluids and tissue elements have given to experimentors results exceedingly difficult to interpret.

It is possible that some of the following considerations will disturb a few substantially rooted, preconceived notions, yet there is no legitimate reason why we should allow old traditional prejudices to neutralize the possibilities of progress and there should certainly be no exception in the present instance, where our common foe is defiant.

Undoubtedly, immunity to tuberculosis in many individuals is due to the simple fact that the tubercle bacillus does not find metabolic conditions in the body suitable to its particular needs.

Those conditions may either prevent the development of the bacillus or result in a destruction of the bacillus by virtue of certain properties residing in the tissues or fluids of the body; or they may neutralize the toxic products of symbiotic bacteria and destroy or prevent the growth of these. Finally,

as in the particular instance, of osmosis, all of those immunizing conditions may at once be brought to bear.

If the validity of the conception that the protective leucocytes, opsonins and other antibodies may not always find access to the tuberculous foci can be established, it is certainly a logical conclusion that the forces which may bring such indispensable immunizing agents to the issue should receive a more concerted attention.

Regarding the nature of a substance in solution, two theories, the hydrate theory and the dissociation theory, have been advanced. The former, not being accepted by the majority of chemists, will not be further detailed. The latter theory was developed from the study of the pressure exerted by substances in solution. This pressure is called osmotic pressure and may be illustrated experimentally as follows: If we carefully pour an aqueous solution of some salt or other crystalloidal substance upon the bottom of a vessel containing pure water, delivering it through a thistle tube so as not to mix the two, and then permit the vessel to remain at rest for a few hours, it will be discovered that the salt has diffused entirely throughout the water. This diffusion is due to the intrinsic activity of the molecules in solution. It can be further shown that if we separate the two liquids by a permeable or semipermeable membrane, diffusion will still occur, and it will be found that an excess of water has collected on the side of the salt solution. Formerly it was said that this salt attracted the water but the phenomenon is now expressed by saying that the salt in solution exerts an osmotic pressure.

Diffusion of this kind through a permeable membrane is called osmosis. Osmotic pressure is, for dilute solutions, the same as would be exerted by the solute if it existed as a gas of equal temperature and volume, and thus the ordinary gas laws of Boyle, Gay-Lussac, and Avogadro were found to hold for solutions. This is pertinent when we consider the analogy to osmosis in the diffusion of gases in the lungs.

Osmosis then may be defined as the tendency of fluids of different densities to diffuse through an intervening membrane, the intensity of the flow being greater from the thinner to the thicker fluid.

This is according to the law of Van't Hoff which may be expressed as follows: *"At constant temperature the osmotic pressure of dilute solution is proportional to the concentration (number of molecules) of the dissolved substance."*

Depending on variations in degree of density, osmosis in the body may be direct, when the intensity of the flow is in a normal direction between the capillaries and the tissues; or neutral when the fluids on either side of the capillary membrane have the same density; or indirect, when the intensity of the flow is in an abnormal direction between the capillaries and tissue elements.

These differences, however, are doubtless in many instances so slight that they may be determined only with considerable difficulty. The exceedingly fine balances maintained in the body preclude any possibility that these variations in the osmotic phenomena are present except in extremely small degrees. The slightest deviations from the normal may nevertheless neutralize and impair the intensity of the osmotic flow to such an extent that only an inadequate quantity of the protective leucocytes, together with the opsonins and other antibodies, may approach the entrenched bacteria.

It is well to remember that proteins, because of their large molecules, do not pass through permeable membranes by means of osmosis. The proteins are circulated in the blood as amino-acids which have smaller molecules and may readily pass through the capillary membranes by means of osmosis to the necessary nourishment of the tissues. For these same reasons the red cells do not migrate, but pass along through the ultimate and extremely minute capillaries to join similar capillaries of the veins. The classical exception to this rule of proteins is that of the leucocytes. These cells, because of their remarkable property of ameboid movement, are able progressively to contract their molecular size, as it were, and in this manner, more commonly known as diapedesis, succeed in passing through the capillary walls to the tissues beyond.

In the body we deal with aqueous solutions of various substances which are continually passing through intervening permeable membranes, such as the walls of the capillaries or of the alimentary tract, and the laws of osmosis are of extreme importance in explaining many of the complex processes relating to the formation of secretions, absorption of nutriment, and the protective or nutritive relations between the fluids of the body and the tissue elements.

Everywhere within the body there is a rich capillary network of vessels permeating every tissue. By means of osmosis the plasma (serum) which contains the protective and nutritive elements of the blood, consisting in the leucocytes, albumins and proteins in the form of amino-acids, sodium chloride, opsonins and other antibodies, is continually passing through minute membranes to bathe the tissues in the interstices of the capillaries.*

With the exception of the allied phenomenon of filtration, there is no other physical force as yet known, which will impel the bodily fluids through permeable membranes as a purely physiological entity; or, reversing the order, there is no other physiological agency, except filtration, whereby the bodily fluids may be made to pass through permeable membranes.

Filtration, unlike osmosis, is dependent on the pressure within the arterial system and is merely a process of forcing the fluids, as it were, through the membranes. Filtration is largely distributed as a process in organs more particularly engrossed with secretory functions, such as the kidneys or other abdominal organs.

That filtration could not possibly be allied with osmosis in the lungs is manifest by the extreme reduction in the pulmonary pressure, which is only one-eighth that of the aortic arterial pressure. Again, the extreme thinness and delicacy of the permeable capillary membranes in the lungs, being such as to bring the red-cells virtually in contact with the air in the infundibula, precludes even a possibility of a process of infiltration existing there. Besides, the lungs may be regarded as an osmotic

* "It is notorious in hospital practice how often the fatal event in arteriosclerosis, cirrhosis of the liver, etc., is a terminal acute tuberculosis."—OSLER.

membrane preeminently fitted for, and engaging exclusively with the phenomenon of diffusion and they are in no wise concerned with a physiological secretory function.

Unquestionably, when a moderate degree of mechanical stimulation is applied to the intervening permeable membrane, the intensity with which osmosis is accomplished may be to some extent augmented.

We probably have in this simple fact a solution of the perplexing problem of immunity throughout the muscular system and an explanation of the relative susceptibility of the more or less immobile apices of the lungs. With the exception perhaps of an occasional group of muscles, such as the psoas, all of the minute permeable membranes which form the capillaries of the muscles are under the influence of slight frictional movements which naturally encourage the passage of leucocytes, opsonins, and other immunizing bodies through such membranes as occasions for defensive measures arise.

However, if a focal tuberculosis develops, undue motion merely disseminates the infection.

In the lungs, three distinct regions may be recognized according to their degrees of mobility. The apical, or relatively immobile; the middle, or moderately mobile; and the lower, or actively mobile in consequence of being nearer the diaphragm. It would seem that such conditions should favor the apical region as the first to manifest primary tubercles. Whether the eparterial variations at the hilus influence the right or left apex in degree of frequency it is impossible to say.

The insensible variations in osmosis are more conspicuous in the grosser evidences of a disturbed metabolic balance observed in the processes of growth, reproduction, assimilation, and repair with which osmosis is inseparably concerned.

In the particular instance of growth, it is not infrequently observed that those individuals who manifest a disturbed osmosis and rapidly acquire a tall and slender growth throughout adolescence, are more particularly susceptible to subsequent tuberculous involvement.

In the instance of reproduction, all of us are familiar with the pathetic circumstances of the pregnant tuberculous woman who evidences some apparent recession in the tuberculous symptoms during gestation, only to succumb the more rapidly after the osmotic activities of reproduction have subsided.

In the instance of assimilation, the problems of infant feeding naturally come to mind. Efforts to support metabolism by means of the bovine milk molecule which differs in many vital respects from the human milk molecule and among other things does not osmose readily in the process of absorption from the intestinal canal, are frequently attended with grave consequences.

In the instance of repair, when the normal osmotic activity has been disturbed, possibly for months or even years all of the dependent physiological processes become impaired to a corresponding degree. Digestion, absorption, secretion, the protective and nutritive functions of the blood or lymph, and many other vital processes become more or less impaired. The balance between repair and elimination fails to be maintained, while the increasing burden placed upon the already subnormal physiological systems becomes greater than they are capable of sustaining. Eventually, a subtle condition of hypotonicity is introduced and the individual susceptibility to infectious bacteria increases. The affected individual is conscious of some vague, slowly progressing condition gradually undermining him, although he is at a loss to localize any particular group of symptoms. He tires easily and there is a general feeling of languor and lassitude. Sooner or later symptoms manifest themselves in the lungs and incipient tuberculosis is in evidence.

The widespread and almost universal distribution of the tubercle bacilli justifies the supposition that we are frequently taking them into our organisms either through the respired air or in our food, and doubtless from early infancy, many of the bacilli invade our bodies.

A normal breast fed infant, let us say, receives a few of the bacilli which find their way to the parenchyma of the lungs or other organs, and being intent upon their own propagation, immediately commence to multiply.

Assuming the osmotic activity to be direct and normal throughout the body, an adequate quantity of opsonins will pass the capillary membranes to the vicinity of the bacilli. Simultaneously, the leucocytes in sufficient numbers pass through the capillary walls, and the attack on the invading bacteria is merely a process in bacteriolysis and perfectly analogous to hemolysis; the bacteria (cells) being dissolved by the complement and amboceptor which complete the bacteriolytic system; or the leucocytes may engulf the bacteria by the aid of opsonins and promptly effect their removal. Our infant subject may then be said to possess a natural immunity.

That these protective or immunizing forces are in almost constant engagement with bacterial invaders somewhere within the body is quite probable.

Unfortunately, the artificial methods of infant feeding which are merely intended as strategic and imperfect substitutes in the occasional emergency when it becomes expedient to remove the infant from the breast, have led to a neglect of the possible dangers in such practices and it not infrequently happens that cow's milk is actually preferred to the provision made by nature. Especially under such circumstances the metabolic balances are not infrequently disturbed and the long chain of phenomena in the nutritive processes of the infant becomes seriously impaired and an imperfect or neutral osmosis is eventually induced while the natural immunity gradually becomes transformed into an acquired susceptibility. The bacilli which then invade the body are destroyed with considerable difficulty or not at all.

The seriously impaired osmotic activity is perhaps augmented to a sufficient degree by mechanical stimulation of the permeable membranes throughout the muscular system to maintain an apparently normal resistance in the muscles.

In the liver or other abdominal organs, the neutral osmotic flow is no longer an immunizing factor, and yet the allied phenomenon of filtration is sufficiently active to impel the leucocytes and other immunizing bodies through the capillary walls by means of arterial pressure, and in consequence

thereof an apparently normal immunity of almost all of the abdominal organs is maintained.

However this may be, there are certainly no allied forces in the lungs to assist the inefficient neutralized osmotic activity. Possibly in the regions of greatest mobility, the middle and lower, the slight mechanical stimulation received from respiratory movements may temporarily assist the immunizing bodies through the permeable membranes and a partial immunity may be for a time continued.

In the immobile apices and bronchial lymph glands, exiled entirely to a dependency upon osmosis for their immunity, the conditions would seem to contribute to the security and propagation of the bacilli and consequent primary tubercle formation.

The question of the more frequent involvement of the bronchial lymph glands in childhood is one of considerable difficulty to satisfactorily explain, and yet it is doubtless true that the lymphatics distributed along the pulmonary circulation are quite entirely dependent upon osmosis for their immunity.

The presence of the tubercle bacilli at various foci in the lungs, and in the absence of sufficient immunizing bodies, stimulate a local cellular activity until the bacilli are entirely sequestered by encapsulation in fibrous tubercles. This provision of nature would seem to adequately meet many protective requirements inasmuch as the tubercle bacilli are decidedly aërobic and non-motile. Their requirement for oxygen in fact is so great that experimental inoculation of artificial culture media is attended with reverses unless the inoculation is very lightly and superficially made on the surface of the medium.

Encapsulation then, depriving the bacilli of a necessary requirement for their growth, places them in a relatively harmless status; yet, the primary tubercles thus formed are a source of constant attraction for the many forms of pyogenic bacteria and unless our infant subject should acquire a more normal osmotic activity, these symbiotic bacteria readily engraft themselves upon the primary tubercle and an inevitable toxemia, with other tuberculous signs of activity, is introduced.

With the return of a normal immunizing osmotic activity the possibilities of secondary infection are negative, and although the primary tubercles originating in the infant continue throughout life as a constant source of attraction for pyogenic bacteria, of which there are so many varieties, as long as the normal direct osmotic activity remains unimpaired, the immunizing elements in the circulation will constantly and efficiently defend our organisms.

That the leucocytes readily come under the control of Van't Hoff's law of osmosis is evident from the remarkable provision made by nature in maintaining the erythrocytes in an axial stream while the leucocytes arrange themselves closely along the capillary wall when they gather in large numbers at a point of severe inflammation. If they were uniformly distributed throughout the volume of blood in the vessel they would probably modify the osmotic pressure while their necessary migration would be interfered with according to the law that the osmotic pressure is proportional to the number of molecules concentrated or uniformly distributed in the solution.

The improvement of an impaired osmosis in the body should be followed by a more normal physiological activity in the functional characteristics of many vital processes.

The exact origin of the leucocytes is still under consideration, yet there can be but little doubt that whenever the physiological units from which they may be derived are functionating normally, they are produced more efficiently than could be supposed if such physiological units were in a state of hypotonicity because of a prolonged impairment in osmotic activity.

Tuberculous individuals with a leucopenia, or very low leucocyte count, are invariably known to have a relatively bad prognosis.

That the improvement which is frequently observed after simple incision and drainage in abdominal tuberculosis might be due to the removal of an abnormal source of osmotic pressure in the pathological fluid, is a possibility.

Although some of the complex physiological processes which seem to enter into the phenomena of immunity are somewhat imperfectly understood, it is undoubtedly true that immunity in pulmonary tuberculosis, by whatsoever means acquired, will pass in through the gateways of osmosis.

Much remains to be achieved; nevertheless, it is possible that enough has already been revealed to direct the way to that substantial factor which will emancipate the noble organs of respiration and inevitably conquer the dark forces leagued against them.

THE MANAGEMENT OF DECUBITUS, A SYSTEM IN USE AT KINGS COUNTY HOSPITAL.*

By WILLIAM BROWNING, M.D.,

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THE successful management of bedsores is an old criterion of good nursing. This condition has so oft been anathematized that its recurrence but proves its disreputable character. Of course such a condition should never be allowed to develop. Nevertheless, anyone with accurate olfaction cannot frequent hospitals without now and then detecting the tell-tale effluvium.

At the Kings County Hospital, the final refuge for all the derelicts of some two million people, wretched cases of this kind have from time to time to be admitted. And where, as in the neurological service, there is commonly an underlying defective innervation of the affected parts, the problem of care and relief is a most serious one. It consequently became necessary to work out a more advantageous plan than those long in vogue. This was done partly on the basis of past methods for the treatment of this condition, and partly by the devising of additional means. The system now followed can best be described as a connected whole. Whether all the principles involved are or are not applied elsewhere matters little, while exceedingly laborious in the carrying-out, they yield results that it has not been possible to secure otherwise.

Certain generally understood preliminaries are a

*From the Neurological Department of Kings County Hospital.

necessity for success, and can be briefly summarized:

1. A hospital personnel that can be absolutely depended upon. Without this nothing is to be expected. And a sniff of the atmosphere anywhere about the patient's bed gives a prompt control of the efficiency obtained.

Suggestion of a Decubitus Division.—Where there is constant work of this kind—and one case may be enough—it would be an excellent innovation to have it handled in a special or separate section, thus insuring attendance by the same physicians and accustomed nurses. The duty is so distinct that it is not likely to be well carried out by any other arrangement. And the welfare both of the sufferers and of other patients would thus be greatly conserved.

2. Cleanliness. As many of these involvements are of parts about the hips and pelvis, and incontinence (bowel and bladder) frequently adds its burdens and dangers, the securing of cleanliness becomes a most trying part of the task. Any discharge (whether the patient be conscious of it or not) must be promptly removed.

3. Change of the patient's position. The areas of skin bearing the body weight must be relieved with a frequency dependent somewhat upon its reactivity. Often every half-hour day and night is the longest permissible interval. And where the skin shows engorgement and lividity the change may need to be made even more frequently. Sometimes this can be done by turning the patient from side to side; occasionally the back can be used briefly or the prone position. Again cushion-rings and other substitute points of rest can be arranged. And where the patient's general status permits, some recourse to the sitting position is very advantageous.

Resort to air- and water-beds may aid a little in some cases, although the liability of chilling is considerable with either. In summer this is less; and even in winter, if the warmth of the water can be surely preserved, it may be permissible; or a thin intervening pad may suffice.

In general, of course, the prevailing posture must be such as to permit the gravity discharge of secretions from any ulceration.

4. For local preventive treatment a most rational and useful agent is the alternate application of heat and cold described by Weir-Mitchell in his work on nerve-injuries. One advantage of this is its availability practically everywhere. Especially in the common cases where trophism is much at fault this form of stimulus is doubly necessary. It can be repeated as many times a day as found advantageous. In general, its purpose is to improve local circulation, stimulate trophism, and favor cleanliness.

The methods so far outlined usually suffice for the prevention of even threatening bedsores. They are consequently available for both prevention and cure. But where the ulcerative, sloughing, gangrenous, pus-forming, and burrowing stage has once developed, these means must be supplemented. And we now come to the only part of the scheme, if any, that has an element of novelty.

The usual routine of simply adjusting a pad of oakum or a dressing of any convenient antiseptic finds in practice little to commend it. The most thus accomplished is a partial absorption of accumulating filth.

What is needed is an application that penetrates, disinfects, deodorizes, checks secretion, and, if possible, has some constricting quality. Bichloride of mercury does not penetrate. Carbolic acid and its kind may sear the surface, but hardly get further, and in these conditions are specially liable to induce carbolic gangrene.

There is one agent, however, that can favorably affect the tissues, and accomplish all these desirable effects. That is formalin (formaldehyde), as shown by its application in histology, but used of course in proper dilution. The peculiar qualities of this agent and their adaptability to the purposes in question need no discussion. A half per cent solution of the usual 40 per cent standard strength serves these ends admirably, and with care causes no undesirable irritation.

A convenient way to meet the various indications each time is to cleanse the ulcer and all its ramifications with plain boiled water as warm as can be handled. Then finish with the cold formaldehyde dilution, getting it well into each crypt and sinus. This includes automatically the stimulating effect of alternating temperatures.

To avoid the exsiccating action of the solution on the user's hands it might doubtless be applied by means of swabs or under the protection of rubber gloves. With us the custom is to make the application with a syringe, this method has the advantage of facilitating its introduction into all pockets and covered tracts and its contact with the exposed surfaces.

Finally it is necessary to have a dressing material that in the intervals of cleansing keeps up the action so far as practicable. For this purpose the subiodide (oxyiodide) of bismuth has been found very satisfactory. It is dusted on in sufficient quantity to make a protective absorbent and antiseptic layer everywhere over the area.

This whole dressing must be repeated as often as requisite for cleanliness, at the start several times in the 24 hours, and thereafter twice or thrice a day is a minimum. When the raw surface becomes dry and clean crusts form, they may be left undisturbed to facilitate cicatrization.

The progress in a given case is naturally influenced by the general condition of the patient. In, for example, neglected cases of multiple neuritis in middle life, as the general disorder responds to treatment, we can see a marked acceleration in the local response as well; even desperate cases of this sort may recover and leave the hospital with only a well-scarred back as a residuum. If, on the other hand, the decubitus is an accompaniment of some destructive central lesion, a slower course is to be expected.

This system has been in use in this service for several years now, and has given such satisfactory results that it can be commended. So far as local treatment can avail, this plan fills the bill. And it has the advantage of being simple in theory and application. Like any useful method for this condition, however, it entails an unavoidable amount of trouble.

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RECENT ADVANCE IN THE TREATMENT OF KIDNEY DISEASE.*

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In the year 1827 Richard Bright, working in Guy's Hospital, London, published his "Reports of Medical Cases," in which he described for the first time in the history of medicine nephritis as we now understand it. So accurate and comprehensive were his powers of observation and so clear and definite were his descriptions of this disease that he left but little for succeeding clinicians to unfold. Indeed, but very little progress had since then been made in the study and treatment of kidney disease until the recent advent of the science of biological chemistry in this field within the past few years.

In this brief paper we shall consider only the chronic interstitial type of the disease, because it is the most common and least understood. It develops under the eye of the general practitioner in the most insidious manner and rarely comes to the notice of the hospital clinician until it is well established. It is well, therefore, for the general practitioner to have in mind certain facts and simple methods of investigation which will assist him in its study and treatment.

The etiology of the disease, while indefinite and obscure, is most important. It is remarkable how frequently this disease runs in families. In more than half the cases which the writer sees there is a paternal or maternal history of arterial degeneration. We cannot say that the disease is inherited, but we ought to assume that the liability to it is transmitted from one generation to another. Kidney degeneration when it thus appears in families usually comes in about the same decades. One therefore should not only take careful family histories but he should watch out for signs of degeneration in the members of such families as they approach this decade characterized by the appearance of kidney disease.

Kidney disease and arterial diseases are nearly always found in association with focal infection in the head, chiefly the teeth and tonsils. Rarely does one see this type of disease in an individual in the absence of focal infection; on the other hand, persistent focal infection is nearly always accompanied by renal irritation. Therefore while we cannot say that a persistent low-grade infection in the mouth is the direct causal agent of arterial and kidney degeneration, we are warranted in viewing it with suspicion. Out of 234 such cases which the writer has seen within the past year or two, in only twelve instances was there an absence of obvious mouth infection. In the treatment of kidney disease, we find further proof that persistent low-grade infection is a contributing causal agent, for when it is removed one often notes an arrest or amelioration of the disease.

Methods of Study and Their Relative Value.—The history of the patient is worthy of careful study. Occipital headache, dizzy spells, gastric symptoms, weakness, shortness of breath, cough, and, most important, a night polyuria are all suggestive. The value of the family history has already been alluded to. An overacting heart and high blood pressure are the most striking points on physical examination. The simple tests of the urine for albumin are of very little value. Taking the specific gravity of a single specimen is of even less importance. Neither of these tests gives reliable information as to the presence of the disease or of its seriousness. Accurately saving the urine for twenty-four hours in periods of twelve hours representing the day and night, measuring these and determining the specific gravity is quite valuable. A patient who passes from 20 to 30 ounces of urine or more during the night, unless this can otherwise be explained, is quite likely to have a sclerotic kidney. Accurately saving the urine in two-hour periods during the day from 7 A.M. to 9 P.M. and from 9 P.M. to 7 the next morning, measuring this and taking the specific gravity of each sample will give information of the greatest value. A normal person will eliminate amounts of urine varying very greatly in volume during the day, depending entirely on the amount of fluid taken. Moreover, it will be eliminated promptly after it is ingested. During the night period of ten hours but little, if any, more urine will be eliminated than during any of the two hours of the day. The specific gravity of the normal urine will also vary widely in the sample from 1006 to 1025 or more. There is a similar response to meals. The sclerotic kidney in proportion as it is diseased will eliminate practically the same amount of water every two hours irrespective of what may be ingested, and during the night period the volume may equal or exceed the total excretion of the day. This tendency to uniformity in amounts of urine and in specific gravity and the failure or delay in responding to the ingestion of food is known as fixation by the kidney. It means that the kidney is already working under high pressure and is unable to respond promptly to the additional work thrust upon it by the ingestion of food and drink. In the scientific laboratory we investigate the excretion of nitrogen and salt in the same way and gain further valuable information. The first part of this test can easily be carried out by the general practitioner and is well worth the trouble and labor it imposes.

The ordinary urea test by the hypobromite method is valueless. Of the many functional kidney tests which have been suggested, the phthalein test is by far the most useful. Any practitioner at a very small expense and with no laboratory training can readily do this. In conjunction with other methods of study, it usually yields very valuable information. When kidney degeneration becomes severe, phthalein elimination declines often to the vanishing point, but not always. When taken in conjunction with the two-hour renal test, the blood pressure and heart examination, and also the examination of the eye grounds, the general practitioner can form a very reliable estimate of the seriousness of his case and the utility or futility of his treatment.

A brief description of the more refined and technical methods of study which necessitate a well-equipped metabolic hospital unit, including both chemical laboratories and special diet kitchens, may be of interest. For the accurate study of this disease, a patient must be placed under conditions

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where his food can be accurately prepared and served, and where all of his excretions may be saved. Under these conditions, certain blood and urine studies yield information of value which is otherwise unattainable. Under these conditions the study of that portion of the nitrogen in the blood which exists in the form of uric acid, urea, and creatinin is both fascinating and useful. Kidney disease is always accompanied by a disturbance of protein metabolism. Consequently there is usually defective nitrogen elimination with retention. The problem is a most intricate one and too complex for simple presentation. Further, there is no unanimity of opinion as to the best methods of study or as to the significance of the data thus afforded. Urea in the blood is the result of food metabolism, creatinin is the result of cell metabolism, never of food metabolism. The normal blood contains from 1 to 2.5 mg. creatinin per 100 c.c. If creatinin is present in excess of 5 mg. per 100 c.c. of blood, the prognosis of the case according to Chace is very serious, death is likely to ensue within a year. The writer's experience tends to confirm this observation.

There is a definite relation between the concentration of urea in the blood and its elimination by the kidneys into the urine. This was worked out by Ambard and amplified and improved by McClean and is known as the coefficient of urea excretion. With an increasing kidney deficiency this coefficient rises, when the kidneys become more efficient it falls. When the kidneys are overactive from irritation, as in fever and in the early stage of kidney disease, it may be lower than normal, but when the kidneys begin to play out, it rises much above normal. It is perhaps the best method of measuring the progress of kidney disease. By it, kidney changes can be detected earlier than by any other method.

Advanced nephritis is attended by acidosis, both local and general. Howland has shown that the general acidosis of kidney disease is due to the retention of phosphates. His method of study has not yet been published but the fact is of clinical value. There is probably also an acidosis in the kidney but this is not demonstrable. Nephritics usually show a deficiency of calcium in the blood; and since calcium is necessary for the metabolism of iron, the iron content of the blood is also low, with a resulting anema. Calcium also favors the elimination of the phosphates, therefore it is one of the most valuable remedies in the treatment of the disease.

A few words as to treatment. Christian[1, 2] has shown, and the writer's own experience confirms this, that diuretics are practically worthless. If a patient is dyspneic and edematous, it is quite likely that he has a disturbance of salt metabolism. The Karell diet in such cases works marvels. The patient is given no other food than one quart of milk and one pint of water daily for a week or perhaps two weeks. Edema usually quickly disappears. Six to eight ounces of lime water or better still one dram of calcium lactate and fifteen grains of Blaud's mass are given daily in divided doses. Later starchy foods and vegetables rich in calcium and iron are added. Protein food is given according to the ability of the body to take care of it. It is the writer's plan to put these cases on low diets, cautiously building them up as above suggested. At the same time a record is kept of their muscular vigor by means of a dynamometer. As a result of the studies which have thus far been made, the writer feels warranted in saying that a patient will gain in muscular vigor on a diet which his body can care for even though it be much below his normal needs, and he will lose in muscular tone if he is fed ever so cautiously beyond his metabolic limitations.

The writer has seen no good from the persistent purging with salts or the use of hot packs; and drugging with diuretics is to be condemned. The greatest care should be taken to get rid of all infection. Rest in bed is valuable.

To summarize the foregoing. Kidney disease is probably a constitutional disease with kidney manifestations. In many cases the liability to it is transmitted from parent to offspring.

Focal infection is commonly associated with nephritis and may bear a causal relation to it.

Every adult over forty with a family history of kidney disease should get rid of all such infection and should be examined at least three times a year for evidences of beginning kidney degeneration.

The best urine test for the general practitioner is the two hour renal test. Tests for albumin and casts are much less valuable.

The phthalein test is extremely valuable.

Blood studies for non-protein nitrogen, urea, creatinin, and the determination of the Ambard-McClean coefficient are very valuable but must be done in a well equipped hospital. The Karrell diet is the best treatment for advanced cases with edema and dyspnea.

Death is caused by acidosis, probably due to the retention of phosphates.

Calcium and iron both favor the elimination of phosphates and are therefore the best medicines for the disease. Packs, purgings, and diuretics are practically worthless.

The following cases illustrates the value of these methods.

Case 1970. Male age 28 years. Albumin found in urine at insurance examination three years before and has been present in varying amounts on numerous examinations since. Systolic blood pressure varies from 120 to 140 mm., diastolic pressure 80 to 90 mm. Recently has had slight dizzy spells and nausea. History of severe tonsillar and middle ear disease in 1912. Tonsils partly removed. Part of left tonsil persists and shows areas of degeneration and infection.

Two-Hour Renal Test.

Diet: Carbohydrate, 148 grams; protein, 80 grams; fat, 115 grams; calories, 1930. Salt, 7 grams. Total volume fluid intake, 1490 c.c.

Hours	Fluid Intake, c.c.	Urine, c.c.	Specific Gravity	Nitrogen		Salt	
				Grams	Per Cent.	Grams	Per Cent.
7-9 A.M.	275	27	1017	0 64	2 37	0.20	0.76
9-11 A.M.	310	225	1013	3.65	1 62	0.94	0.42
11-1 P.M.	300	155	1017	2.56	1 65	0 96	0.62
1-3 P.M.	415	112	1024	2 44	2.18	0.94	0.84
3-5 P.M.	....	125	1025	3 28	2 62	0.95	0.76
5-7 P.M.	90	100	1025	2 51	2 51	0 84	0 84
7-9 P.M.	.....	105	1027	2 78	2 65	0.99	0.94
9-7 A.M.	100	500	1024	11 90	2 38	4 00	0.80
Totals...	1490	1349	.....	29 76	.....	9 82	.

Urine. Specific gravity varies from 1020 to 1030. Patient passes from 350 to 550 c.c. during night. Small

amount of albumin present, also many hyalin and granular casts. Phthalein output in two hours 49 per cent. Urea in blood 40.6 mg. per 100 c.c. blood. Creatinin 1.2 mg. per 100 c.c. blood. Ambard-McClean coefficient 0.089.

Comment. The excretion of water during the day from noon on is quite constant in amount when compared with the intake. This suggests that the kidneys are working under pressure, have not much reserve, and tend to tire out during the day. This is known as fixation. The same condition will be observed in the percentage of solids present as is revealed by the specific gravity which is quite constant during the latter half of the day. Nitrogen metabolism is on a very high plane, the patient having lived on a very high protein diet preceding the test. It will be noted that there is not much fluctuation in either the amounts or percentage of concentration of either nitrogen or salt after the noon hour, indicating fixation of these elements to a considerable degree.

The foregoing examination has the following significance. The patient, while young and vigorous and as yet not showing any very appreciable renal symptoms, is passing to the stage where indications of disturbed kidney function are becoming evident which probably will soon give rise to noticeable clinical symptoms. The phthalein is slightly below normal. The blood urea and creatinin are practically normal, as is also the Ambard-McClean coefficient. The two hour renal test would indicate that the patient's diet is too rich in nitrogen and that the kidneys have not the normal reserve. With proper care, the prognosis in this case is good. The diseased tonsil should be removed.

Case 1875. Male age 63 years. Complains of gastro-intestinal distress, dyspnea, weakness, and prostatic obstruction. Systolic blood pressure at beginning of observations was 180 mm., diastolic pressure 100 mm. After several months of study and treatment, systolic blood pressure varied from 120 to 140 mm. and the diastolic from 80 to 90 mm.

Urine examination showed a small amount of albumin and much pus, specific gravity 1011. Several two-hour phthalein tests in a period of six months gave readings of from 2 to 5 per cent. Several total non-protein nitrogen determinations of the blood made at intervals of about one week were as follows: 178 mg., per 100 c.c. blood, 206 mg., 194 mg., 142 mg., 156 mg., 198 mg. and 122 mg. The normal is rarely above 50 mg. Creatinin determinations were as follows: 9.4 mg. per 100 c.c. blood, 8.0 mg., 10.0 mg. According to Meyer and Chace above 5 mg. means a fatal issue. Urea in blood was 184 mg. per 100 c.c. blood. Urea in twenty-four hour urine on this day was 16.9 mg., giving an Ambard coefficient unusually low of 0.56.

Because the patient had to be catheterized, it was impossible to make a two-hour renal test, therefore the four-hour catheterized specimens were examined and are as follows:

Four-Hour Renal Test.

Diet: Carbohydrate, 111 grams; protein, 26 grams; fat, 37 grams; calories, 962. Total volume fluid intake, 1020 c.c.

Hours	Fluid Intake, c.c.	Urine, c.c.	Specific Gravity	Nitrogen		Salt	
				Grams	Per Cent	Grams	Per Cent
7-11 A.M.	420	315	1012	0.85	0.27	0.90	0.28
11-3 P.M.	330	220	1013	0.62	0.51	0.66	0.30
3-7 P.M.	180	345	1015	0.55	0.16	1.17	0.34
7-11 P.M.	90	335	1013	1.77	0.53	0.93	0.28
Totals...	1020	1215	.....	3.79	.....	3.66	.....

Comment. This patient presents the clinical bedside picture of an individual extremely ill with nephritis. The serious weakness, difficult breathing, and feeling of oppression caused by an equality between the lesser and greater circulations, the urinous odor to the breath, all find adequate explanation in the laboratory examinations of the case. The prognosis in this case is very grave, although the patient has shown very marked improvement on the treatment outlined in this paper and is now attending to his business.

It is evident to one who has an opportunity of closely studying many cases of arterial hypertension that a very considerable number of them are caused by some other agency than disturbed renal function. The following case is illustrative of a number seen by the writer.

Case 1853. Female age 56 years, married. Complains of rapid heart action, swelling of ankles, pain in shoulders and back.

Important points from case history. Father and one brother died of gangrene of feet; personal history, negative.

Physical examination; heart, soft mitral bruit, compensated; toes cyanosed; ankles slightly puffed out but no edema; no evident thyroid disturbance. Blood pressure, several determinations over a period of months, systolic ranged from 190 to 225 mm., diastolic from 100 to 120 mm. Urine, specific gravity fluctuates from 1012 to 1028, amount from 900 to 1900 c.c. Trace of albumin commonly present, but no casts or renal elements. Excretion of chlorides normal on test diets for two weeks.

Blood urea 40 mg. per 100 c.c. blood, creatinin 1 mg. per 100 c.c. blood, Ambard-McClean coefficient 0.103. The two-hour renal test was as follows:

Two-Hour Renal Test.

Diet: Carbohydrate, 120 grams; protein, 47 grams; fat, 76 grams; calories, 1345. Salt, 10 grams. Total volume fluid intake, 1350 c.c.

Hours	Urine, c.c.	Specific Gravity	Nitrogen		Salt	
			Grams	Per Cent	Grams	Per Cent
7-9 A.M.....	62	1018	0.43	0.70	0.42	0.68
9-11 A.M....	205	1009	0.75	0.37	0.36	0.18
11-1 P.M....	125	1015	0.63	0.51	0.64	0.52
1-3 P.M.....	182	1012	0.93	0.51	0.48	0.26
3-5 P.M	245	1013	1.22	0.50	1.32	0.59
5-7 P.M.....	85	1022	0.75	0.88	0.70	0.84
7-9 P.M	84	1025	0.85	1.01	0.94	1.12
9-7 A.M	900	1015	3.15	0.65	4.86	0.54
Totals....	1888	.....	8 61	.....	9.72	.....

Comment. In the foregoing test, the only datum suggesting a renal disturbance is the night polyuria. All the other data point to a normal kidney function. A renal lesion producing a systolic blood pressure of 200 or more would be likely to produce some striking evidence of disturbed kidney activity which is absent here. Indeed, aside from the night polyuria, this might be taken as an example of normal renal function.

The following case is a good example of the final stage of the disease. It terminated fatally after being under observation for two months.

Case 1924. Male age 43 years. Systolic blood pressure ranged from 190 to 230 mm., diastolic pressure from 160 to 190 mm. Phthalein output in two hours 14 per cent. Creatinin observations made at intervals of a week or less were as follows: 6.4 mg. per 100 c.c. blood, 5.3 mg., 6.6 mg., 8.7 mg., 12.1 mg., 16.1 mg. 24 hours before death. The blood urea over the same time was as follows: 74.9 mg. per 100 c.c., 98.0 mg., 252 mg., 418 mg. just before death. The Ambard coefficients in the last ten days were 0.214 and 0.750. The patient was in deep uremic coma for 72 hours preceding death and the foregoing figures represent the extreme failure of kidney function.

Two-Hour Renal Test.

Diet: Carbohydrate, 64 grams; protein, 32 grams; fat, 32 grams; calories, 640. Total volume fluid intake, 1740 c.c.

Hours	Fluid Intake, c.c.	Urine, c.c.	Specific Gravity	Nitrogen		Salt	
				Grams	Per Cent	Grams	Per Cent
7-9 A.M.	520	45	1016	0.48	1.07	0.08	0.18
9-11 A.M.	180	104	1016	0.95	0.91	0.10	0.10
11-1 P.M.	400	125	1016	1.16	0.93	0.22	0.18
1-3 P.M.	180	110	1015	0.96	0.88	0.12	0.12
3-5 P.M.	.....	130	1015	1.08	0.80	0.16	0.12
5-7 P.M.	180	120	1015	0.97	0 81	0.16	0.14
7-9 P.M.	280	90	1016	0.92	1.03	0.07	0.08
9-7 A.M.	.....	575	1015	4.65	0.81	1.02	0 18
Totals...	1740	1299	.....	11.17	.....	1.93	.....

The above two-hour renal test was made two months before death. It showed a moderate fixation of water excretion, a well marked fixation of specific gravity, and nitrogen excretion. Salt metabolism was on a very low plane and undoubtedly explained the severe edema from which the patient suffered.

Of the two methods of kidney investigation, it would appear to the writer that the blood chemical studies furnish the most reliable evidence of the condition of the patient and afford a better prognostic guide than does the two hour renal test. The blood chemical methods are too complex and beyond the laboratory means of the general practitioner and indeed the majority of hospitals. The two hour renal test on the contrary is much simpler. Important and valuable parts of it can be done by the practitioner without any technical training or laboratory experience. Merely accurately measuring the urine excretion and determining its specific gravity every two hours during the day and estimating the night urine are extremely valuable guides in diagnosis, treatment, and prognosis. The phthalein test is very simple and equally valuable.

REFERENCES.

1. Christian, Frothingham, O'Hare and Woods: Studies of Nephritis, *Am. Jour. Med. Sc.*, 1915, cl, 666.
2. Christian: Some Studies of a Diuretic (Theocin) *Arch. Int. Med.*, 1916, XVIII, 606.

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ELECTRICITY THEN AND NOW.*

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In undertaking a consideration of the influence of this Association in the field of electrotherapeutics since its organization in 1891, I was prompted to review its work as shown in its published transactions. Such a review awakens a realization of work done on a very large scale—papers presented to the number of many hundreds dealing with the use of electricity in every conceivable ailment of the human body, committee reports exhaustive in scope and detailed study, and discussion of both papers and committee reports almost endless in volume and of great interest.

Electrotherapeutic work of recent years has been very different in character from that of the early nineties. Before that time there had been no united effort to study its problems, much crude and unsatisfactory work was being done, and the merit of electricity in medical practice was justly questioned by the profession at large. They were true pioneers who in 1891 organized with the avowed purpose of placing electrotherapeutics on a plane with surgery and drugs.

To appreciate the changes since that time it is necessary to remember that commercial electricity with modern motors was not then available and the only apparatus in common use was the galvanic battery of from two to sixty cells, the faradic coil of small size, and the static machine of two, and at most four, revolving plates. A very few had a crude form of sinusoidal apparatus, the electric light had not come into use, there was no electric vibration, and the *x*-ray and radium had not been discovered. The static modalities were sparks, roller sparks, and the static breeze; there seemed no easy way of determining polarity, and as to whether static electricity had any value at all other than psychical was a matter of serious debate.

One of our most esteemed workers said in 1895: "By static electricity I have never yet succeeded in even temporarily relieving a case of sciatica of any kind from any cause, known or unknown." How different from the confident assertion by an equally esteemed worker a dozen years later who said in speaking of the value of static electricity, "I have yet to see the case of simple acute sciatica which I cannot relieve in ten days." The difference lay partly in the fact that in the meantime the static machine had become an instrument of vastly greater power with corresponding increase in efficacy, and partly in the discovery by one of our members and the prompt development of its therapeutic action by another, of that most valuable of all the static modalities, the static wave current.

Galvanism was the favored current in all forms of treatment. It is a fact that then as now this was used generally to stimulate the circulation, improve nutrition, cause absorption of exudates, cause ionic penetration of medicinal substances, and destroy tissue directly or by metallic ionization; but so much of the proceedings of the early years of the Association were devoted to the treatment of genitourinary diseases in men and women that the first impression made on an impartial observer must have been that electrotherapeutists were a group of enthusiasts who were trying to convince themselves that galvanism and faradism constituted a near-cure-all for all such diseases.

Concentration of attention upon gynecological conditions was doubtless due to the unsatisfactory results of the surgery of that period, but to us of today feelings of wonder are aroused at the daring of the electrotherapeutist in employing a technique which would seem often to have carried more danger of disaster than promise of relief. Practically all pelvic disturbances in women were treated by the use of an intrauterine electrode, while the accepted method of treatment for uterine fibroids was by the insertion into them of long needles per rectum, vagina, or cervical canal, for galvanic ionization. Hundreds of cases were reported with claims of a very large percentage of cures. The prostate was treated with equal daring. The galvanocautery here ruled as a favorite for a certain period and aroused a pitch of enthusiasm equal to galvanopuncture. It was declared that "the galvanocautery cures all cases of hypertrophied prostate; it is harmless even at the age of eighty; there are no bad postoperative effects; the operation is painless, the results permanent, and no case has been known to recur."

Gradually the influence of frank discussion and of more carefully compiled and later case reports was felt, and a more rational and conservative opinion prevailed. In 1900 it was definitely acknowledged that electropuncture seldom cured fibroids, that it merely reduced their size, and that electricity for fibroids should be used only to control hemorrhage. For treatment of this condition an improved surgery then held sway until displaced very recently

*Read as the Presidential Address at the Twenty-seventh annual meeting of the American Electrotherapeutic Association under the title "The Influence of the American Electrotherapeutic Association Upon Electrotherapeutic Practice."

by the *x*-ray with its proven curative power and manifest superiority.

The introduction of commercial electricity provided a constant current unlimited in quantity and easy of control, but recognition of its limitations and dangers coupled with the development of other apparatus and other methods of procedure diminished the popularity of this current, so that it no longer remained the modality of first choice in the hands of most electrotherapeutists.

For our share of the credit for progress in the whole field of electrotherapeutics, I know not whether to give more credit to the established habit of free discussion of papers, or to the work of our various committees which in the course of these many years have spurred the manufacturers on to the production of more efficient types of apparatus, and have worked unceasingly in the study of the various electrical modalities, and to determine the correct procedure for their use.

It is many years since the requisites for an electrotherapeutist were a galvanic battery, a faradic coil, and a feeble static machine. To the experienced worker, the varieties of electrical force now at our command offer free choice as to method of treatment; to the beginner they mean confusion and uncertainty as to what to do in any given case; while to the uninitiated physician or surgeon the very names of our most valued agencies mean nothing at all and the whole subject is to them a closed book. To enumerate some but by no means all of the modalities in common use today: the static machine offers the static induced current, the wave current, vacuum tube currents, sparks, sputtering and blue pencil brush discharges, the d'Arsonval current, resonator effleuves and sparks, and desiccation; the various coils and transformers provide diathermy, autocondensation, vacuum tube discharges, effleuves, sparks, and fulguration; the constant current is always available in any quantity and under perfect control; there are many varieties of sinusoidal apparatus; light, either as white light, blue light, or ultra-violet is highly valued; hot air, water at varying temperatures, and vibration are within our province; while the *x*-ray and radium are no longer reserved for diagnostic work but have come into play as most valued therapeutic agents.

Not only are there so many modalities in use, but it is a fact that in the treatment of similar conditions individual workers follow lines of treatment at such apparent variance with each other that a casual study of our methods adds to the confusion of the inquiring mind. For the good of all I enter a plea that our efforts be continually exerted toward establishing the simplest possible technique capable of producing the desired result.

The maxim has been propounded by one of our number that fundamentally the physiological effects of all electrical modalities are either thermic, mechanical, or electrolytic. The mechanical effects are chiefly in the production of tissue and muscular contraction, and are readily recognized. *Heat* is produced by all the various modalities; it is the ultimate result of transformation of energy in the tissues, and it is in direct proportion to current strength and resistance. The constant current causes some definite and unique local effects, but except for very local effects in the immediate field of application of the electrode, I believe the terms electrolysis and ionization as applied to the working of this current have a theoretical and vague meaning, and that we should think of the action of the constant current in the deeper tissues in terms of simple heat units. High frequency and particularly the transformer currents create heat through and through the body to any desired degree. The *x*-ray becomes more and more popular in the treatment of many conditions. In larger doses than those which produce stimulation, the effects are inhibitory, interfering with germ development, lessening protoplasmic activity, diminishing secretion, promoting retrograde changes in fibrous and malignant tissue; but it is recognized that in small doses its effects are very stimulating, and it is a question if in the case of the *x*-ray also, the final inhibitory effects of large doses may not be analogous to those of heat applied in degree more than stimulating, yet short of immediate destruction of tissue.

Moderate heat gives renewed vitality to protoplasmic cells, makes the lymph flow more freely in the intercellular spaces, thereby diminishing exudates and promoting tissue repair, and it simultaneously dilates the capillaries and causes a more active circulation of blood in the part with all the good effects which that implies. Certain workers who once relieved neuritis and arthritis with the constant current, then with light or the blue pencil brush discharge, are now waxing enthusiastic over the results in similar cases from the use of diathermy. All of these methods have one important effect in common,—the production of *heat* in the deep tissues of the body. Heat by topical applications is dissipated at the surface, whereas in the case of every one of our electrical modalities, the heat generated is as deeply penetrating as the current itself.

If the action of heat is the chief element in the efficacy of so many modalities, it is easy to understand the many good results obtained from the older and cruder types of apparatus as well as present day successes along seemingly diverse lines, and much of the mystery attached to the workings of electricity is at once dispelled. Bearing in mind the great value of the currents causing contractile mechanical effects, both locally in promoting tissue drainage and generally for effects upon nutrition and metabolism, it remains in the average case of localized pain, inflammation or trauma to select for an important share in treatment that apparatus and that modality of electricity which will most conveniently, efficaciously, and safely supply deep and penetrating heat to the part.

Let us think and talk in terms of simple physical effects and do away with the atmosphere of mystery which clings so closely to the thought of electricity. Thus shall we hasten the day when the general practitioner everywhere will feel that it is safe and proper for him to give his patients some of the benefits of this most powerful agency for good.

27 East Eleventh Street.

Nitrogen and Maleness.—Maurel claims that the extra consumption of protein by males brings about a condition of hereditary arthritism, which is indirectly responsible for the inferior number of male births.—*Le Progrès Médical.*

THE MOLOKAI LEPER SETTLEMENT.

By E. S. GOODHUE, M.D., LL.D.,

HONOLULU, HAWAII.

PERHAPS in all Hawaii there is no place so beautiful as the little stretch of land on windward Molokai dedicated to the happiness of its six hundred or more of lepers. Back are the almost perpendicular cliffs of solid rock, softened by trees, ferns, and waterfalls, a magnificent mass rising in some places as high as 2000 feet, and shutting off ingress or egress except by a narrow trail that zigzags its way to the flat and windy top. This trail though hazardous except for the accustomed feet of horse or man, is traveled by the postman four times a week, and by many others who prefer to land on the leeward side of the island.

The plat of land fronting the cliffs one would think providentially selected for the settlement now established upon it, is about three miles long by three wide. Against it breaks a rather noisy surf, and during most of the year a vigorous trade wind blows, the effects of which are seen in the one-sided trees and the good health of the residents of the peninsula.

FIG. 1.—Kalawao, Molokai. U. S. Leprosy Investigation Station near the beach; the other buildings are the various "homes."

At Kalawao, a northern segment where the original settlement was made, are the buildings of the Federal Station for the study and investigation of leprosy. These buildings are practically deserted. The scientific work is done at Honolulu under the supervision of Dr. Currie of the United States Public Health Service and Dr. H. T. Hollman.

Here at Kalawao, facing a sheer wall of rock, is the little church of which Father Damien was curate; near-by an iron railing surrounds his grave. The story of his life, work and tragic death needs no repeating. "Brother" Dutton, almost equally well known, lives within a stone's throw of the church. Upon a greensward of native grass are the Baldwin Home buildings for Mr. Dutton's boys, and the pupils of four brothers of the Church who devote their lives to the care and betterment of these youths.

Mr. Dutton is so well known that a mere mention of his name is all that is necessary. I will state, however, that an appreciation of him by the late Edwin E. Woodman, entitled "Damien and Dutton," and first published in *America*, is well worth reading. It refers to the latter's work as a captain during the Civil War, and to his subsequent entrance into the Roman Catholic Church as a layman, and his work here on Molokai.

Following the beach, now rugged and lava-strewn, now incurved with sand and fringed by reefs, we pass the lighthouse which nightly sends its gleam upon the wave, southward to Kalaupapa, the settlement proper.

The road, which is a very good one, easily traversed by automobiles, was completed a few years ago through the efforts of the superintendent and medical superintendent of the settlement, and by private contributions. Bisecting streets, lanes, and paths are all indicated by neatly printed signboards: McVeigh, Goodhue, Buddie, and other names of significance to the residents.

Among many private residences surrounded by pretty gardens, in some cases owned by the leper occupants, are the McVeigh Home for white lepers and Portuguese; Bishop's Home for leper girls, supervised by Sisters of Charity; Bay View House for blind and other advanced cases, including five new, well-equipped buildings; the Hospital, where the attending surgeon holds his remarkable clinics, and the nursery where non-leprous infants of lepers are taken immediately after birth. Should leprosy develop, they are given back to their mothers. Yesterday the child of a leper father and mother was born and taken to the nursery. After a time these children are discharged and leave the Settlement.

In the town proper are three churches: Roman Catholic, under two priests, one French and one German; Mormon, and Protestant, ministered to by native pastors.

Besides a settlement store, there are smaller private shops, a bandstand for the local musicians, all lepers, and a new music hall and theater. This splendid building, 110 feet long by 40 wide, is well adapted for its purpose, a recreation hall and stage for private theatricals, billiards and other games,

and "movies," for which films are received each Thursday. There is an electric piano, and in the body of the building enough seats are placed for the entire population of the Settlement. Patriotic banners adorn the walls, with local names and mottoes, Aloha, Molokai, Honolulu, Kamehameha, among them.

There is a gallery for non-leprous spectators, where it was my privilege to watch the movies, and what interested me far more, the enthusiastic people below, whose appreciation of the scenes appeared to be keen indeed. All was joy, smiles, and laughter. A spirit of wholesome mirth pervaded the place, and I came away gladdened to know how fully these people could forget their bodily ills. Old men were there, and women, the middle-aged, youths of both sexes, children, mere tots.

Here I met many of my old friends, some of them lepers I had sent to the Settlement from my own district, and it was my privilege before I came away from the Settlement to have something to do with the discharge of a number of them.

The music hall was erected by the Board of Health, but the equipment was secured by private contributions through the efforts of the earnest and indefatigable Jack McVeigh, business superintendent of the Settlement.

Somewhat removed from the leper houses, surrounded by his own grounds, is the latter's residence, close up against that of the medical superintendent and resident physician. Mrs. Gerrould and others recently have told your American public about this capable man and the things he has achieved.

The quality of Mr. McVeigh's work is intrinsic, and when he goes there will be none to take his place, as perhaps may be said of any adequate man; but his works will follow him. Personally, he is extremely susceptible to human appeal, but he is also businesslike, quick, to the point, possibly in some cases brusque. He sees to the pecuniary and business needs of the Settlement, and generally "gets what he goes for," even from such a variable entity as the Hawaiian Legislature, which usually each year makes a junketing trip to the Settlement.

However splenetic this body may feel on arrival here, a few hours spent in the colony makes converts of them all, and they return to grant generous appropriations. Mr. McVeigh is modest, and I will not make an enemy of him by fulsome flattery. I would say that his predominant characteristic is tact, pervaded by a sense of humor.

As the medical superintendent, Dr. Will Goodhue, is my brother, and at this time, with his charming wife, my host, it were perhaps unbecoming of me to say more about him than is already known by intelligent men throughout the world; but I feel that in an article of this nature I should be doing my subject injustice were I to leave out some reference to his great work here. There is a mistaken idea that his residence on Molokai is enforced; that he is a prisoner, confined like his lepers to the rocky shores of his island. This is not so. He may come or go freely, or leave for good. But as he left a lucrative field in medicine because of his interest in the study of leprosy, so he remains because of his love for the lepers themselves, whom he serves day and night, skillfully, kindly, conscientiously, with a tender interest and sympathy I have never seen excelled. Naturally, he is deeply loved by residents in the Settlement, by Hawaiians, Japanese, Chinese, Portuguese, Filipinos, Porto Ricans, Koreans, Germans, French, Belgians, and others who are there.

Great surgeons have praised his surgical work,

FIG. 2.—Baldwin Home, office front; showing many young lepers and Mr. Dutton.

done bi-weekly at his clinics, where remedial and plastic operations of great importance take place. His tracheotomies in lepral stenosis have saved many lives and cured altered conditions of the nose and throat which no other treatment will help. This will be the subject of a later article.

Fig. 3.—Father Damien de Venster.

In this journal, some years ago, was a contribution upon the surgical removal of local leprous lesions, with subsequent cure, a fact well established by the discharge of former lepers now free from the disease. My work in the last week has been to examine and discharge such cases. And while Dr. Goodhue is unusually conservative, and inclined to minimize the value of curative measures carried on by him in this Settlement for 14 years, he readily grants that many cures have been effected, and that the future holds out great encouragement for the relief of localized incipient forms of leprosy. He believes that the nose and tonsils are the most common points of leprous infection, the inflamed mucous membrane of the nose and the

Fig. 4.—Mr. B. Dutton at the age of 20 years.

tonsils offering a rich soil for the reception, growth, and development of the bacillus Hansen.

A number of cases, especially of the anesthetic form, have become self-limited, remaining quiescent, if not cured, for a period of from 8 to 12 years. These have been paroled, subject to inspection at specified periods.

At the usual biennial examination which occurred this month two were discharged cured, and some 14 or 15 paroled for longer or shorter periods before re-examination. A number of others have refused to come up for examination, fearing discharge and subsequent removal from the Settlement, where they have lived for years, perhaps, and formed intimate relationships. One cannot blame them, either. For climatically it would be hard to find a pleasanter place. Their bodily comforts are supplied, food in abundance, and a fair ration in clothes are given them. They may work and earn money, or not, as they please.

"Where do they get their fine clothes?" I asked the doctor, "for most of the women, at least, seem to have the latest styles." "That is true," was the answer, "and I think there is no other institution where individuals receive so many gifts from outside as our people do here. Visitors do not forget us."

Fig. 5.—Dr. Goodhue, servant, and "Buddie."

While unafraid, the doctor is extremely careful about exposure. His lovely home, fronting the cliff and sea, is surrounded by a garden and hedge. A double gate guards the ground, upon which no leper is allowed to come; but at the outer gate there is a bell, lighted at night, to which lepers have free access at all times. The doctor answers any call, at any hour of the day or night, outside of his regular trips to clinics, hospitals, and the homes. The house, in bungalow style, has every convenience. His wife and three children—one little daughter now attending school in Honolulu, and two younger boys—reside here. The former, Buddie, a beautiful and attractive child of 8 years, has become well known abroad through movies in which she is pictured. In their automobile, of afternoons they ride the six miles the area provides, stay for a while at the Beach House, or spin on to Jungle Grove to watch the wild deer upon the cliffs near Kalawao. Or perhaps they climb the trail, and spend a day or so at their Mountain House, at the top of the

pali or precipice, among the trees, for a change of air and environment.

Recently the doctor has selected a plot of low ground, surrounded it by an impervious wall, and will flood about 8 acres for a fish pond. This will be the only inland body of water on the peninsula, and its establishment is giving work to lepers, who receive from $1 to $1.25 a day for their services.

Of course, there is a pathetic side to the life here, but I do not know that it is any sadder than, or so sad, as hospital life, or the life in sanatoriums for the tuberculous. Comfort and happiness smile everywhere. Hope, well based, indeed, reigns in the hearts of many of the incipient and milder subjects of the disease, and when some who are ready to leave may leave, they go with the love and *leis* of their fellows who remain.

This is no charnel house, no graveyard pasture. Death is no more in evidence than it is away from here. People eat and sleep and smile and laugh and enjoy the delights of locomotion. The old grow older in comfort; the middle-aged, in marital companionship, have no worry about future needs; the young joy in their youthful loves.

There is no hanging sword, no danger of suspicion and arrest. The residents are here because they are lepers. It is the non-lepers who feel out of place among their neighbors. No one thinks or talks of the disease. The thing to worry about is an intercurrent malady, or the poor unfortunate who has tuberculosis.

I presume there is no place in the world, no other leper colony, so advantageously placed by nature, and I know none is so tactfully and scientifically maintained, so carefully and conscientiously provided for, so generously endowed, as the Molokai Leper Settlement.

It is an evolution through a series of experiences and processes, to be sure, and credit is due to many men, boards, and legislatures; but it must be conceded that the best ameliorative measures are of comparatively recent date, and are due to the initiative of two or three men.

As I sit here watching the evanescent tints about the sea and cliffs which James Lane Allen has so well described in his "Flute and Violin," a sense of gladness wells up within me, and I feel that the saddest phase of life here is not half so sad as the strife overseas.

THE ETIOLOGY OF GENERAL PARALYSIS.*

By B. LEMCHEN, M.D.,

DUNNING, ILL.

PHYSICIAN TO THE CHICAGO STATE HOSPITAL.

FOURNIER half a century ago was the first to suggest that general paralysis was due to syphilis. He met with quite an opposition at that time from the medical profession, but on further study, and especially lately after the discovery of the Wassermann reaction and the spirochete in the paretic brains by Moore and Noguchi, it is conceded by most authorities that general paralysis is due to a syphilitic infection. What is necessary for us to do is to explain why only about 2 per cent. of syphilitics become paretics. The time allowed for this paper is too short to give all the theories relating to this subject, and as most of these theories have not been accepted, it is unnecessary to repeat same.

As to the latest theory of a different strain of spirochetes having an affinity for nervous tissue—the evidence given of conjugal paresis or conjugal tabes is so meagre in the number of cases that it can hardly be considered, while the long incubation period by itself would speak against it. Do we find such a long incubation period in any of the other infectious diseases of the nervous system, such as cerebrospinal meningitis or anterior poliomyelitis? The incubation period and the course of the diseases are only days or weeks, while from the initial infection of syphilis to the development of paresis, there is a period of from two to fifty years, and the course of the disease also lasts years. Evidently other reasons must be sought for it and this may be due to nature's desire to keep the original species. Had every person exposed to an infection become infected and had the infection run a virulent course or had the invading bacteria always been destroyed by the antibodies, the human race and probably all the bacteria that can live only in human tissue would have long since been destroyed, but nature's desire to keep the original species has accomplished so much that different people will react differently to the same infection. What we should do is to study nature's ways and see what we can learn from them. First there is an individual difference in the local reaction to an invading organism and more so to its toxins. That is why some people may be very sick and even die from an infectious disease, and post mortem will show very few changes, while others with extensive anatomical lesions will live comfortably. We have all seen very severe cases of typhoid fever, which post mortem would show only a few superficial ulcers, while others will have mild typhoid with extensive ulcerations. In fact, the disease is recognized only through perforations. Again, some people will die from tuberculosis and on post mortem only a few small tubercles will be found, while others will live comparatively comfortably with cavities or where the greater part of their lungs are destroyed. Of course had everyone that contracted an infectious disease been overcome by its toxins, where would the human race be to-day? How does the human body protect itself against infectious bacteria? The simplest way is by destroying the organism that invades the body. Nature has provided in all serums a substance known as lysins that will destroy the common parasites, but the dead bacteria liberate a toxin that is responsible for the systemic toxemia, and when too numerous will destroy the host; and the host from cell memory prohibits the destruction of too many bacteria by lysins, but tries some other way by phagacytosis, agglutinins or other means where cell dissolution is not necessary, and also by producing antitoxins to neutralize the toxins; so it can readily be seen that the number of bacteria received at the time of an infection with the rate of their multiplication and the ability of the host to produce antitoxins will have quite a bearing on the future course of that disease because the other protecting bodies besides the lysins must naturally be of a slow formation, and while the producing of toxins is one

*Read at the sixth annual meeting of Alienists and Neurologists, Chicago, July 11, 1917.

way bacteria protect themselves against the host by inhibiting the lysins to destroy all of the infected bacteria, in time bacteria will produce other substances that will protect them against the other antibodies, and the cells of the host also will in time get more resistive to the local action of that organism, and the organism and the host may be so balanced that while the organism will grow in the host, it will not be able to produce its disease in the host.

We have thus what are known as the carriers, and some day some part of the host will get weakened at another part than that part where the organism is accustomed to its local action, and will produce its destruction right there, and that is probably the cause of general paralysis. It is in an individual who has been infected with the spirochetes where to cell memory it was not advisable to destroy them in too great numbers and where the organism and host were well balanced until the nervous tissue underwent some injury either by trauma, alcohol, toxins of other bacteria, autointoxication, or the like, and gave the spirochetes a chance to produce their destructive effect; or in other words, general paralysis is syphilis with lowering of the vitality of the central nervous system, and for this reason we must advise every syphilitic in whom we are not sure that the disease has been cured to live a life that will preserve the normal vitality of the central nervous system by refraining from excessive use of alcohol, tobacco, worry, excitement, trauma, overeating, and excesses of any kind, and above all we must educate the public to the danger of venereal diseases, and the best way of doing this is to teach boys and girls the functions of the reproductive organs.

I may repeat the interpretation of the Jewish Rabbi of the story of Adam and Eve. The Bible tells us that when Adam ate of the forbidden fruit and was reprimanded by God, he stated: The woman you gave me made me eat. They explain it. When God told Adam that his intention was for him to live forever, and because he ate of the fruit of knowledge he would have to die, he answered: "If your intention were for man to live forever, you would not have given him a wife. It is true that you claimed that you made the wife as a helpmate, but that was not the main reason. The main reason why you gave me a wife was for reproduction, as you expected me to die and you wanted to perpetuate the human race, and I figured as long as I am to live in this world only a short time I may just as well possess knowledge. The woman you gave me made me eat it." Every boy and every girl born will live only a short while in this world, and they are entitled to know all about themselves. Then why deny them the knowledge of the functions of the pelvic organs? While the pelvic organs may have an internal secretion that is of some benefit to the body, still their main function is reproduction, and it was nature's intention that the function should be by legitimate marriage as provided by society; and nature in guarding it has armies of bacteria known as *Spirochetæ pallida* and gonococcus that will attack the individual who is not living up to nature's desires, and they are more destructive than the weapons of modern warfare. The best way to impress this on their minds is to take the young men and young women to hospitals for the insane and show them the different stages of general paralysis, and tell them this happens to men and women who violate the seventh commandment.

BALANCING BODY METABOLISM, AND THE QUARTZ ULTRA-VIOLET LIGHT.

By DONALD McCASKEY, M.D.,

NEW YORK.

It is an elemental principle in mechanics that if the inflow through a pipe is greater than the outflow, there is an overflow. We have this principle illustrated in very concrete form during a thunderstorm when the sewage system of a city is unable to carry off the water that falls upon its streets as rapidly as the downpour occurs. This same principle is illustrated in the experience of every housewife in the kitchen when the sink overflows. It is an obvious conclusion, therefore, that there must be balance or perfect equilibrium between the inflow and the outgo, otherwise blockade disorders develop with all the attending phenomena resultant therefrom. The application of this mechanical principle in the physiological chemistry of the human body is likewise quite obvious.

The blood vessels, the lymphatics, the glandular and other cellular tissues of the human body require certain standard quantities of chemicals to pass through them, to upbuild, and to conduct off a balanced amount of waste as a result of tissue destruction.

Take water, for example. If this chemical enters the body in amounts larger than it is eliminated, dropsy occurs. Dropsy is simply an overflow into the human tissues. This same principle applies in the intake and output of any other chemical, for there is no reason under the sun why the nitrogen, carbon, sulphur, and other chemicals that enter into the complex formula of an albumin, or a fat, or a starch molecule, should not be considered upon the same mechanical basis as the hydrogen and oxygen chemicals that comprise the water molecule. This being the case, it must follow that if any of these food chemicals are taken into the body in amounts greater than they are eliminated from the body, the physiological equilibrium of the human tissues is thrown into disorder. As a result, we have the various phenomena that are presented objectively to us by the patient in ill health. To put it in another way, it is absolutely essential for the perfect health of our patients that there be an equilibrium between their processes of anabolism and catabolism. Conversely, as long as these two chemicophysical forces are thrown out of balance the internal machinery of the patient's makeup will likewise be thrown out of equilibrium. This physiological and chemical balance or tissue equilibrium is purely an elemental principle in the mechanics of the human body. It is as fixed as the law of gravity.

Just as soon as this basic law is recognized and the patient given guidance with the specific object of establishing his or her body in a state of physiological equilibrium, any physician holds in his hands the power of metabolism regulation.

The human body might be considered as a great transcontinental railroad artery of traffic, with a demand for multitudinous surveys by the civil engineer for constructive work, with a demand for the solution of any problem that occurs in mechanical or electrical engineering, and all the other forms of organization, executive and administrative work connected with a great railroad system.

The attempt, therefore, to regulate the metabolism of the human body without going thoroughly into the survey phase of the chemical state of equilibrium, would be as futile as for a transcontinental railway president to attempt to succeed in managing his great transportation organization without knowing specifically the basic facts upon which the passenger and freight traffic are conducted; upon the money intake of his railroad and its expense outgo.

In other words, the intake and outgo of money expense on a great railroad system is virtually a financial anabolism and a financial catabolism process. It must balance if the road is to be maintained in a healthy condition over many years.

There are two angles of approach to this problem of bodily anabolism. One is the chemical nutriment value of the food ingested. The other is the assimilation value of the tissue cells that receive this food. There are likewise two angles of approach to this problem of bodily catabolism. One is from the aspect of diet, digestion, exercise, drugs, hydrotherapy, electrical currents, sleep, recreation. The other is through purely afferent avenues. By this I mean the periphery of the human body through the agency of the great skin area with its intricate nerve, blood, and lymphatic supply. By working from without inward, the science of medicine today has advanced its ability to solve this problem of the regulation of metabolism. It is on this phase of the subject, namely, working from without inward, that I shall speak with specific remarks confined to the physiology of light.

We now know that sunlight is divided into three general divisions. First, the Hertzian light wave that is so long in its wave length vibrations that wireless telegraph messages are constantly being sent upon them. We can not see these waves. Consequently, we do not know what color the various Hertzian light waves resemble. The human optical nerve cells in the retina are not attuned by nature to record this molecular vibration. These are the infra-red rays and incapable of producing sunburn.

The second group of light rays from the sun are the luminous group, which the human eye can perceive in the colors of the rainbow, namely, violet, indigo, blue, green, yellow, orange, and red, the wave lengths being the longest in the red and shortest in the violet vibrations. These are the heat rays of the ordinary incandescent electric lamp but are utterly incapable of producing sunburn.

The third group are the actinic light waves. These might be divided into those that produce only a sunburn because of their low penetration power and those which produce a deep penetration, namely, the Roentgen or x-rays.

I shall confine my remarks to that portion of the field of these three groups of light that have to do purely with sunburn. I shall speak of the sunburn actinic rays as produced specifically by the quartz glass light.

It is a fixed principle in the physiology of sunburn that the tissue cells of the epidermis are markedly stimulated and that the peripheral blood vessels are dilated. The lymph channels become engorged and a physical state of localized edema is created with all the other gross phenomena embraced in the four symptoms of inflammation, namely, pain, swelling, redness, heat.

As a result of chemically stimulating the epidermal tissues of the body by sunburn, we have nature coming to the rescue to oppose the invading vibration of these light sunburning rays. Herein is created a marked anabolic and catabolic activity and the metabolism basis of regulation from without inward.

We soon find that the intracellular enzyme ferments have become intensely active with the result that millions upon millions of dark granules are synthetically formed and deposited in the stratum granulosum of the epidermis. There is a resultant marked activity of all the five layers of skin with the exfoliation of the outer or horny layer. These newly synthetized granules of the granular layer contain nature's first line of defense or barrier against the quartz light intruder.

As a result of this increased activity in the metabolism of skin tissues there is formed a more stable and enduring skin structure with all the attending sequelæ of increased blood supply, lymph supply, and likewise peripheral vasomotor and other afferent nerve invigoration.

It is herein that we have made another advance over the purely mechanical-artificial stimulant of massage, of hydrotherapy, or of electricity, for the quartz light sunburn brings about a metabolic reconstructive change of a more or less permanent nature. In the purely mechanical stimulation by hydrotherapy, electrical currents, the luminous or heat rays, and massage, the tissue processes of anabolism and catabolism are but temporary. They lessen as soon as these mechanical stimulant methods stop, and they finally fall back to their original plane of activity.

In the sunburn, however, there is a reconstructive chemical change developed. It continues and increases so long as the light dosage is able to penetrate the skin tissues. This compels nature to form synthetically the black granules in the stratum granulosum of the epidermis and to force continually a new and persistent epidermal growth with exfoliation. Whether there is any reflex stimulation of the internal glandular secretions, especially that of the suprarenals, I have not as yet done any experimental research work to prove or disprove. Clinically, and from purely empirical observation, I begin to suspect that the suprarenals are actually stimulated, but I make this statement with every reservation. Thus far it is entirely a hypothesis and remains to be proven or disproven by future laboratory research work.

So much for the basis of metabolism that can be reached by the sunburn agency.

The proof of the pudding is in the eating. My case records of patients treated for metabolism disorders, in which I have employed the quartz light sunburn therapy as an adjunct to internal chemical regulation, now total 2,000. In no single instance has there been a lack or failure of beneficial results in metabolism regulation. The patient

promptly exhibits marked subjective relief symptoms and phenomena of objective invigoration.

We are yet in the primary grade as to our technical skill in the therapeutic doses of the quartz light upon our patients. By our present methods of application, the dosage of the light must be regulated according to three factors. One is the resistance of the individual patient's skin. The second is the intensity of the light's strength. The third is the period and distance of exposure. Each patient is an individual unit and must be treated as such. To give, for instance, a generalized quartz light sun bath of 3,000 candlepower for twenty minutes at even twenty inches over the entire naked body of an individual as a first treatment would likely put that patient in bed with chills, fever, and a subjective frame of mind extremely irritable and unfavorable to the further employment of quartz light therapy.

Shock results from the quartz light in its initial application just the same as from a surgical operation.

The technique in the use of this vitalizing therapeutic agent must be brought to a more accurate and scientific basis before its most widespread benefits can be available, and I hope in the near future in my clinical and research work with this light to be able to evolve a method of technique whereby we can measure the electrical voltage or resistance of each patient's body so as to be able to know exactly what dose of light per weight is the proper amount to administer to each individual. As it is now, we are dependent purely upon empirical dosage methods of distance and time periods of exposure.

The subject is vast. These observations are merely introductory. In future communications I shall describe the modus operandi of dealing with specific types of disordered nutrition. Certainly, in sunburn therapy from the quartz light we have a powerful and prompt adjunct to metabolism regulation from without inward.

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THE PERSISTENCE OF ULCERATION.

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"Any lesion of the living organism tends toward natural repair." At times the process implies a complete regeneration of primary tissues, even reproduction of entire organs, as occurs, for instance, in some of the lower animals (claws of lobster, tail of newt); most often, however, the defect is obliterated by cicatricial structures.

Without attempting a detailed study of the various histological processes involved, it will suffice to mention the proliferation of connective-tissue elements, whose embryonic cells in time undergo fibrous transformation, ultimately resulting in the production of scar tissue.

Any cause interfering with connective-tissue proliferation entails a retardation, perhaps even suspension, of the normal reparative process, in consequence of which the lesion—simple wound that it was in the beginning—assumes ulcerous characteristics. An ulcer may therefore be defined as "any tegumentary lesion that fails of spontaneous repair," and while, in practice, the differentiation is easy as between a simple wound and an established ulcer no one as yet has precisely determined the point at which ulceration begins, nor indicated a pathognomonic feature of the latter. Perhaps exact biopsic findings or determinate histochemical reagents may yet serve to establish this mooted point. Whatever the nature of the changes, the efficient factors in persistent ulceration belong to one or more of several causes, which may be classified either as mechanical, biological, chemical, or microbiological, many of these, however, straddling the classification, and simultaneously coming under two or several heads.

Pressure, for instance—one of the mechanical agencies—acts not only *per se*, but in conjunction with anoxemia, and this is mainly what makes the difference between a corn and a bed-sore.

Again, cataptosis after preparing the ground for ulcerous transformation of a most insignificant tegumentary lesion will maintain such a lesion by continuous tension at the marginal sulcus. Another mechanical factor of no mean import is found in desultory tension at the line of repair, and one can readily visualize a "ragging" of the growing tissues by untoward adhesive bands, or even underlying mobile bony surfaces. This is, I believe, an element, as yet unrecorded, in the persistence of ulcus perforans, and fistula in ano.

By far the most common and efficient factor in the maintenance of ulceration is the presence of parastasis, acting not alone in a mechanical manner by causing and maintaining abnormal intravascular tension, but also through concomitant anoxemia from circulatory stagnation, so that the congested, perhaps even edematous granulation tissue is in the worst possible condition for undergoing reparative changes.

Another no less potent and efficient cause of persistent ulceration hinges upon improper management or faulty technique, inordinate flushing and washing, frequent change of dressings with disturbance of granulation tissue, improper dressing material (protective or gutta percha covering, which retains irritating discharges), but most of all the local use of unsuitable applications, veritable histolytics in character. Irritation incident upon such topical treatment is further increased by possible systemic incompatibility, and one is often in position to bring about a speedy, uneventful healing of protracted ulceration merely by suspending the use of some irritant salve or powder, and substituting therefor almost any bland anodyne application. This is especially the case in syphilitics who often come with a lesion surrounded by a zone of congestion, even of infiltration, and presenting at the margin veritable areolas of medicamentous eczema. And where such marked irritation obtains on the unbroken skin, what must we not fear of such applications acting on the sensitive, delicate elements of budding granulation tissue?

The trend of practice in the management of ulceration is toward the empirical—almost haphazard—exhibition of heterogenous remedies advertised in the press, and I make bold to say that there is perhaps not a single medicamentous agency (from abelmoschus down the list to zedoary) which has not at some time or other been vaunted as a positive cure for long standing ulceration. It is true that some cases do heal under—perhaps even despite—

any form of local treatment; this, however, is but an added proof that nature is of kindly disposition, and merciful unto the suffering.

At the last analysis, however, we must seek in microbiological agencies the key to persistent failure of ulcerative repair. Bacterial organisms inhibit growth of healthy granulation tissue more directly by purloining for their necessary pabulum vital or chemical constituents, the presence of which is essential to the cellular plasma and indispensable to the process of repair, and also by direct poisoning of embryonic elements with excrementitious catabolic products (toxins). Untoward action of bacterial agencies manifests itself indirectly through their nocive influence upon the nerve supply: the vasomotor and trophic innervation. This in part explains the production of interstitial edema, of infiltrative changes, of exudates, and untoward excretions at the wound surface.

Fischer[1] ascribes the lethal termination of nephritis and its complications to cerebral edema, and while he does not express himself in so many words, no doubt the hydration of the vital organs is mainly of chemical origin, and referable to the bacterial toxins circulating in the blood.

The frequent occurrence of stubborn ulceration in cases of lues, tuberculosis, diabetes, etc., is another proof that constitutional dyscrasia, hemic incompetency, the "cacochymia" of the Ancients, is mainly traceable to "impurities" slushing about in the circulatory current; in other words, to the presence of bacterial toxins, generated in amount and at a rate sufficient to compromise natural reparative tendencies.

Adequate curative procedure therefore implies neutralization of hemotoxins, in conjunction with competent local treatment. Nor should we lose track of the fact that not all so-called antiseptics are acceptable. A most instructive tale among la Fontaine's Fables is that of "The Man, the Rock, and the Bear," in which he proceeds to tell us of a certain farmer who captured a bear-cub, and raised him for a pet. The faithful brute, one day, was idly watching his master, asleep in the shade, while a pesky fly made repeated attempts at unwelcome familiarity, persistently landing on the sleeper's face, whereupon the bear, seizing a rock, proposed to swat the fly when he should land again. One fell swoop, and the fly was no more. Neither was the farmer. . . .

Something similar occurs when we attempt by the use of antiseptics to encompass destruction of bacterial agencies at work in a persistent ulceration; granted we kill the germs, what is to become of the delicate granulation tissue, fighting its precarious battle with numerous other factors imperiling its vitality?

To be at all acceptable, any local antiseptic should be of the mildest possible character consistent with the purpose at hand, and it will redound to the lasting credit of Carrel, not that he reintroduced into the surgical armamentarium a preparation advocated almost a hundred years ago,[2] but that he developed a technique enabling him to use the chlorinated lime solution[3] in such manner as to procure aseptization without jeopardizing the patient's welfare.

REFERENCES.

1. Fischer, Martin H.: Diagnosis, prognosis, and treatment in nephritis, *Detroit, Med. J.*, 1916, p. 227.

2. Labarraque, Antoine Germain: De l'emploi des chlorures d'oxide de sodium et de chaux. Paris, 1825.

3. Lisfranc: Memoire sur l'emploi du chlorure de chaux dans le traitement des ulcères simples. *Rev. Med. franç. et étrang.*, Par., 1826, Vol. IV, pp. 169-93.

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Medicolegal Notes.

Attending Physician's Right to Fee as Expert Witness.—In an action by a physician for a fee as an expert witness it appeared that the plaintiff, an attending physician and a lifelong acquaintance of deceased, having testified on a prior trial as an expert witness for the proponent, at an agreed compensation of $50 per day, was thereafter employed by a succeeding attorney for the proponent at the same terms, to go over the witness' records to prepare himself so as to give expert testimony on the issue of the deceased's mental soundness, which he did on two trials. It was, however, objected that as plaintiff had been the attending physician, his testimony was not that of an expert, and that such agreement for compensation should not be enforced. It was held that if a medical witness, or other witness with technical qualifications, goes beyond mere testimony to facts observed by the senses, and is asked to draw a technical inference or conclusion, he may properly stipulate for compensation. People vs. Montgomery, 13 Abb. Prac. (N. S.) 207, 240; Barrus vs. Phaneuf, 166 Mass. 123, 44 N. E. 141, 32 L. R. A. 619. Birch vs. Lees, New York Appellate Division, 165 N. Y. Supp. 846.

Refusal of Plaintiff to Submit to Medical Examination.—An unmarried woman 20 years old, residing with her parents but engaged in daily work, recovered a verdict of $25,000 for personal injuries diagnosed by her attending physician as general downward displacement of certain internal organs and traumatic neurosis. On appeal, this was reversed by the New York Appellate Division for the following reason: The court said: "We think that, upon testimony as to the injuries, the defendant is entitled to a new trial unless the plaintiff consent to a reduction of the verdict to $10,000. The plaintiff was not disabled at first by the injury. For a considerable period thereafter she went about her business. She testifies that finally she had to take to her bed. That the medical testimony is unsatisfactory is attributable to the plaintiff alone. With appreciation of her maidenly modesty, we should not lose sight of the fact that she is a claimant for the defendant's money as matter of right. The said physician had qualified himself by an examination of his patient without her knowledge and when she was under an anesthetic. He testified that such an examination was the only method to ascertain the pelvic symptoms. The expert physician called by the plaintiff testified that he could present a diagnosis only as to her nervous condition, for when he attempted to examine the abdominal parts externally, the rigidity of the muscles and the resistance of the patient made it impossible for him to reach any conclusion. The plaintiff admitted that, before trial, she had refused such an examination as was made by her own physician to the physician chosen by the defendant, and she stated at trial that she would not permit such an examination to be made by a woman physician to be appointed by the court. The said physician chosen by the defendant testified that he was permitted to make but a partial examination of the plaintiff, and was refused the right of further examination when he asked for it. He testified that from the examination afforded to him he could not discover any injury. If the plaintiff feels confident that the verdict as reduced is not compensation, and has nothing to fear from a full medical examination, she can take her new trial, and lay aside her present nicety, and submit to an examination without criticism for lack of modesty, certainly if the examiner is a woman. Judgment and order reversed, and new trial granted, costs to abide the event, unless within 20 days plaintiff stipulate to reduce the recovery of damages to the sum of $10,000, in which event the judgment, as so modified, and the order, are affirmed, without costs."—Ringelmann vs. Oscar Daniels Co., 165 N. Y. Supp. 1109.

Military Medicine.

MENTAL DISEASES AND THE WAR.

HOVEN (*Archives Médicales Belges*, May, 1917) states that he does not intend to go deeply into this subject, and contents himself with a brief analysis of the material which has come under his observation as military alienist during the past 14 months. Out of 300 cases, 28 were examples of post-traumatic psychoses such as follow trauma, cerebral commotion, or moral shock. In 11 of the 28 there had been an actual injury to the cranium, while in 12 others shells had exploded close to the victims. Of the 28 patients, 16 presented evidences of mental confusion, and 8 of melancholia. There were 2 cases of dementia precox, one of which the author describes, adding that in post-traumatic psychoses the possibility of dementia precox should always be borne in mind.

With the exception of 24 patients whose insanity dated before the war, the remainder of the material (256 cases) includes the ordinary psychoses of the alienist, viz., dementia precox, 61 cases, and melancholia, 52 cases, followed by acute confusional insanity, with 16 cases, and progressive general paralysis, with 14 cases. Other psychoses occurred only in scattering figures (manic-depressive, mental disequalibration, alcoholic, etc.). However, under ordinary psychoses are comprised idiocy and imbecility, with 62 cases: *i.e.* the mental ailments were found to be associated with subnormal mental development. This contingent was, of course, the result of hasty selection during mobilization. The subjects presented either mental confusion, melancholia, or nervous crises. Latent mental weakness was in part brought out by alcoholic abuse. Those actually insane before the war were mostly volunteers suffering from paranoia, paraphrenia, epilepsy, and alcoholism.

The author states there is no specific war psychosis. The alleged "battle hypnosis" is no more than acute mental confusion with dream hallucination, occurring especially in post-traumatic psychoses. These patients are very wakeful, with an exaltation of psychic automatism and a sensorial erethism. Acute mental confusion is characterized in general by lacunar amnesia, which disappears slowly, and persists after other symptoms have vanished.

Simulation of insanity is rare, but dementia precox often passes at its onset for simulation because the victims indulge in silly, absurd, affected behavior. In true simulation the patient is always abnormal, a psychopath. In contrast with actual simulation, exaggeration is common. Psychopathic deserters are not uncommon, and much care is necessary for the proper fixation of responsibility.

By what mechanism does warfare cause insanity? No one knows now, but after the war is over it may be possible to answer this question. No doubt, insanity is produced by a commingling of psychic and somatic insults. Homesickness, loss of sleep, fatigue, at once suggest themselves, and we may add apprehension of danger, shell concussion, etc. Hereditary taint and history of neuropsychic manifestations are very common; in fact, predisposition in some form is almost universal. In some material, alcoholism, whether as effect or cause of predisposition, is present in a third of all cases.

The practical aspect is diagnostic and not therapeutic. But few of these men are fit for duty, for they can seldom react properly to discipline. They must be mustered out, and, if necessary, interned. The best modern treatment is life in farm colonies, which results in more or less improvement. The inoffensives are able to do useful work for the army in various capacities—basket weaving, shoemaking, woodworking, baking, etc., etc.

WAR RADIOGRAPHY.

THIS subject is pretty well covered by at least one monograph in French, which we believe has already been translated into English. In reading this work, which was pronounced of great merit by experts, we remarked that much of its contents was necessarily of *ante bellum* origin, and that some of the very latest advances in radiography—principally gasless tubes—had not been utilized. It is evident that a completely satisfactory work on war radiography cannot be written until after the termination of the conflict, when the results of specialists from all warring countries can be coordinated.

Meanwhile several periodicals are supplying important data on military radiography. One of these, *La Radiologia Medica*, published at Milan, is very largely devoted to military subjects. In the July-August number of this periodical, four out of seven original articles are of this type. Fiorini writes of gas gangrene and numerous plates illustrate both gas phlegmon and the diffuse type made up of discrete macules or small bullæ. These are brought out in the great majority of cases if very soft rays are used. When present in connective tissue the latter presents an alveolar appearance; while in striped muscle the shadows pursue a course parallel with the muscle fibers. Gas phlegmon is seen as a rule near a fracture; the grouped macules may be distinct or aggregated into a single shadow.

Maffi relates a case of shell fragment in the right ventricle of the heart which it had entered through the inferior vena cava. The soldier had been struck in the abdomen and the fragment had broken the right tenth rib at the median axillary line. The abdomen was tympanic, but there was no peritoneal reaction. The patient complained much of pain in the right hypochondrium. The bowels moved with the aid of glycerine enemas and the tympanites subsided. The first *x*-ray examination was negative. The state of the patient one week after the injury was one of shock and adynamia. The pulse was imperceptible, facies pale and slightly cyanotic, and the patient was totally unequal to voluntary motion. He was now rayed by regions—hepatic, thoracic, cardiac, etc.—still with negative results. The heart could be seen to contract rapidly, with the right side partly obscured by the opaque base of the right lung. Finally, however, a movable shadow became visible in the right ventricle, the motion being of the vortex type. The pericardium was apparently intact, so that the projectile doubtless had reached the heart through the inferior cava. The revelations of the screen could not, of course, be corroborated by an ordinary radiogram. Auscultation and percussion tended to up-

hold the diagnosis. Many colleagues examined the patient who was recognized as acutely anemic while the base of the right lung appeared to be consolidated. The operation of cardiotomy indicated in theory was actually contraindicated by the patient's condition. He was now delirious and blood cultures showed the presence of the streptococcus. Death occurred 12 days after injury. A postmortem radiogram showed that the shell fragment was no longer in the right ventricle, it having migrated into the adjacent pulmonary area at the level of the third intercostal space and three fingers breadth from the sternal margin. Autopsy revealed bloody serum in the right pleural cavity and hepatisation of the base of the right lung. The pericardium and heart were intact and the endocardium showed no trace of irritation. The projectile was found to have entered the pulmonary artery and lodged at the point of bifurcation. It was quite bare, but the artery of the right lung was completely occluded with a thrombus. The liver in the area of the trajectory of the projectile was necrotic and putrid, the suprahepatic vein being included in the process.

Rossi cites 41 cases to illustrate the tolerance of the organism to modern war projectiles. This paper is well illustrated. Finally Coppola describes and illustrates a new operating table for fluoroscopic control.

Skin Diseases and Their Treatment Under War Conditions.—Henry MacCormac states that in the present war the losses occasioned by diseases of the skin have been considerable, and that dermatologists are much concerned with two questions: first, whether the art of this specialist can prevent these skin conditions, and second, when they have arisen how best he can cure them.

In France the problems presented are new; unusual types of skin affection have arisen, while the progress of war, the environment of the army in the field, its ebb and flow and the complicated movements of its being, render impracticable those processes familiar in the quiet habit of civil life.

In dealing with diseases of the skin he says that we are content to know that not only are we alleviating illness, but further, since nearly every case will return to duty, we are able to add considerable reinforcements to the army. We are dealing with men whose health is but little impaired, many of whom are highly trained soldiers, and who from a purely military point of view are of the utmost value to the combatant forces. MacCormac particularly emphasizes this fact because it is so necessary to insist that the employment of the highest skill and best methods are well repaid by the results obtained. The work of a dermatologist is important for a further reason. Where so large a proportion are affected with contagious diseases, the cure of one case may mean the prevention of many others. The problem is no new one. During the American Civil War, out of an army of some 600,000 men, 32,000 cases were diagnosed as itch, and another 35,667 were merely recorded as skin disease. So severe was the former complaint that its pathology was disputed at the time. During the Napoleonic campaign cases of itch were counted by the hundred thousand.

The problem is a serious one. Medical science has curbed many army diseases, but the scourge of scabies still survives to the present time. Naturally, difficulties arise in the treatment of skin conditions on account of the moving forward of the troops over contested ground. In Pais the director of St. Louis Hospital assured the writer that the incidence of scabies in the troops has been greatly lessened since the beginning of the war. This has also occurred among the Belgian Army, due to the establishment of an admirable bathing system and the establishment of dermatological centers in various sections where expert opinion and treatment is available. The French Army has also established these centers and cutaneous affections have been less severe among the French soldiers than among the British soldiers.

MacCormac approves of a scabies station for each army corps. The establishment of these stations would release beds and personnel elsewhere employed in the treatment of skin diseases and each medical officer could deal with a large number of cases and an actual saving would be effected.

Since scabies in France differs in some important features from the form seen in civil life, medical officers must know what to look for. The hands are often entirely free from lesions, while interdigital burrows, that pathognomonic sign, are only present in about 13 per cent. The problem is further complicated by the presence of lesions and itching caused by pediculi. The louse-bitten soldier regards pruritus as a normal accompaniment of his life. The pediculosis is acute rather than chronic and presents a close resemblance to scabies, at times most puzzling. Fortunately the louse never attacks the penis, while this organ is frequently affected in scabies, and the presence of papules or crusts there is of the greatest help in forming a diagnosis. Any system of regimental inspection for the detection of scabies must permit of an examination of the whole body and above all of the penis. Interdigital vesicles rather than burrows should be sought for; impetigo of the buttocks is pathognomonic of scabies, and every patient with boils should be regarded as suspicious, as they form 28.4 per cent. of the pyodermic complications, either alone or associated with impetigo.

The treatment of scabies offers a wide field for discussion. In this prevention is of primary importance. How does a soldier acquire this disease? Dermatologists insist that prolonged and intimate contact is necessary. Since opportunities for removal of clothing are comparatively rare and offer themselves only when in rest, infection must occur at this time, and as it is then that blankets are chiefly used, they may be the means of transmitting the disease. No doubt horses and a venereal origin account for some cases—a small and negligible class. Were it possible to disinfect blankets more frequently, using the Clayton sulphur vapor method, scabies might be greatly lessened. Another source of infection—the importance of fresh cases from England or the base—merits some reference. These men may be removed, but the scabies "carrier," the individual who has been partially cured by methods such as

sulphur fumigation, is a power difficult to deal with.

MacCormac states that under conditions of active service, the best treatment is that which is best suited to the majority, most easily carried out and least expensive. Any system to be effective must fulfill three conditions: burrows must be opened to permit access of the parasiticide to the insect and ova; the parasiticide should be of such a nature as to destroy the parasite without producing dermatitis; finally, to prevent reinfection, contact clothing and blankets must be disinfected. The first of these conditions is achieved by a hot bath, soap, and a soft brush; the second by the application of sulphur ointment twice daily for three consecutive days, and the third by means of any steam pressure or sulphur vapor apparatus. Showers and steam baths are unsatisfactory and almost useless. To attain success the ointment must be thoroughly rubbed in over the whole body below the neck. The soaping and the application of the sulphur ointment must be done under the direction of the medical officer or carried out by a skilled orderly, as the men attempt to apply it with puttees and boots on. Each man should have a separate portion of ointment. Many other remedies, such as balsam of Peru, B-naphthol, etc., have been tried but are not effective. Discovery of the acarus is the only absolutely certain proof that a man is still uncured. But this test is useless in France, for the acarus is extraordinarily difficult to find, even in marked untreated cases.

Brief reference should be made to the impetigo associated with scabies. Its distribution on the buttocks and frequently over the elbows and knees is very characteristic. This impetigo is of an ecthymatous type, and is caused by streptococcal infection; it is relatively common. Those unfamiliar with it are apt to overlook the primary scabies which may be of slight degree. Its presence in no way contraindicates sulphur treatment, which often acts most beneficially. After the scabies has been cured the same treatment is followed as for ecthyma elsewhere.—*Proceedings of the Royal Society of Medicine*, July, 1917.

Tropical Phagedenic Ulcer in French-African Troops.—Simple phagedenic ulcer of the tropics is doubtless confounded with several well-known specific affections, and an account of this affection by Spick in *Le Caducée* for August 15 should be of use in clarifying the subject. When Senegalese soldiers were first brought to France, in 1914, many of these individuals, who had been engaged in railway construction in Africa, were found to be suffering from sores on the feet and legs. In every one of the 129 cases studied by Spick the lesions had originated in abrasions from collision with rails or crossties which the men were transporting. Infection occurred because of complete lack of cleanliness and surgical aid. When these subjects were assembled together for treatment the odor was indescribably repulsive and nauseating, indicating the presence of necrosis. It was impossible to interne the men with other patients, and a separate pavilion was improvised. Generally speaking, the ulcers were multiple, circular, with a tendency to form polycyclic contours. The maximum of extent was that of the palm of the hand. The borders were sharply cut and the floor presented a dirty grayish deposit of gangrene, the thin secretion of which conveyed the disgusting odor. Naturally, the toes, their web, and the adjacent sole of the foot suffered most from the sloughing phagedenic process. Bacteriological tests showed the presence of Vincent's bacillus and spirillum. Treatment, the outcome of many tentatives, was eventually as follows: The ulcers were cleansed with pledgets of cotton soaked in hydrogen peroxide in order to be rid of the sloughs, the scissors also being required to secure the proper conditions for treatment. Upon the prepared surface iodoform was thickly applied. The Paquelin cautery, heated cherry red, was then employed, and served incidentally to set free iodine fumes. More iodoform was now added and sterile gauze applied. After four daily dressings this method of disinfection was repeated. Simple dressings were substituted about the twelfth day, or as soon as all signs of gangrene had disappeared. In some cases toes required disarticulation, and in very severe cases the foot either had to be sacrificed or an extensive use was made of drainage tubes beneath the plantar fascia. Salvarsan was also injected intravenously in seven cases, and appeared to arrest the phagedenic process after surgical methods had failed. The interval between the injections was six days, with an initial dose of 15 cgm., which was doubled, trebled, and quadrupled in the three succeeding doses. Save for the few cases in which relatively extensive amputation was necessary, the men were all back in the ranks in a short time.

Training in Psychiatry for the Reserve Corps.—Beginning with the first week in October a number of officers in the Medical Reserve Corps are taking a six weeks' intensive training in psychiatry and neurology at the St. Elizabeth's Hospital, formerly the Government Hospital for the Insane, under the direction of Dr. William A. White, superintendent, and his assistants. The officers taking this course are: Captains Cyrus Brown Brownrigg, H. R. Carson, R. G. Eaton, William Alonzo Searl, and A. B. Colburn, and First Lieutenants Quintard Taylor, James A. Belyea, John Miller, H. A. Durkin, Emery Low Dravo, and Percy Betterman Battey. A number of enlisted men have also been detailed to the St. Elizabeth's Hospital to be trained in taking care of such cases.

Columbia Base Hospital Opened for Army.—The new base hospital erected on Columbia Oval was formally opened on the afternoon of October 3 with exercises, at which Dr. Nicholas Murray Butler presented the hospital to the United States Government. It was accepted on behalf of the Government by Col. E. R. Schreiner, commanding officer at the hospital. In his address of presentation Dr. Butler said that the building of the hospital was authorized by the Trustees of Columbia University on April 2 and four days later a committee was appointed to take charge of the undertaking. The work of building and equipping the hospital had been rapidly executed and represented "American effectiveness in action." The hospital is receiving soldiers sent home through illness or accident and is prepared at the present time to care for 500 pa-

tients. Plans have been submitted, however, for enlarging it so that it will accommodate 1,000. The building and equipment of the hospital were provided for by a special gift of $175,000 from Daniel G. Reid and $100,000 raised by popular subscription.

British Hospitals Bombed.—A cablegram from the British headquarters in France and Belgium reports that German airmen have dropped bombs on two hospitals behind the British lines. Three British nurses and a number of wounded soldiers were killed.

Flower Hospital to Become a Base.—At a recent meeting of the Flower Hospital War Relief societies it was announced that the Flower Hospital, New York, had made application to be accepted as a base hospital and that this was soon to be granted. Plans have been made for increasing the fund for medical supplies from $10,000 to $25,000 and for doubling the personnel of the hospital.

Red Cross Nurses in Service.—The national committee of the American Red Cross announces that over 2,000 Red Cross nurses are in active nursing service and another 2,000 are in teaching and committee work. Nine thousand more stand ready to serve at once. Specially trained nurses are being held in readiness for work in units devoted to pediatrics, orthopedics, mental diseases, and public health. Infant welfare nurses have already been sent to France and Roumania, and plans are under way for sending a special unit of nurses trained in the care of mental diseases to serve in the mental wards established in the hospitals of 32 cantonments. Since the arrival of the American Red Cross Commission in France last spring an organization of 864 persons has been built up to care for the American expeditionary force and the French people. Of the commission's staff, 517 members are serving without pay or living allowances from the Red Cross. Among these are prominent business men, technical experts, and women experienced in the handling of relief supplies. The average salary paid to the remaining 347 persons on the staff is $800 per year.

Big Red Cross Rally.—The largest body of war nurses ever gathered in this country and the first great Red Cross parade were witnessed in New York City, on October 4. More than fifty chapters of the Red Cross were represented and all the hospitals of the city. Among those leading the parade were Henry P. Davison, chairman of the Red Cross War Council; Major General William C. Gorgas, and Rear Admiral Braisted, surgeon general of the navy. An open air pageant and benefit on the following day netted the Red Cross $50,000.

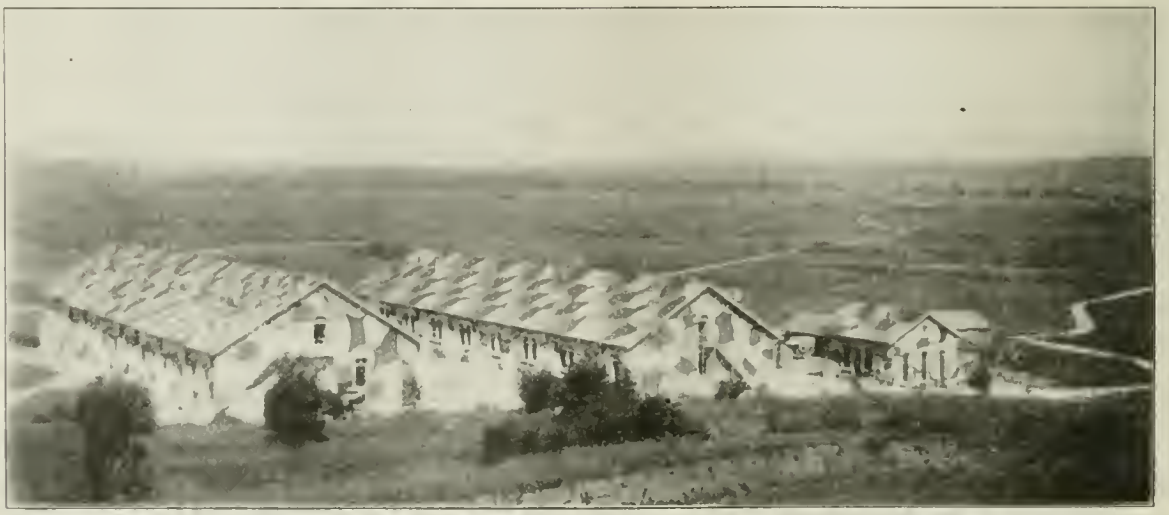
Permament Base Hospitals for France.—The Red Cross has taken steps to replace the temporary structures now used as base hospitals in France with permament buildings which will provide better protection against the rigors of a French winter. Major Murphy has cabled for 2,000,000 feet of fir which is being hurried from Oregon. Other supplies needed in construction are being collected for shipment as rapidly as possible. The American Red Cross has now more than a dozen base hospitals in France, each equipped with at least 500 beds.

Additional Red Cross Activities.—The Red Cross War Council announces that a Bureau of Medical Service of Foreign Commissions to give prompt and expert attention to the requests for medical and surgical supplies received from American Red Cross commissions now at work in Europe has been established. The bureau will also answer requests from doctors and nurses wanting to serve with these commissions, particularly in France and Roumania. Dr. R. M. Pearce of Philadelphia has been made director of the bureau.

Sixteen large warehouses have been completed for the new war relief distribution system in France. Six of these buildings are in Paris and the others in departments outside the capital, and all are said to be filled with supplies.

Another announcement is the appointment of directors of the civilian relief work in each of the thirteen national divisions of the Red Cross. The director of the Atlantic Division is Alexander M. Wilson. Instruction of home service field workers will be provided in twenty-five institutes. These will be opened soon in various parts of the United States.

The object of the home service is to help the families of soldiers and sailors to solve the problems confronting them through the absence of husband or father, and to help them to adapt themselves to the exigencies of war times.



An ambulance station in France; showing the camouflage replacing the Red Cross insignia on the roofs—a change necessitated by the inhuman practice of German airmen of bombing all hospitals and ambulance stations wherever discovered.

Some War Books.

PHYSICAL REMEDIES FOR DISABLED SOLDIERS. By R. FORTESCUE FOX, M.D., Honorary Medical Director of the Red Cross Clinic for the Physical Treatment of Disabled Officers. With Chapters by Major R. TAIT MCKENZIE, R.A.M.C., Professor of Physical Education and Physical Therapy at the University of Pennsylvania; FRANCIS HERNAMAN-JOHNSON, M.D., Senior Medical Officer to the *x*-Ray, Electrical, and Massage Department, Cambridge Hospital, Aldershot, and JAMES B. MENNELL, M.A., M.D., Civilian Medical Officer in Charge of the Massage Department, Military Orthopedic Hospital, Shepherd's Bush; Medical Officer to the Physico-Therapeutic Department, St. Thomas' Hospital. Cloth. Pp. 277, with 88 illustrations. Price, $2.75. New York: William Wood & Company, 1917.

THIS is a valuable summary of physical treatment afforded the sick and wounded in the English military hospitals. It is an early product of rich experience by trained men in the fields of hydrology, electrotherapeutics, radiology, remedial exercises, and training, including massage, passive movement, mechanical treatment, and exercise. Plans of the Heaton Park Command Depot and the department for physical treatment, Military Orthopedic Hospital, Bangour, Midlothian, are included and there is a valuable chapter on the various marine resorts and climates in Great Britain.

So much has been done in England and France to afford physical treatment in suitable cases that in America it is obvious we shall be compelled before long to use the same measures for our returning soldiers. Indeed, we are already making preparation for this reconstructive work. We shall, therefore, do well if we heed the lessons of European experience. No better on the various marine resorts and climates in Great Britain.

Among the newer forms of baths employed are the whirlpool baths. They are local baths of flowing or agitated water, usually at a moderate temperature of 100 to 105° F., or hyperthermal, 105° to 120° F. At the lower temperatures they may be continued for fifteen to forty, or even ninety minutes. They stimulate the arterial circulation in the most powerful manner and both Dr. Fox and Major McKenzie lay great stress on their value. In the French form of bath the movement is supplied by the incoming water under a fifty-foot head; in the British form there is an electrically driven turbine protected by a grating which revolves rapidly at the bottom of the bath. These baths are applicable not only to limbs, but to the entire body and are used in dealing with the stiff and swollen extremities of wounded soldiers. The French are prone to the use of this method which they term "balnéation à l'eau courante."

Another valuable feature of the work is the set of instruments for recording measurements of the mobility of joints and their progress under treatment, and a chart is given for recording these movements as used at the Centre for Physical Treatment at Versailles. It is encouraging to learn that at the Anglo-Belgian Hospital at Rouen of 2020 convalescents discharged after a course of physical treatment, 1170 were completely cured and rejoined their depots; in another hospital out of 3348 soldiers received from disability of all kinds 2676, or 80 per cent., were cured and returned to service. Great stress is laid on reeducation and work and the chapters on massage, passive movement, and exercise by McKenzie and Mennell are illuminating.

LE PALUDISME MACÉDONIEN. Caractères cliniques et hématologiques. Principes de thérapeutique. Par P. ARMAND-DELILLE, G. PAISSEAU, P. ABRAMI, HENRI LEMAIRE. Collection Horizon. Prix 4 francs. Paris: Masson et Cie., 1917.

THIS little work begins with a preface by Professor Laveran, discoverer of the plasmodium malariæ. There is an introduction on the parasitology of Macedonian malaria, chapters on the primary synchromes and relapses and recurrences of the same. The synchromes of secondary paludism are next considered, and followed by the chapters on diagnosis and treatment. Despite the seriousness of the geographical type of malaria, it seems to have been largely overcome by various intensive plans of treatment. It is, however impossible to prevent outbreaks of the disease when summer reappears.

OTITES ET SURDITÉS DE GUERRE. Diagnostic-Traitement-Expertises. Par H. BOURGEOIS, Oto-rhino-laryngologiste des Hôpitaux de Paris, Arbitre-Expert près le Trib. d. Commerce et M. SOURDILLE, Ancien Interne des Hôpitaux de Paris. Collection Horizon. Prix 4 francs. Paris: Masson et Cie., 1917.

AFTER a brief account of non-traumatic otitis as found in soldiers, the authors give due consideration to wounds of the ear and mastoid process and then pass to the vital subject of war deafness from cranial shock and shell deflagration. Special types are described of deafness due to lesion of the auditory nerve paths and hysterotraumatism. The entire subject is summed up in the section on expertisation, which includes a full account of the examinations for audition and equilibration. Not the least in importance are the pages on the relations of impaired hearing to military duty and aviation.

L'APPAREILLAGE DANS LES FRACTURES DE GUERRE. Par PAUL ALQUIER, Ancien Interne des Hôpitaux de Paris, et J. TANTON, Médecin Principal, Professeur Agrégé du Val-de-Grâce. Prix 7 francs 50. Paris: Masson et Cie., 1917.

WHILE the word orthopedic does not occur on the title page, this is an eminently orthopedic treatise; for, aside from the orthopedic management of fractures of the long bones *per se*, the entire subject of the apparatus treatment of resections of bones and joints following projectile wounds is considered along with prosthesis after amputations in the thigh and leg. We note that in the treatment of recent fractures metallic plates are used to some extent, as is also the Hodgen-Smith suspension apparatus. The temporary retentive apparatus for fractures naturally belongs under surgery proper, but the secondary or so-called permanent apparatus is orthopedic throughout, securing unimobilization plus mobility; so that the functions of the limb can be maintained while the bones are not permanently united. Complicated devices such as Delbet's apparatus for fractured thigh are extensively used and the latter has undergone modifications during the present war. The number and variety of single parts which may enter into the composition of these apparatus is surprising. The reviewer obtains the impression that it will become more and more difficult in the future to draw a sharp line between ordinary bone and joint surgery and orthopedics.

FIRST AID TO THE INJURED AND SICK. An Advanced Ambulance Handbook. By P. J. WARWICK, B.A., M. B. Cantab., M.R.C.S., L.S.A., A. K. C., London Major R.A.M.C. (I.) I.D., Commanding 306th (South Midland) Field Ambulance, Lecturer and Examiner on Ambulance, Home Nursing and Hygiene to the Educational Department, London County Council, etc., etc., and A. C. TUNSTALL, M.D., C.M., F.R.C.S., L.R.C.P., Ed. Major, R.A.M.C. (I.), Rtd. Commanding R.A.M.C.'s First Brigade, London Division National Reserve, etc., etc. Tent edition, revised. Price, 80 cents net. New York: William Wood and Company, 1917.

THERE are many extremely good text books on "First Aid," but a lack of concise and well illustrated text books. It was no further back than the year 1901 that Drs. Warwick and Tunstall wrote and published a work with the view of supplying this want. In the sixteen years that have elapsed, the book has gone through ten editions, so that it may be taken for granted that the authors have been successful in this direction. The present edition has been thoroughly revised and brought up to date. In its present form it is admirably adapted to its purpose, which is to give information as to how to render temporary assistance in the most effectual manner to a person suffering from an accident or sudden illness until the arrival of a doctor. The little book will be found quite useful by nonmedical workers in France and on other fronts, and can also be studied with profit by the elders in every household.

MEDICAL RECORD.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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DEGENERATIVE CHANGES OCCURRING IN BICHLORIDE POISONING.

IT is a commonplace that from time to time a wave of suicide sweeps over the land; this is well known by every newspaper reader and especially familiar to the police. When a case of bichloride poisoning occurs, for example, the police department of a great city become immediately on the *qui vive* for a recurrence. Pharmacists are cautioned to be careful about dispensing bichloride, and various other precautions are taken, in spite of which there frequently occur four or five other suicides by bichloride within a short time.

Everyone will recall that several years ago an epidemic of this form of *auto da fe* suddenly materialized, out of nowhere, so to speak. A distressing feature of the situation was the large incidence of fatalities among these cases. In spite of all the remedies known to science, many of these patients seem doomed from the beginning. The spectacular feature of it to the public mind was the fact that some of them went about their daily avocation for a time, apparently well, and then, often a week or so later, succumbed to the poison. Naturally the fact that, even with such a chance for therapeutic effort to be made, these cases went on to collapse and death, was seized upon by opponents of the medical profession as a peg whereon to hang criticism, while the profession itself was not at all satisfied with the state of affairs, and strove to discover some remedy for such a situation.

The natural assumption was of course that profound organic changes of some sort must take place in the patient shortly after the ingestion of mercuric chloride, otherwise the intensive elimination usually carried on would soon rid the patient of the poison. This view is borne out by an article by Drs. W. H. Burmeister and W. D. McNally (*Journal of Medical Research*, March, 1917), who have made extensive studies of the changes taking place in the viscera in bichloride poisoning, especially in the liver and kidneys. As they point out, too often the intensive inflammation of the digestive tract, while a distressing symptom, is given much attention to the comparative neglect of the more important renal and hepatic changes.

Why these organs should be so profoundly affected has not been clearly understood hitherto, although several theories have been advanced. The most popular ones have been those which held that the injury was directly caused by the irritant action of this poison as it was eliminated. The latest opinion seems to be that there are local vasomotor disturbances plus direct injury of the parenchyma cells by the mercurial compound.

Drs. Burmeister and McNally studied the kidneys, liver, and colon of 14 dogs poisoned by corrosive sublimate. Not to describe their experiments in detail, it can be said that they were very thoroughly and accurately performed. The chief conclusions drawn from them were: (1) That mercuric chloride can be detected in the blood a few minutes after it is taken. (2) Similarly quickly, degenerative changes appear in the kidney, going rapidly on to cell-death. (3) When large amounts have been taken there is a corresponding effect on the kidneys; when smaller doses have been taken kidney changes depend on the length of time; in large doses liver changes do likewise. (4) The degree of kidney and liver changes is not necessarily proportionate to the amount of mercury in the blood.

These experiments show clearly why so little effect has been seen with energetic therapy in bichloride poisoning. The poison seems almost at once to seek out the kidneys and liver and institute degenerative changes which go rapidly forward. Our problem then must be to prevent this rather than to concentrate our entire energies on hastening elimination.

SUCCESSFUL TYPHOID PROPHYLAXIS.

IN spite of the great success achieved in the reduction in the morbidity from typhoid fever through better water supply, supervision over the sources of food supply, and other sanitary and prophylactic measures, every so often there is an outbreak of the disease in a community paying the maximum attention to these matters. That this is a source of worry and discouragement to many goes without saying—as is the case with the present typhoid epidemic in one of the boroughs of New York. But before accusing a community of negligence in the care of pertinent matters it must be remembered that there is a "normal" increase of typhoid fever in the autumn—hence the name, "autumnal fever." Much of this increase must be attributed to direct importation from distant rural communities where city people are wont to spend the summer in large number and where the sanitary provisions are usually inadequate. On the other hand, infection of even one person, no matter where the source, who handles food can set up a considerable epidemic. The infected individual need not be at the source of supply, and an intermediary handler of food may be difficult to trace because his contact with the food is so very transient. The typhoid contracted directly from consuming infected food, such as oysters, will follow no definite geographical

lines, because the consumption of such food follows no definite lines but is rather scattered. But in the case of water, and particularly of milk or milk products, the line of infection is usually well marked and confined to the lines of distribution. Many of the water and milk epidemics have for this reason been run down easily. Infections that are originated by active typhoid cases are comparatively easy to trace to their source, but the trouble in the detection of the human cause of the epidemic lies in the fact that it is the apparently healthy carrier who is the chief source of infection. Against carrier infection general sanitary prophylaxis seems impotent, because the carrier is hard to detect and because he is himself innocent of the danger he harbors.

Formerly, in searching for the source of an epidemic water was given first place. Yet in communities like New York that have a highly developed and protected water supply the danger from this source is negligible. Even in less protected communities the water supply is the slightest offender. Unless the pollution of the water supply is at once sudden and overwhelming water can dispose of a good deal of infectious material. Flowing water, especially aided by sunlight and sedimentation, soon frees itself of even a great deal of pollution. Moreover, the dilution of the infected material in a stream is usually great and any individual can imbibe only a small dose at the worst. This is not meant to minimize the danger from polluted water nor to discourage the expensive methods for the purification of the water supply, but rather to put the likelihood of infection from water in its proper place. On the other hand infection from food, especially milk, plays a large factor in the spread of this disease. In this case neither the flux, sedimentation, dilution, nor sunlight can play any part, and infection therein has an opportunity to exert a direct and maximum force. The direct contamination of food by flies and other insects must, of course, be borne in mind. In the case of milk or other food the infection directly by carriers or by those attending upon actual or undiagnosed cases is perhaps the largest factor in the causation of typhoid fever. And yet while all the elements of prophylaxis against this disease, such as adequate water purification, supervision over food production, general sanitation, education, etc., have helped to reduce the incidence of typhoid fever they have not succeeded in eradicating the disease. Indeed, these measures can be a delusion and even a snare. No army would now think of depending wholly upon such extrinsic elements in protecting itself against typhoidal infection. The only real and successful safeguard against the disease is antityphoid vaccination. This was amply demonstrated among the troops on the Mexican border and is being imposed upon the present overseas army. Should antityphoid vaccination be carried out as universally as vaccination against smallpox the former disease would soon be just as great a rarity in civilized communities as the latter.

OSSEOUS ANOMALIES.

For some occult reason the idea of a person or part of one becoming petrified has for ages been hailed as exquisitely mirthful. Any slang term which can embody this concept in a succinct manner is sure to become popular. Thus we have the application of such terms as "solid ivory" and "concrete dome" to those whose intellect, it is alleged, functionates slowly, or who are guilty of acts whose wisdom can be questioned. There is also a very general lay notion that a human being can "turn to stone"; casting back into our own youthful memories for a criterion, the conception of this process would seem to be a gradual stiffening and hardening of the flesh—general, not local—finally culminating in a sort of statue, whose only human attribute is that it exercises reason. More picturesque still is the popular idea of an ossifying process beginning, say, at the toes, and simultaneously, or soon thereafter, in the finger joints, and creeping upward, slowly, steadily, implacably, until it reaches the heart, when the individual of course succumbs.

Such famous practical psychologists as the lamented P. T. Barnum, of glorious memory, the idol of a generation or two of youthful worshippers, were not slow to see the possibilities in this outré conception, and one of the chief stand-bys of the sideshow and the dime museum has been the "petrified man," the "man of stone," and so on. Of course many of these cases are frauds, or have some other affection than real progressive ossifying myositis, which is a great rarity. The real disease seems to have been first described by John Freke in 1741, but the first accurate description was by Münchmeyer, who, in 1869, collected from his own experience and the literature twelve cases. The disease is sufficiently well known now, although of course, in most cases, only from hearsay, by the great majority of the profession.

In a recent article, E. L. Opie* has reawakened interest in this subject by a classical description of it. After discussing the literature, Opie describes the skeleton of a seventy-year-old man who had had this disease. In the same periodical, Opie, collaborating with Nathaniel Allison, describes a kindred disorder, hypertrophic chondrodystrophy, where the abnormal production of osseous matter occurs within cartilage. A number of illustrative cases are described. There is nothing to indicate that these two disorders result from any inflammatory process, rather must we regard them as perversions of the normal osteogenetic process. The cause is obscure, and probably will remain so until that time—should there ever come such a time—when we obtain some real insight into the creative power which gives to the protoplasm sentience.

*Progressive Muscular Ossification (Progressive Ossifying Myositis)—A Progressive Anomaly of Osteogenesis, by Eugene L. Opie; and Hypertrophic Chondrodystrophy in Infancy and Adolescence—A Progressive Anomaly of Osteogenesis, by Eugene L. Opie and Nathaniel Allison, *Journal of Medical Research*, May, 1917.

Treatment of Wounds by Soap.

Lucas Championnière was one of the first to draw attention to the value of soap as an antiseptic, and since then more or less use has been made of it for this purpose. In the *Medical Press* of August 15, 1917, Dr. M. Palynski gives his experience with soap in this relation. It must, of course, be of good quality, that is as devoid of impurities as possible. The manner in which Palynski has employed soap is by lavage, irrigation, and local application in saturated compresses. For lavage and irrigation a solution of 25 grams to the liter of boiled or distilled water was used. According to the author, the modes of action and advantages of such a preparation are as follows: On contact with the sanious or fungating surfaces of infected wounds, soapy solutions produce a viscid, stringy fluid of an opaline tint. The cleaner a wounded surface is, the less is the exudate of viscous fluid. Thus, on the other hand, all anfractuous wounds, and especially those of compound fractures, yield an abundant discharge of that kind of fluid. This characteristic secures, to some extent, the effect of making the soapy solution a reagent by the aid of which we can discover the presence of pus in those remote cul-de-sacs and inaccessible interstices, the draining of which is rendered physically impossible by their position. A compress, impregnated with a 20 per cent. soap solution, never causes any pain or smarting in the surface it touches. Simultaneously with the appearance of the viscous exudation, the congestion of the tissues of the wound begins to subside under the influence of the soaping and where there has been a bleeding point, the capillary hemorrhage ceases. It would seem, indeed, that with its mild, non irritating, alkaline, and antiseptic properties, the dressing possesses no injurious influence, whatever, on living tissues. It acts as a porous dressing which sucks away the pus as fast as it is formed. The stratum of minute air bubbles imprisoned between the tissues of the gauze realizes to a marvelous degree the condition essential for capillary drainage. At the same time, the alkali, in virtue of its avidity for liquids, contributes very effectively to the desiccation of the surrounding tissues. The dressing should never be covered up with any form of impermeable material.

"Medical" Treatment of Abscesses.

The possibility of preventing the formation of abscesses even after considerable pus has begun to accumulate has been freely discussed in past ages. To cite two examples, we may mention scrofulous abscesses in the neck region, and carbuncles. In each of these processes there appears to be a critical point at which suppuration may be arrested before the collection of a large amount of pus. Surgeons and pathologists are naturally sceptical as to any abortive action on suppuration, and look on such suppression as apparent rather than real, but intensive local and general antiscrofulous treatment sometimes seems to check the beginning suppuration in a cold abscess, just as the act of pushing calcium sulphide inwardly often appears to check acute suppurative processes. To-day, perhaps hardly any one believes in the policy of arresting such pus formation, even were such a result obtainable. The dangers of absorption and metastasis are so numerous and varied that prompt elimination of the focus is regarded as most urgently indicated. The entire subject seems to be revived in connection with the possibility of suppressing abscesses of the liver of presumably dysenteric origin with injections of emetine. The use of ipecac in this condition has been discussed for nearly two centuries, but tropical abscess of the liver is not a momentous subject with dwellers in temperate zones, except those in countries having colonial possessions. There is an article by Brocq and Auge in the *Revue de chirurgie* for August, 1917, on the successful treatment of acute hepatitis with expected abscess formation without resort to the knife, in which three cases are narrated, the probable nature of which was amebic. It is admitted that the knife alone cannot cure hepatic abscesses, but a combination of emetine with simple puncture is often successful in these cases, for the alkaloid changes living pus to dead pus through its amebicide properties, and the dead pus can be readily evacuated with a trocher. In the authors' cases, since no puncture was used, we can infer that pus had not yet formed, or that after sterilization it simply underwent retrograde changes. No doubt this possibility will eventually be cleared up by autopsy finds.

The Fasting Cure of Diabetes.

Recent works on this subject by Kellogg of Battle Creek and Stern of New York award the chief credit for this innovation to Guelpa of Paris, which may be just, so far as the calendar goes. But the work of Allen of the Rockefeller Institute, though published a year or so after Guelpa's clinical reports, has a sure scientific foundation, including results of animal experiment; hence it evens matters up when Professor Sabrazès, the distinguished clinician of Bordeaux (*Gazette hebdomadaire des sciences médicales de Bordeaux*, August 12), appears to give the American full credit for the scientific—as contrasted with the empirical—*raison d'être* of the fasting management of diabetes. We have never understood why any one should begrudge to Allen the credit to which he is abundantly entitled in this connection, nor can we understand how Stern, in his recent work, can ignore Allen so completely that—if we do not err—the latter is not even granted the courtesy of a passing reference. Kellogg gives some space to Allen's work, yet since he began the fasting treatment as soon as he had learned of Guelpa's experience, he may perhaps be excused for not expatiating on the former. On the other hand, the work of Joslin of Harvard is more or less confused with that of Allen. The former appears to have evolved a near-fasting treatment before 1908, and he was the first, or one of the first, to give Allen's work a fair test in practice, so that to-day the Joslin and Allen methods agree very closely. The name of Naunyn is often seen in connection with the evolution of the fasting treatment of diabetes, and it is to be hoped that the question of priority in this regard will eventually be permanently settled to the credit of all just claimants. The same problem seems inevitable whenever a really epoch-making discovery is made in any branch of applied science.

Paraffin in Burns.

Researches into the antiquity of paraffin in the treatment of burns do not appear to have been made as yet, perhaps because the rock-oil industry is comparatively modern. However, vegetable paraffins have been known for a much longer period, and according to Dr. Luis Espin (*Revista Medica Cubana*, July 1) some form of paraffin was recommended for burns as far back at 1797 by a Scotch practitioner. The remedy soon passed into oblivion, but was revived in England in 1834, only to meet with a like fate. Next in historical order comes the work of Barthe de Sandfort, with his "ambrine," and, following this, numerous preparations with open or secret formulæ. Espin states that he obtained the old Scotch and English formulæ (the last named is from the London Hospital) and devised a new preparation on a paraffin base which has given him surprisingly good results in the first case tested. The formula is as follows: Subnitrate of bismuth, 0.8 gm.; oxide of zinc, 10 gm.; beechwood creosote, pure, 3.5 c.c.; vaseline, 70 gm.; paraffin, 160 gm. Following the practice in Scotland, he began by using a brush on the burn and then applying the remedy warm and allowing it to cool. As this dressing is not claimed to be highly antiseptic, the burn should first be treated with a solution of hydrogen peroxide. A layer of cotton is then superposed on the paraffin coating. The author omits to state either the old formulæ or the references to the original reports, but doubtless a research into the older literature of the treatment of burns would unearth similar procedures.

Tartar Emetic and Malaria.

Quinine, although regarded as a true specific in the treatment of malaria, is by no means curative in all cases. It is pointed out in the *Interstate Medical Journal* for September, 1917, by Dr. M. D. Levy and Dick P. Wall that in estivoautumnal infection quinine fails almost entirely. Rogers stated some time ago (*British Medical Journal*, January 6, 1917) that tartar emetic injected intravenously had an inhibiting action on the plasmodia in malaria, and Levy and Wall, on the strength of this statement, gave the method a trial, the results of which they summarize as follows: In the few cases reported by them, tartar emetic used intravenously in comparatively large doses had no ill effect upon the circulatory apparatus. In cases of tertian malaria it reduced the temperature and apparently relieved the patient, though it did not cure him, as plasmodia were present in the blood stream after rather large doses of the drug. While no conclusions could be drawn, it seemed that in tertian malaria, at least, tartar emetic was not as efficient as quinine. However, the authors promise further experiments with the drug in the treatment of estivoautumnal fever and will report upon their results in a later paper.

The Administration of Emetine.

Emetine is now largely employed in therapeutics and especially in the treatment of amebic dysentery, and it almost always is given hypodermically. This mode of administration, however, causes intense pain, with redness, swelling, and induration. Writing in the *Lancet* of August 18, 1917, Dr. P. Figdor recommends intramuscular injections of emetine. He thinks that the best sites are on the upper arm over the deltoid and in the gluteal region. According to his experience a prolonged course of treatment can be given in this way without causing any inconvenience to the patient. There is no pain, though sometimes there is a little tenderness at the site of injection for twenty-four hours or so. Injections can be given on alternate arms day by day. Briefly summarized, Figdor believes that the advantages of the intramuscular method are as follows: (1) Pain during the operation is limited to the prick of the needle; (2) After-pain is generally absent, and when present disappears within 24 to 48 hours; (3) There is no tenderness, swelling, induration, or discoloration of the skin, and scarring is minimal or absent; (4) The efficacy of the drug may be increased, as there is probably less precipitation through more rapid absorption; (5) The same site may be used for injection indefinitely at intervals of 48 hours.

News of the Week.

Government Control of Manufacture and Sale of Narcotics.—As a result of recent disclosures in reference to the criminal drug traffic in this city, the Federal Grand Jury has recommended in a set of resolutions, unanimously adopted, that the entire manufacture and sale of opium, heroin, morphine, and other narcotics, be placed under the direct control of the Federal Government. The Grand Jury urges inspection of every plant where drugs are manufactured; that the product be shipped to Government warehouses, in zones to be established; that the Government should control the prices, the quantities shipped to wholesale druggists, jobbers, dealers, retailers, and pharmacists, all of whom should be bonded and licensed; and that the Government should control exports and imports. The Grand Jury has asked that the matter be taken up with the Department of Justice, so that an adequate bill may be presented to Congress.

The Feeble-minded in New York State.—As one of the first steps necessary to the better control of the problem of the feeble-minded, a joint committee of the State Charities Aid Association and the New York Committee on Feeble-mindedness has prepared an estimate of the number of feeble-minded persons in New York State. The estimate places the number at 35,000, of whom 6,000 are in institutions established for the feeble-minded, 4,500 are in other institutions, and 24,000 are at large in the community. Those making this investigation believe that these figures are in themselves sufficient evidence of the inadequacy of the present institutional accommodations in New York for this large class of individuals.

Street Deaths.—The report of the National Highways Protective Society for the nine months ended September 30 shows that in New York State 636 persons were killed, as compared with 543 and 476 for the same periods of 1916 and 1915. In New York City, automobiles killed 46 persons, trolleys 5, and wagons 4, during the month of September. In New Jersey, 29 persons were killed by auto-

mobiles during the month. During the first nine months of the year 190 deaths were caused by automobiles, as compared with 171 for the same period of 1916. In Detroit, said to be the most dangerous city in the United States in which to live, an average of one person a day has been killed for the past two months. The figures show that car accidents in that city have increased 100 per cent., and automobile accidents 185 per cent.

Lay Cornerstone on Randall's Island.—The cornerstone of the first of a group of eleven buildings now in the process of construction on Randall's Island was recently laid by Mayor Mitchell. These buildings are being erected by the Department of Charities, and will be known as the Institution for Feebleminded Children. Bids will soon be asked for three more buildings.

Hospital Needs Funds.—The New York Ophthalmic Hospital has made an appeal for $10,000 with which to keep its work up to the standard. The appeal states that the war is adding to the number of blind and deaf, and the institution wishes to be prepared to do its part, especially since the directors have placed it at the disposal of the Government.

High Cost of Milk a Health Problem.—The Health Department of New York City believes, in view of the relation of the cost of milk to child welfare, that it should concern itself with the present high price of milk. It has already made inquiries, which are still under way, among families of the poor, which indicate that the use of milk has been greatly restricted because of the increased price. It has been found that the sales of milk for family use have been decreased 20 per cent. in some districts. It has also been found that for purposes of economy some mothers have bought milk for their children of a lower grade than is considered safe for infant feeding, and that this has undoubtedly been a factor in the increased infant mortality of the past summer. Health Commissioner Emerson has called the attention of Mayor Mitchell to these facts, and has suggested that the city schools, baby health stations, settlement houses, hospitals, dispensaries, and police stations, might with propriety be used for the distribution and sale of milk, bread, and perhaps other staple foods whose cost to the community is now excessive. At the request of the commissioner, the mayor has appointed a committee to elicit all the facts in relation to this matter and to make constructive suggestions.

Work of Rockefeller Foundation in China.—The annual report of the China Medical Board of the Rockefeller Foundation, which has just been presented, states that two medical schools were founded in 1916 at Pekin and Shanghai, planned on American and European lines. Appropriations totaling $158,502 were made to missionary hospitals at Nankin, Huchow, and Canton. An appropriation of $50,000 was made to the Tsinanfu Medical College and $30,000 to the Hunan Yale Medical College. The report states that the work of establishing these medical schools has been somewhat delayed by the lack of facilities for giving students the proper premedical training, and quite a number of the appropriations made were to institutions promising to further general and premedical education.

Dr. Egbert H. Grandin announces the removal of his office to 200 West Fifty-eighth Street, New York City.

The George F. Geissinger Memorial Hospital of Danville, Pa., has received an endowment fund of $1,000,000 from Mrs. Abigail Geissinger.

Dr. Jonathan Leigh of Hiawatha, Kan., celebrated his one hundredth birthday anniversary on September 24. Dr. Leigh continued in active practice until ten years ago.

Dr. W. W. Crawford has been appointed health officer of the city of San Diego, Cal.

Prof. James McKean Cattell of the Department of Psychology in Columbia University, has been dropped upon the charge that he had disseminated doctrines tending to encourage a spirit of disloyalty to the Government of the United States.

"Euthanasia" Again.—In accordance with the inexorable cyclic law, a revival of the discussion on the killing of the old, the infirm, and the hopelessly ill is now due, and promptly on time comes a Des Moines physician with the familiar proposition. The legalization of the practice was urged by the doctor at the annual meeting of the American Association of Progressive Medicine, in Chicago, on September 24. It gained for him a fifty-line notice in the *New York Times* the following day.

The Missouri Valley Medical Society, at its meeting in Lincoln, Neb., on September 21, elected the following officers: *President*, Dr. A. I. McKinnon of Lincoln; *First Vice-President*, Dr. T. M. Paul of St. Joseph; *Second Vice-President*, Dr. Paul Gardner of New Hampton, Iowa; *Secretary*, Dr. Charles Wood Fassett of Kansas City, Mo.; *Treasurer*, Dr. O. C. Gebhart of St. Joseph, Mo. The next meeting of the society will be held in Omaha, in September, 1918.

The Increase of Insanity.—An article in the *Modern Hospital* points out that whereas the population of the United States has increased 11 per cent. between 1904 and 1910, the number of persons in insane asylums has increased 25 per cent. during this same period.

Typhus in Serbia.—A cablegram from Jassy, in Roumania, announces that the American Red Cross Commission has arrived there at a most opportune moment, as typhus fever has broken out again and is making headway in various villages.

Obituary Notes.—Dr. DAVID GORDON ALLEN, Assistant Surgeon, United States Navy, died on board the *Panther* on October 3, aged 38 years. He was a graduate of the College of Physicians and Surgeons, New York, in 1903, and was appointed Assistant Surgeon in the Navy in 1908.

Dr. BENJAMIN M. PAGE, a practitioner of medicine in Pasadena, Cal., since 1887, died at his home in that city, on September 18, aged 74 years.

Dr. HARRY VERNON WEAVER, a graduate of the Boston University School of Medicine, in 1893, died at his home in New Bedford, Mass., on September 22, aged 47 years.

Dr. J. N. RILEY died at his home near Stamping Ground, Ky., on September 20, his ninetieth birthday. He was a surgeon in the Confederate Army and practised medicine in Central Kentucky until he was 80 years of age.

Dr. BRADBURY M. RICHARDSON, a graduate of the New York Homeopathic Medical College, in 1865, a

member of the American Institute of Homeopathy and the State Homeopathic Medical Association, died at his home in Brooklyn, September 23, aged 75 years.

Dr. EDWIN SHARP, a graduate of Vanderbilt University, Nashville, in 1881, for many years a practitioner of Argenta, Ark., died in a sanitarium in Hot Springs, after a long illness, on September 25, at the age of 65 years.

Dr. JOHN HENRY ELLISON, a graduate of Vanderbilt University, Nashville, in 1888, died at his home in Altoona, Ala., on September 27, aged 55 years.

Dr. MOORE MOORE, SR., died at his home in Grenada, Miss., of cerebral hemorrhage, on September 24, aged 70 years.

Dr. JESSE R. JOHNSON, a graduate of the Memphis Hospital Medical College, in 1894, died at his home in Amite, La., on September 24, aged 52 years.

Dr. BENJAMIN F. FORTNER, a graduate of Vanderbilt University, in 1872, formerly of Springfield, Mo., died at Vinita, Okla., September 24, aged 70 years.

Dr. EMMA MEHLMANN, a graduate of the University of California, in 1908, died of acute leucemia, in Oakland, Cal., on September 20.

Dr. CHARLES W. NUTTING, a graduate of the Atlanta Medical College, in 1876, died at his home in Etna Mills, Cal., on September 22, aged 65 years.

Dr. HENRY L. WILSON, a Confederate veteran, and one of the oldest citizens of Atlanta, Ga., died after an illness of several months, aged 78 years. He was a graduate of the Atlanta Medical College, in 1876, and the first city physician of Atlanta.

Dr. LACY KINDRED BOBO, a graduate of the Louisville Medical College, in 1889, died of cerebral hemorrhage, in Dallas, Tex., September 20, aged 66 years. He formerly practised medicine at Oxford Junction, Iowa, and later removed to Maquoketa, Iowa.

Dr. R. M. HARGETT, a retired physician of Versailles, Mo., died on September 24, aged 87 years.

Dr. HENRY GILBERT LEE of Petersburg, Va., died suddenly at Blue Ridge Summit, Pa., on September 22, aged 50 years. He was a graduate of Bellevue Hospital Medical College, New York, in 1891, and was for many years city coroner of Petersburgh.

Dr. ROBERT MCALLISTER RICHARDSON, a graduate of the Chattanooga, Tenn., Medical College, in 1908, died at his home in Chattanooga, after a lingering illness, on September 19, aged 37 years.

Dr. BRADBURY M. RICHARDSON, a graduate of the New York Homeopathic Medical College, in 1865, a member of the American Institute of Homeopathy, died at his home in Brooklyn, N. Y., on September 23, aged 76 years.

Dr. PETER HUGHES of Brooklyn, N. Y., died at his summer home at Milford, Pa., on September 30, aged 60 years. He was a graduate of New York University, in 1879, formerly demonstrator of anatomy in New York University, visiting surgeon to St. Catherine's Hospital, Brooklyn, St. John's Hospital, Long Island City, and St. Mary's Hospital, Jamaica, L. I.

Dr. MARCUS LAFAYETTE NANCE, a graduate of the Medical Department of Tulane University, in 1905, of Utica, Miss., and later of Osola, Miss., died September 20, aged 43 years.

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 27, 1917.

1. Foreign Bodies in the Eyes. John F. Curran.
2. The Chinese Barber and His Use of Aural Instruments. A. M. Dunlap.
3. Results in Further Study in Leg Rotation. C. L. Lowman.
4. Carcinoma of the Umbilicus. M. G. Wohl.

1. Foreign Bodies in the Eye.—John F. Curran states that since the establishment of factory hospitals it is the industrial surgeon who treats the majority of cases of foreign bodies in the eye, and it is from his point of view that Curran presents this subject. At the Norton Company during the past year 1300 cases of injury to the eye were treated; of these 90 per cent. were directly attributable to foreign bodies. In fact, they constituted one-third of the entire number of cases treated at their hospital, and were second only, in frequency of occurrence, to lacerations of the upper extremities. The method of examining the eye for foreign body is as follows: First, the lower conjunctival sac is inspected. This is done in the ordinary manner, by pulling down the lower lid, and telling the patient to look up, thus exposing the whole conjunctival surface. The upper lid is next inspected. The lid must be everted. To do this easily, have the patient look down, grasp the lashes of the upper lid, place an applicator at the base of the tarsal cartilage and evert the lid, thus exposing the entire fornix. The cornea is next examined. If necessary a watchmaker's glass may be used, or the eye illuminated obliquely through a condenser. Large foreign bodies can usually be seen with the naked eye, but small ones require a prolonged search with artificial aid. If the eye is first put at rest by the instillation of two drops of a 4 per cent. solution of cocaine, the examination can be conducted with greater ease and expediency. Two conditions may arise to cause confusion: First, pigment spots in the iris, and, second, pigment stains, or rust spots. Rust spots are the result of the imbedding of foreign bodies in the cornea. Curran leaves the rust spot for the time being, after having removed the particle, and in the course of forty-eight hours the spot in its entirety can be removed. In the treatment prophylaxis is of the utmost importance. Goggles should be worn by the workers wherever there is danger of flying particles. Their hospital records show that in 50 per cent. of the imbedded cases the foreign body is in the cornea, 5 per cent. in the sclera, and in the remaining 45 per cent. it is found loose in the conjunctival sac. Removal of foreign bodies lying loose in the conjunctival sac can usually be accomplished by means of a cotton-wool applicator. Two drops of argyrol, 20 per cent., are instilled and the patient discharged. Imbedded foreign bodies, whether situated in the cornea or sclera, always necessitate the use of an anesthetic. Two drops of a 4 per cent. solution of cocaine in a boric acid solution are used. A corneal spud usually removes the offender without difficulty. Technique for removal of large foreign body imbedded in cornea is thus: Eye cocained, lids held apart; foreign body located. Point of cornea spud introduced as nearly as possible between the foreign body and the corneal tissue. The foreign body is then elevated and removed with a swab, in case it slips from tip of spud, as it frequently does. A Graeffe cataract knife is used to remove small foreign bodies. After the removal of a foreign body is accomplished routinely there is instilled two drops of a 20 per cent. solution of argyrol because of its antiseptic and astringent properties. If much conjunctivitis is present or pain the following is frequently used: Cocainæ hydrochloridi gr. 1, glyceriti borici 51, aquæ camphoræ 31. One or two drops are instilled every hour or two, and the patient is advised to use hot compresses at home. When a foreign body which was imbedded is removed two drops of a 1 per cent. solution of atropine is always instilled to put the eye at rest. The injured men are supplied with colored goggles, and Curran states that the men seldom lose time even when the injury is extensive. He considers that the number of such accidents has been reduced to a minimum by the use of goggles which are now being worn throughout the factory. The goggles not only directly protect the eye

but deflect many blows which otherwise might permanently injure the eyesight.

New York Medical Journal.

September 29, 1917.

1. The Eye and Ear Surgeon in the General Hospital. Frank Allport.
2. The Vegetative Nervous System. Thomas J. Orbison.
3. Doctor and Patient. Joseph H. Marcus.
4. Anesthetics in Orthopedic Surgery. Walter G. Elmer.
5. Serum and Blood Therapy. Albert David Kaiser.
6. Syringomyelia and Leprous Neuritis. Nyman Climenko.
7. Treatment of Sclerotic Middle Ear Diseases with Radium. Zdenko Von Dworzak.
8. Dermoid Cyst. W. R. Jackson.

7. Treatment of Sclerotic Middle Ear Diseases with Radium.—Zdenko Von Dworzak states that the middle ear diseases which he holds suitable for radium treatment are the catarrhal adhesive process and otosclerosis proper. In both of these diseases there have to be dealt with obstacles in the sound conduction in the tympanic cavity. The etiological factors are about the same in both diseases. The clinical diagnosis is at times difficult, and the prognosis in all cases is doubtful. As organized disease processes in the middle ear have to be dealt with, a return to the normal is almost impossible. Up to the present the prognosis in cases of typical otosclerosis has always been very unfavorable in view of the anatomical changes in the labyrinth cavity. The therapeutic object has been to stop the rapid progress of the disease, to lessen if possible the head noises, to eliminate the disagreeable head symptoms, and if possible to improve the hearing. Up to the present no method of treatment has accomplished any great result, and Dworzak states that it would be a real blessing if the activity of radium with its destructive and stimulating qualities would give a new remedy to combat this distressing condition. For the treatment he uses the radium rays as well as the radium emanation. The use of the latter he considers is original with him. He applies it directly in the tympanic cavity, as the tympanum offers much resistance to the rays, like all other fibrous membranes. The amount of radium varies from one to ten mgm. radium element. The radium tubes are applied by means of the radium applicator and are centered in the ear by means of the head band, to which is attached a small ear speculum by which it is possible to introduce and remove the applicator and to watch the reaction. A brass filter eliminates the alpha and beta rays and the therapeutically active gamma rays penetrate the tympanum and middle ear. Besides this, he employs a larger amount of radium to ray the entire ear region. He considers the effect of the radium to be purely destructive here in eliminating the proliferating pathological tissue and partly in a selective action on the terminal nervous ramifications. The radium emanation he manufactures in an emanator of special construction. Out of the tank oxygen bubbles through the liquid in the bottle which contains the radium in solution. The quantity of this oxygen is nicely regulated. The oxygen takes up the radium emanation and can be used for inhalation, by means of a mask or in room, for the activation of water for drinking purposes or for the treatment of the ear directly in blowing it through the Eustachian tube in the middle ear. In the latter case Dworzak employs the pressure of the oxygen alone or combines the emanator with the Meyer-Rowan instrument, so that sound waves or air under pressure will force the emanation into the tympanic cavity. At times the patient inhales the radium emanation and he also inflates the Eustachian tube by Valsalva's test. In all cases it is necessary to remove the excess radium emanations after treatment by means of suction from the external auditory meatus or by pressure through the Eustachian tube or both combined, for radium emanation remaining in the middle ear could ultimately cause damaging after effects. Radium D, one of its products of decomposition, lasts sixteen years, and might remain active too long in the middle ear. The radium emanation acts like a strong and active ferment and therefore it deserves a prominent place in the treatment of internal diseases, especially as we have no other means which brings about such an intense oxidation effect. In the course of the treatment three phases can always be recognized: 1. The pathological symptoms become more severe and general unrest is exhibited by the patient. 2. Later a constant euphoria sets in and all the symptoms of the disease disappear. 3. Finally a supersaturation seems to arise with insomnia and unrest, occasionally accompanied by the old pathological symptoms. An intermission in the treatment causes a disappearance of these symptoms in a few days. Dworzak cites four cases out of fifty-three similarly treated by the above method. In almost all the cases he found either an improvement or a complete cure—in twenty-two cases—of tinnitus. In twenty-four cases there was striking improvement in the hearing; in eighteen cases, a slight improvement; in seven cases there was no reaction whatever. The rest of the patients—four—left town before treatment was completed. Dworzak calls attention to the fact that radium is not a panacea, but a valuable remedy in combination with other known methods of treatment.

Journal of the American Medical Association.

September 29, 1917.

1. Adequate Medical Service of the Future. Otto P. Geier.
2. A Critique of Banti's Disease. Eli Moschcowitz.
3. The Framingham Health and Tuberculosis Demonstration. D. B. Armstrong.
4. Cerebral Spastic Paralysis Due to Hemorrhage: A Further Report of the First Sixty-five Cases of Cranial Decompression for Selected Cases. William Sharpe and Benjamin P. Farrell.
5. The Importance of the Ligaments of the Ankle in Correction of Congenital Clubfoot. Isadore Zadek and E. L. Barnett.
6. A Case of Epidermophyton Infection of the Scalp. Richard S. Weiss.
7. Treated and Untreated Osteochondritis Juvenilis of the Hip. Wallace Blanchard.
8. Cerebrospinal Fluid Pressure. A. L. Skoog.
9. Morphologic Appearance of Cancer Clinically Cured by Radium and Roentgen Ray. Isaac Levin and Barnet Joseph.
10. Oiled Gauze and the Absorbing Power of Cotton Sponge. Torald Sollman.
11. Eclampsia and Lumbar Puncture. J. W. Snyder.
12. The Treatment of Epidemic Poliomyelitis with Immune Horse Serum. E. C. Rosenow.
13. Simplified Method for the Preparation of Carrel-Dakin Solution. Frederic Rosengarten.

5. The Importance of the Ligaments of the Ankle in Correction of Congenital Clubfoot.—Isadore Zadek and E. L. Barnett announce that it is generally conceded that the best time to begin treatment in cases of congenital clubfoot is within a few weeks after birth. The usual method of correcture is employed, using plaster of Paris, braces, or adhesive tape, to maintain the proper amount of correction obtained. While this suffices in a large percentage of cases to effect the desired results, it does leave a large percentage still uncorrected. It is with the element of equinus that they have been chiefly concerned. While the clubfoot may be practically overcome, the child stands and walks without being able to put his heel squarely on the ground. To overcome this, they have followed by means of the Roentgen ray the relative effect of section of the Achilles tendon and the posterior ligaments of the ankle joint, as regards the freedom of dorsal flexion of the foot immediately afterward and the positions assumed by the os calcis. They were unaware of the case with which the posterior ligaments of the ankle can be cut subcutaneously, and their first case was done under the fluorscope. The technic employed has been to use a tenotomy knife with a long shank and small blade with a cutting edge only on one side. The knife is inserted on the inner side of the ankle just at the inner edge of the Achilles tendon, and on a level with the tip of the internal malleolus. The back of the blade is turned inward. After penetrating from a quarter to half an inch, depending on the age of the patient, the blade is turned so as to lift the vessels, nerves, and other structures up on its back, and the blade is pushed deeper. Maintaining this position, the blade is swept outward from the internal malleolus while pushing up on the foot. There is an audible and palpable grating while the sawing motion is in progress. After all the resistant structures have been cut, the tenotome is withdrawn and the foot is pushed up. There is a give and sometimes an audible cracking. Now one finds the os calcis tilted un. Thus far they have treated in the manner described twelve club-feet.

They would caution against using this procedure soon after manual correction has been attempted, as the foot broken and weakened at the mediotarsal joint will give at this point, and thus will not allow sufficient leverage to obtain the desired dorsal flexion of the foot as a whole. They draw the following conclusions from the results of their investigations: (1) One of us, from observation of several hundred cases of congenital clubfoot treated by the usual methods, has noted that practically none of the severe cases shows dorsal flexion to a right angle without breaking the mediotarsal joint. In view of this observation of failure to procure sufficient dorsal flexion to insure stable locomotion, this operation has been devised. (2) From a study of these cases by the Roentgen ray we conclude that the only reliable test for the correction of the equinus if there is a rounded sole is a roentenogram. Many cases which have shown apparent overcorrection, when studied by the Roentgen ray show a break at the mediotarsal joint, with the malposition of the os calcis not rectified. These are the cases which later, never having had the equinus over-corrected, gradually become worse and constitute the early "relapsed clubfeet."

12. **The Treatment of Epidemic Poliomyelitis with Immune Horse Serum.**—E. C. Rosenow announces that opportunity to test the effect of this serum in patients presented itself during the present epidemic of anterior poliomyelitis at Davenport, Iowa, and surrounding community. The routine procedure consists of making a spinal puncture for diagnostic tests and for relief of abnormal pressure, and of injecting the serum. From 5 to 30 c.c. of spinal fluid are allowed to escape, depending on the age of the patient and the amount of pressure. The fluid is made to flow slowly. The cell count and Noguchi's globulin test are made at the bedside, and if positive, the injection of serum is given at once. The serum is activated with complement by adding one part of fresh guinea-pig serum to nine parts of the immune serum and incubating at 37 degrees for one hour. It is then diluted with equal parts of 0.85 per cent. salt solution. The diluted serum is injected slowly into a suitable superficial vein not later than thirty-six hours after activation. Approximately 2 c.c. of the mixture are injected per minute of time. The dose is varied according to the age of the patient and the severity of the symptoms. Babies from about 1 to 2 years of age are given from 3 to 7 c.c. of serum at each injection, that is, 6 to 14 c.c. of the mixture; children from 2 to 5 years of age from 7 to 10 c.c., and older individuals from 10 to 20 c.c. The injections are repeated in from eight to twenty-four hours if necessary. Every patient in whom the diagnosis is definite, and the disease still active, is given injections of serum irrespective of the severity of symptoms. Altogether forty-four patients have been treated. Of these nine died, a mortality of 20 per cent. Of the nine fatal cases, six were moribund, or in a dying condition from respiratory failure at the time the serum was given, and hence should not be included as treated cases. Of the thirty-eight patients in whom there was sufficient time for the serum to act, three died, a mortality of 8 per cent. One of these was a baby 11 months old, semicomatose with spasms eight days after onset of the illness when the serum was first given. One, a boy 2 years old with cyanosis, marked tremors, high fever, severe gastroenteritis, and beginning respiratory paralysis on the second day at the time of the first injection; and one, a girl 11 years old, with high fever and paralysis of the face on the third day when the first dose of serum was given. Of these thirty-eight treated cases, twenty-two showed definite paralysis when the treatment was begun, and sixteen were in the preparalytic stage. Excepting the three fatal cases in the former group, paralysis appeared to be arrested in all but one, a boy 5 years of age, in whom a moderate paralysis developed in the left leg, the first injection of serum being given on the second day of the disease. All of the sixteen cases treated before paralysis had begun recovered without paralysis. These results are in sharp contrast to the twenty-three untreated cases which occurred during this epidemic of which nine patients died, a mortality of 35 per cent. The apparent good effects from the injection of serum are often striking. The headache, nervousness, restlessness and tremor often disappear promptly. The temperature and pulse rate are lowered. A beginning paralysis often disappears in an astonishingly short time. A rapidly progressing paralysis is often arrested and improvement is unusually rapid. The post-paralytic pains do not appear or are comparatively mild. It is believed that the unactivated serum would do good, and that intraspinal injections might be given with benefit, but since the activated serum and intravenous injections have given the best results in monkeys, and are yielding such splendid results in patients, Rosenow has not felt justified in changing the method. Intravenous injections in this epidemic appear especially desirable because the gastrointestinal symptoms are so pronounced. It is, of course, realized that many more patients must be treated before conclusions can be drawn as to the exact value of this treatment. Of its harmlessness and apparent good effects, there can scarcely be any question. There is on hand enough serum to treat approximately 800 patients. Suitable quantities will be sent gratis on request to physicians or laboratories for reports of cases in localities where poliomyelitis now exists in epidemic form.

The Lancet.

September 8, 1917.

1. Some Statistical Results of the Treatment of Chest Wounds. T. R. Elliott.
2. Purulent Bronchitis: Its Influenzal and Pneumococcal Bacteriology. Adolphe Abrahams; Norman F. Hallows; J. W. H. Eyre, and Herbert French.
3. Trench Fever, or P. U. O., Associated with the Presence of a Hemogregarine. Lyn Dimond.
4. A Case of Influenzal Meningitis. K. S. Bhat.
5. A Case of Periodic Attacks of Pyrexia. R. V. Solly.
6. A Case of Advanced Multiple Brain Softening. Thomas Walmsley.
7. Studies in Anatomical Nomenclature, with a View to an International Nomenclature Based Upon the B. N. A. Wm. Cuthbert Morton.

2. Purulent Bronchitis: Its Influenzal and Pneumococcal Bacteriology.—Adolpe Abrahams, Norman F. Hallows, J. W. H. Eyre, and Herbert French describe a type of bronchitis, not following the usual classical symptoms and clinical history, which they state has impressed all who have had the opportunity of engaging in military practice in the Aldershot Command for any length of time. These cases are of a definite type, clinically recognizable almost at sight, yet different from anything they have been familiar with in men of military age in civil life. To this peculiar type of case they have given the designation "purulent bronchitis" on account of the characteristic nature of the expectoration. They call attention to these cases for two reasons. In the first place, the affection has a very high mortality—very much higher than that of lobar pneumonia; secondly, there are features and circumstances which suggest an epidemic nature. A typical case is as follows: The onset is usually acute; the early symptoms correspond to a "cold in the head." Temperature may be 101° or 102° Fahr., but there are no distinguishing features by which to diagnose the condition from the ordinary cold. At this stage two or three days later two features attract attention. First the character of the expectoration: this consists of thick pale yellow dollops of almost pure pus, not the frothy expectoration of ordinary bronchitis; it has no particular odor, and it becomes increasingly abundant until in a day or two it may amount to several ounces in the 24 hours. Secondly, the rapidity of the patient's breathing: this may be so evident that pneumonia suggests itself, yet on examining the chest the only physical signs consist of a few or many rhonchi scattered widely, but most marked at the bases of the lungs behind, associated with wheezy vesicular murmur; resonance is unimpaired and bronchial breathing absent. A little later a peculiar dusky heliotrope type of cyanosis of the face, lips, and ears appears, so characteristic as to hall-mark the nature of the patient's malady even on superficial inspection. Dyspnea becomes pronounced; respiration consists of short, shallow movements, which in bad cases amount almost to gasps, reminiscent of gas poisoning. Recovery at this stage may occur, but by the time the cyanosis has become at all marked the prognosis is extremely bad. Character of the sputum remains the same throughout, occasionally it may be blood-tinged. The condition is not

primarily a lobar or bronchopneumonia, but a bronchitis. Microscopical and bacteriological examinations show that it seems not unlikely that these patients suffer from a primary invasion of their lung tissues by the *B. influenzæ*, and that pneumococci, present at the same time, are at first of low virulence. The earlier symptoms seem to be attributable to a *B. influenzæ* toxemia. Exaltation of the virulence of the pneumococci by a symbiotic growth with *B. influenzæ* would appear to follow, a fatal termination being due to pneumococcal septicemia.

La Presse Médicale.

August 16, 1917.

Causes of Pan-Germanism.—Helme quotes from a recent address on this subject by Dr. Sanarelli, the well-known hygienist. The original impetus was very ancient, and founded on advantages of climatic nature enjoyed by the Celto-Latin peoples, who possessed clear skies and prodigal soil, and no tendency to overcrowding. Deprived of these advantages, the German peoples were compelled to develop industrial life, and the desire for conquest. So-called culture began with Kant's teaching that perfect social order is the final expression of culture, an interpretation which apparently holds good to-day. This sentiment gave rise to a dangerous altruism—dangerous because all people, Germans as well as non-Germans, must be enslaved "for their own good." Socialism and Pan-Germanism both hark back to the same sources, but represent the extremes of democracy and autocracy. Even when the French held Prussia during 1805-1808, Fichte, the philosopher, then at the height of his fame, insisted that Prussia was the educator of the human race and identified the German peoples with humanity. German vanity must, therefore, be well-nigh indestructible and proof today against hunger and privation. Hegel upheld the State against the individual; Schelling thought German destiny was the destiny of the human race; Schlegel that the German peoples sum up all the good qualities of alien folk. "Did they not possess the artistic tastes of the Italians, the logic of the French, the historical genius of the English, the poetry and patriotism of the Spaniards?" Schleiermacher, the theologian, caps the climax when he says, speaking for Germany, "I will take possession of the universe." It was only necessary to transform philosophy to science to make possible the present war.

Arterial Tension in Aortic Insufficiency.—Amblard sums up his article as follows: Even without the aid of the ear one may affirm the existence of aortic insufficiency by evidence which in any case could not be supplied by the stethoscope. If a patient has a minimum tension of 65 mm. of Hg. and a maximum tension of 165 he surely is suffering from this condition. In cases recognizable by the stethoscope it may be possible to determine whether or not the affection is specific simply by the minimum tension whenever the latter at least equals constantly the normal minimum. If this minimum is about 100 in a known case of aortic insufficiency we can almost certainly pronounce the case one of syphilitic aortitis. In the same manner we can appreciate the progress of the disease, and in connection with the rapidity of the pulse can predicate the functional condition of the myocardium. The author has worked on this subject for 10 years (his graduation thesis was devoted to daily fluctuations in blood pressure), but neglects to state what apparatus he uses for determining blood pressures.

Journal de Médecine de Paris.

August, 1917.

Syphilitic Origin of Fissured Tongue.—Gaucher refers to the predilection of syphilis for the tongue; for this affection may give rise to mucous papules, sclerous glossitis, leucoplasia, and so-called scrotal tongue, the last-named being congenital, and a dystrophy rather than a disease. In this affection the tongue is always enlarged, with its mucosa thrown into folds which resemble somewhat the cerebral cortex (whence the term cerebroid tongue). The author is thus particular to describe this condition, because it is diametrically unlike fissured tongue in the strict sense of the term; for in this affection the fissures are superficial and the tongue small rather than large. In scrotal tongue the normal median groove is deepened, and branches are given off which subdivide and intersect. In fissured tongue a similar state of affairs exists in miniature. The grooves have a similar arrangement, but the ramifications are so shallow that the finer ones are readily overlooked. Fissured tongue is not a congenital dystrophy, but a so-called quaternary phenomenon of syphilis, like leucoplasia—a sequel of active syphilis. But while it is usually acquired it may also appear as a form of rather late inherited syphilis. In the latter form it may be associated with leucoplasia, geographical tongue and the denture of hereditary syphilis. In the fissured tongue the normal median furrow is somewhat deepened and branches are given off as in scrotal tongue. The principal difference is seen in the fact that fissured tongue is made up in part of isolated grooves, while the furrows as a class exhibit a tendency to form straight lines and curves instead of the symmetrical arrangement of furrows in the scrotal tongue, which has been likened to that of the veins in a leaf. The author cties eight cases of simple fissured tongue in syphilitics. The first patient was a young girl, daughter of a paretic, aged 11 years. Her tongue was not enlarged, and exhibited shallow, irregular furrows on both dorsum and edges which could be emphasized by passing the finger over them. The second patient was a young woman referred by a dentist. The Wassermann was positive, and the diagnosis was "fissured and geographical tongue." The case was evidently hereditary. The third patient, a middle-aged man, knew himself to be a victim of hereditary syphilis, and gave a positive Wassermann. His teeth showed stigmata, and he also presented leucoplasia and an irregularly fissured tongue. The remaining patients all had acquired syphilis of many years' standing, and presented the characteristics of fissured tongue. To take a case at random, patient No. 8, aged 57, had contracted syphilis at 18. He seemed to be in perfect health, but the normal median furrow of the tongue was deepened and crossed by three transverse grooves, while at either half of the dorsum there were isolated curved longitudinal fissures.

Le Progrès Médical.

August 18, 1917.

The Luetin Biopsy.—Tzanck and Bernard refer to the employment of luetin in the diagnosis of late syphilis—the older the syphilis the greater the percentage of positive reactions. Luetin may be regarded as a vaccine of dead cultures, killed mechanically, but containing all the syphilis toxines. When a subject with old syphilis is vaccinated the local reaction may be expressed by a papula, pustule, or indolent lesion, which is also pustular. False positive reactions may occur from imperfect technique. The only other disease which has given true positive reactions with luetin is leprosy. To exclude the possibility of false positives biopsy is required with histological study. In a true positiv the epidermis presents no change. The derma stains its elastic fibres, and of the cellular infiltration a third, at least, of the cells are plasma cells. The dominant element is the giant cell which may be seen isolated in the infiltration or in a caseated zone beneath the derma. They are usually numerous, and many of them typical. If pus is present they may be found in a drop of pus without biopsy. The latter should be performed about the tenth day.

The Codex of Effort.—Dr. Bellin du Coteau uses this expression as synonymous with the record of an athletic contest. The effort may be merely intense—corresponding to our sprint and short distance races—in which case a great deal depends on the start; or intense and prolonged (as in middle distance running). When the distance is a mile or more the effort is only relative. In a sprint the pulse rate is 160; in a middle distance race it may reach 220. In a relative race it is about 140. A sprint is over before there can be any reaction in the brain. The runner does not feel the effort he is making, but the fatigue is pathological and exceeds that in the mile or relative effort. A distance

of 400 meters is traversed with almost as great a speed as one of 100 meters. The first 150 meters equal a sprint race, but during the last 250 the runner must use his volition to hold his pace. Hence, at this distance a psychologic element is present—the will must offset the fatigue of the heart. Finally, in the relative effort the runner is an ordinary human being, who reasons, and uses certain tactics with mind relatively free. He has to antagonize inevitable choking up with respiratory products and slowing of the muscles.

Revue Médicale de la Suisse romande.

August, 1917.

Indicanemia, Symptom of Renal Insufficiency.—Tchertkoff refers to the recent progress of our knowledge of azotemia. Retention of nonalbuminous nitrogen was known even to some of Bright's contemporaries and there are numerous old studies of the subject which, however, led to conflicting conclusions. Strauss was the first to arrive at harmonious results, and to revive the flagging interest, and Widal and Javal distinguished between chlorine retention and nitrogen retention. It was recognized by Weil that the latter means something more than excess of blood urea. Two other substances, creatinine and indican, began to receive attention. It was shown that uremia of a certain clinical type was not dependent on nitrogen retention—eclamptic, or pseudouremia. It was also learned that "considerable degree of nitrogen retention could occur without the development of uremia; and that in such cases a strong indicanemia could be present. Conversely uremia could occur with but little urea retention, and in such cases indican could be absent from the blood. The technic for measuring blood indican is somewhat complicated, and this fact has led the author to devise a more simple method. He punctures a vein to obtain 8 or 10 c.c. of blood serum, adds an equal quantity of 20 per cent. trichloracetic acid, and filters. To 10 c.c. of filtrate he adds an equal amount of concentrated HCl, containing 5 grams per liter of perchloride of iron. The mixture is then shaken and 3 c.c. of chloroform added. During the next 15 minutes the mixture is shaken several times. If indican is absent no coloration appears. If present a pale to dark blue color is manifest, varying with the amount of indican present. This method is also of value for the recognition of iodine in the blood, the presence of which is shown by a rose or rose violet color. The two reactions tend to cause confusion, and no test for indican should be made on patients who are taking iodides. The amount of indican is estimated by control color solutions. The test is so simple that no practitioner can afford to omit it. If indican is present at all it implies an azotemia of about 1.5 per cent., and always means renal insufficiency. If the patient have chronic nephritis it signifies a fatal ending within a few months—often a few weeks. In certain of these cases the blood urea is barely increased. Azotemia is by no means synonymous with uremia.

A New Cause of Hematuria—Phosphaturia.—Perrier reports four cases of hematuria in which the only demonstrable cause of association was phosphaturia, the former subsided when the latter had been corrected by treatment. The exclusion was as follows: Tuberculosis, through several inoculation tests; calculi by *x*-rays; tumors by the parallel efficiency of the two kidneys; nephritis and pyelitis by the negative evidence; hemophilia on general principles, etc., etc. How does phosphaturia contribute to hematuria? It certainly does not do this necessarily. The author cannot even suggest a mechanism to explain the association.

Correspondenz-Blatt für Schweizer Aerzte.

August 25, 1917.

Blood Transfusion.—Klinger and Stierlin review a number of the methods in use and give the results of personal experiments on animals. They had devised a citrate method which is practically that of Lewisohn of New York, but at the time were ignorant of its existence in literature. In animal experiment they learned that *in vivo* the citrates do not affect the coagulability of the blood. When injected into the circulation some unknown × prevents it from "paralyzing" the blood calcium. We can only explain this phenomenon by the supposition of rapid oxidation. This hypothesis has been partially sustained by experiments *in vitro*. This discovery does not prejudice the value of citrates in transfusion, for the method leaves nothing to be desired unless in hemophilic cases, in one of which the authors successfully used transfusion with normal blood. Transfusion is indicated after all severe blood losses when serum alone is insufficient. A certain degree of loss of hemoglobin makes the need of transfusion imperative. The most urgent indication is in hemophilia. In recent years in European clinics septic conditions attended by severe anemia have benefited by transfusion. There is a great need in such cases of erythrocytes which are able to function. We cannot, of course, be sure that these cells do not produce their good effects after disintegration.

The Neurosis Problem in the Light of War Neuroses.—Imboden discusses Oppenheim's new book on war neuroses. The latter makes four disease forms—pure hysteria, neurasthenia, hysteroneurasthenia, and traumatic neuroses in the narrower sense. Neurasthenia cases show as a whole closeness to type—monotony in symptoms, as excitability, exhaustibility, sleep disorders, general weakness, headache, vertigo, tachycardia, exaggerated reflexes. But it is not easy to draw a sharp line between this affection and hysteria, on the one hand, and hysteroneurasthenia on the other, despite the great variations and lack of type in these two affections. Many independent clinical affections have to be placed under one or another of the four groups, and as nervous tics, akinesia, amnestica, reflex paralysis, myotonoclonia trepidans, etc. Such affections fit most naturally into traumatic neroses which is in part a residual group. Oppenheim recognizes three principal causal elements or mechanisms—mechanical shock, psychic shock (akin to fright), and ideogenic motivation. Here emotions and ideas are sharply differentiated as causes. Oppenheim believes psychic shock a far more common causal factor than ideogenicity, the latter, in fact, being very rare. The two mechanisms are so different that it would be a great error to confound them. Emotional shock acts powerfully on the visceral nervous system, causing somatic symptoms. In traumatic neuroses mechanical shock is by far the leading causal factor, hence a truly organic basis must often underlie these syndromes. Naturally the pronounced views of Oppenheim are meeting with more or less criticism at the hands of his colleagues.

Poisoning by Vaseline Oil.—Salomon reports cases in a woman and two children in which such symptoms as nausea, cardiac oppression, cyanosis, and somnolence ceased upon the discontinuance of applications of liquid vaseline. Analysis of the latter failed to discover the noxious principle.—*Correspondenz-Blatt für Schweizer Aerzte.*

Snapping Neck.—Lanz describes the case of a man of thirty-two who when rotating his head in extension—which was done only with pain and effort—elicited a snapping sound. Operation revealed an anomaly of the spinous process of the fifth cervical vertebra, which on rotation rubbed against the spinous process of the subjacent vertebræ.—*Zentralblatt für Chirurgie.*

Treatment of War Erysipelas. — Mild and medium cases in the experience of Capitan yield to relatively mild, symptomatic remedies, local and general, such as ointments containing salol and antipyrine, quinine, and cardiac and renal stimulants. In severe cases he has used collargol and antistreptococcus serum. Large doses of the latter prove abortive in some cases.—*Revue de Médecine et de Chirurgie Pratiques.*

Aspiration Drainage in Infected Wounds.—Grimberg has applied a method used for treating empyema to infected war wounds. After preliminary irrigation with Dakin's fluid a simple suction apparatus is applied, to wit, a bottle with two tubules of which one is connected with a drain while the other has a stopcock. The bottle having been filled with water the stopcock is opened slightly and water begins to escape, creating a vacuum into which there enters slowly the discharge from the wound.—*La Presse Médicale.*

Book Reviews.

THE FUNDUS OCULI OF BIRDS ESPECIALLY AS VIEWED WITH THE OPHTHALMOSCOPE. A Study in Comparative Anatomy and Physiology. By CASEY ALBERT WOOD. Illustrated by 145 drawings in the text; also by sixty-one colored paintings prepared for this work by ARTHUR W. HEAD, F.Z.S., London. Price $15. Chicago: The Lakeside Press, 1917.

THE colored plates in this work are grouped at the end of the text and include three of reptilian fundi. The work, published as a quarto, is the outcome of ten years of study, and is apparently the first serious effort to depict the fundi of birds in a comprehensive and systematic fashion. The avian eye is the highest expression of vision among the vertebrates. So great is the diversity of the fundus in species that it is often possible to identify the latter by the former. Attempts to photograph the fundi of birds in natural colors have thus far resulted in failure. The eyes of domesticated and captive birds are of no value for study, for they have undergone material alterations as a result of disuse; for the fundi of the wild bird are especially adapted to seek food, to escape from natural enemies, for migration and reproduction. The reptilian fundus, as would naturally be expected, closely resembles the avian fundus. The most conspicuous object in the avian eye is the pecten, which springs from the optic disk and projects to a greater or lesser extent into the vitreous. It may be flattened or cylindrical, and in the latter case sometimes extends completely through the posterior chamber. A study of the avian fundus is very largely a study of the pecten. These often possess a most striking and suggestive appearance. Thus the pecten of the laughing kingfisher as seen by the ophthalmoscope resembles at first sight a centipede. In various species it resembles a pine cone, and also often recalls a tightly coiled snake. We do not find the fundus of the buzzard of the South, so famed for its preternatural sharpness of vision, but even the most enthusiastic scientist might be excusable for declining to study this scavenger at close range. The book is of course beyond all praise.

HEALTH SURVEY OF NEW HAVEN. A Report Presented to the Civic Federation of New Haven. By CHARLES-EDWARD AMORY WINSLOW, JAMES COWAN GREENWAY, and DAVID GREENBERG of Yale University. Price 75 cents. New Haven: Yale University Press, 1917.

THIS survey comprises the sanitary condition of the city, the health organization, and the vital statistics. The mortality runs slightly higher than the average of registration cities. The infant mortality agrees closely with that of New York City. The death rate from typhoid fever seems unnecessarily high in contrast to that of a number of cities. In spite of an analysis of the morbidity nothing has been found to work upon, *i.e.* the drinking water and milk supplies are not at fault. The only factor in evidence appears to be the habit of bathing in the polluted harbor water. Results in lowering the death rate of tuberculosis are gratifying. Pneumonia seems unusually deadly in New Haven, while for cancer the mortality is not only unusually high but increasing. A third extensive cause of deaths is the degenerative disease of advanced years. These three causal factors cannot be reached by sanitary activities.

ROENTGEN TECHNIC (Diagnostic). By NORMAN C. PRINCE, M.D., Attending Roentgenologist to the Omaha Free Dental Dispensary for Children, Associate Roentgenologist to the Douglas County Hospital, etc. With seventy-one original illustrations. Price $2. St. Louis: C. V. Mosby Company, 1917.

THE author, who is roentgenologist to a number of clinics in Omaha, has prepared this volume especially for general practitioners who have installed *x*-ray equipments.. The book is simplified by the assumption that all such practitioners use interupter transformers exclusively. It is also taken in part for granted that they will make use of Coolidge tubes. The technic for raying each region of the body is carefully described and illustrated. Serial photography, the use of the fluoroscope, and location of foreign bodies receive brief consideration. A considerable chapter is devoted to dark-room procedures. The chief section of the book—positions and exposures—appears practically in atlas form—photographs with explanatory text. The book seems to us to be admirably adapted to its purpose. It contains no roentgenograms because the author does not intend to go into interpretation.

THE SECRETION OF URINE. By ARTHUR R. CUSHING, M.A., M.D., LL.D., F.R.S., Professor of Pharmacology, University of London, University College (formerly of the University of Michigan, U.S.A.). With diagrams. Price $3. London and New York: Longmans, Green & Company, 1917

THIS book could have been christened "The Physiology of the Kidneys," for there is little reference to the secretion of urine by diseased kidneys. But as the author is a pharmacologist rather than a physiologist his title is very appropriate, because much of the subject matter relates to the modification of urinary secretion by drug action, which is also studied extensively in animal experiment. A few pages at the close of the work are given to albuminuria and nephritis. The volume should be of value for collateral study in physiology, pharmacology, biochemistry, diagnostic procedures in reference to kidney action, and in therapeutics, and should be indispensable to the student throughout his undegraduate course.

DENTAL MATERIA MEDICA AND THERAPEUTICS, with Special Reference to the Rational Application of Remedial Measures to Dental Diseases. A Text-Book for Students and Practitioners. By HERMANN PRINZ. A.M., D.D.S., M.D. Professor of Material Medica and Therapeutics, the Thomas W. Evans Museum and Dental Institute School of Dentistry, University of Pennsylvania, etc. Fifth Edition, Enlarged and Revised According to the United States Pharmacopeia, Ninth Decennial Revision. Price $5. St. Louis: C. V. Mosby Company, 1917.

THE fourth edition of this well-known work, published in 1916, was exhausted within a year, and the author was enabled to incorporate in the present edition certain changes in the recent revision of the United States Pharmacopeia, some of which were recommended by the author in his capacity of chairman of the Committee of Revision of the Section on Stomatology of the American Medical Association. Other innovations comprise an Index of Drugs and a rewritten section on ionic medication. This edition has gained twenty pages and twenty illustrations. The principal new drugs dealt with are cotarnine hydrochloride, betaeucaine hydrochloride, paraformaldehyde, and sodium perborate.

PHYSICAL EXERCISES FOR INVALIDS AND CONVALESCENTS. By EDWARD H. OCHSNER, B.S., M.D., F.A.C.S., President Illinois State Charities Commission, Attending Surgeon Augustana Hospital, Chicago. Illustrated. Price 75 cents. St. Louis: C. V. Mosby Company, 1917.

THIS little work contains forty cuts, which illustrate as many kinds of free gymnastic exercises, with explanatory text. The exercises themselves are eminently simple and familiar, but as they are combined with deep breathing they acquire a new quality which makes them more akin to athletic sports and physical exertion in other directions. In the sedentary they can take the place of a certain amount of manual labor. The author quotes from William Penn to the effect that work is wholesome for the mind as well as for the body.

FOOD FOR THE SICK. A Manual for Physician and Patient. By SOLOMON STROUSE, M.D., Associate Attending Physician the Michael Reese Hospital, Professor of Medicine at the Post-Graduate School, Chicago. and Maude A. Perry Dietician at the Michael Reese Hospital, Chicago. Price $1.50. Philadelphia and London: W. B. Saunders Co., 1917.

THIS book is ostensibly written for the physician and patient, but the nurse is not mentioned, perhaps because she is pretty well supplied with text-books on feeding the sick. The authors plunge almost at once into the subject matter of the book, *i.e.* such sections as the chemistry of foods, digestion, etc., are very briefly outlined. The large amount of space often given to recipes in works of this kind is also greatly cut down. Ménus, as distinct from recipes, are well represented. Calory feeding iis not overdone; indeed some readers may think it slighted.

Society Reports.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Thirtieth Annual Meeting Held at Newark, N. J., September 17, 18 and 19, 1917.

THE PRESIDENT, DR. JOHN W. KEEFE OF PROVIDENCE, RHODE ISLAND, IN THE CHAIR.

Fundal Hysterectomy to Reduce the Menstruating Surface.—Dr. GORDON K. DICKINSON of Jersey City, N. J., stated that all operations on the pelvis should be as conservative as operations upon the brain and upon the thyroid gland. Not only should there be a minimum amount of mutilation of tissue, but the least possible interference with the circulation, particularly of the sex glands. Prognosis and effect of such interference would depend largely upon the full development of the internal secretion and its effect upon the organs and tissues of the body. Climate and civilization apparently tended to a degeneration of that which developed the feminine. People from the older countries, where the call of the germ plasm was less restricted, gave us the best feminine development, and of them particularly surgeons should be most careful. Metritis was an effect of slow tedious confinement, relaxed uterus, and infection. Sometimes it was fibrofatty, sometimes cirrhotic, sometimes arterial fibrosis. It might tend to hyperplasia of the endometrium, or in the cirrhotic type, atrophy. In both there was a tendency to sterility and hemorrhages. The curette had been employed without benefit and, at times, with harm. Chloride of zinc might succeed in the hands of the most skillful. Radium was of great value, but it had its obvious restrictions. By fundal hysterectomy done through the vagina we had a procedure which was simple, safe, and effective. After placing a purse-string around the anus, so that during operation there might be no puffing out of the foul matter from that vent, a clip was applied to each labium, which was retracted open. Into the vagina was poured an ounce or more of 3½ per cent. tincture of iodine, which was allowed to remain while the patient was being draped. When everything was ready, a volsellum was put on the cervix and it was brought down. A transverse incision was made anterior to the cervix, bladder separated from the uterus, the peritoneal cavity was opened, and the fundus was very easily brought into the vagina. We now had an inspection of it and the adnexa. Clips were firmly but gently applied alongside the uterus to slightly compress the circulation and act as retractors. A V-shaped incision was then made through the substance of the womb for various depths, depending upon the extent of the disease as estimated by the clinical sign of hemorrhage. This was not made too close to the fornix because the object was not so much the reduction of the uterus as the reduction of the menstrual surface. After this wedge-shaped piece was removed, both fornices should be thoroughly cauterized. If not, they would respond at the menstrual period, and producing tension give rise to pain. The cervical portion should also be touched for aseptic reasons. The part removed was carefully inspected for any appearance of malignancy. With a small, sturdy, curved needle the two flaps were approximated, staunching hemorrhage. The peritoneal surface was further brought together by running catgut, the clips were removed, the uterus was pushed back into place, and the anterior colpotomy wound sutured.

Dr. ROBERT T. MORRIS of New York City said that our surgery, conservative or otherwise, must be moulded according to the individual woman, her age, her wishes with regard to children, her objection or otherwise to an incomplete operation, with the possibility of recurrence of the condition. All these things belonged to the individual woman. In considering the subject of decline, Dr. Dickinson did not make a clear distinction between nation and race. That we must keep clearly in mind. In this country there was a very rapid decline, and more rapid than in other countries, because in this nation we had not developed strong racial types. When nature limited the development of a race she struck at the female sex, first among plants and animals, and consequently we found a larger degree of forms of arrested development among the women than we did among men, and very few were 100 per cent. women. We found in the masculine type the pyramidal form of pubic hair. We found the short clavicle; we found the various changes which need not be enumerated here, but when the sexes approached each other in type, in anatomy and mentality, there was a tendency to represent the other sex in the course of decline. Decline did not mean that mentality might not be higher. Some of the most brilliant and most valuable members of society among women were those that were masculine. They were not the ones to breed, they ought not to breed; they had no business to breed, and we had no business to help them to do it. That was not their function. They represented a mental state which was tremendously valuable to society.

Dr. ALBERT GOLDSPOHN of Chicago stated that there was one feature about this surgery that some of his obstetric friends would rather object to from the standpoint that they objected to having the abdomen opened and the uterus cut into in order to find out what was the matter in it. In view of that, it was somewhat called for to allude to this that more efficient work could be done medically without operating to help some of these cases that were not extremely bad. The use of tincture of iodine applied to the endometrium, say about twice a month, in an effective manner, would convert many of these people into cases in which it was not thought necessary to operate. Chloride of zinc would be needed once in a while, and while it was destructive, it would easily do the work. If chloride of zinc was to be applied efficiently to the endomterium, the fundus, it was necessary to dilate the cervical canal with sounds the same as one would stretch a stricture of the urethra with a large-sized sound, but one with a lesser curve. The woman would need to have a good dose of morphine, or the cervical canal would be required to be anesthetized with carbolic acid or cocaine for this purpose. Ample dilatation to something like 20 or 24 French should be made first under a clean technique, then the application must be made with some kind of syringe applicator, wrapped with cotton and dipped into the liquid, introduced, and the cervical canal cauterized extensively, doing nothing to the fundus. The cervix must be covered with a swab or absorbent cotton. The air must be forced out, the cotton must be wet with some antiseptic, and then immediately such an ample dilatation the applicator with the chloride of zinc was introduced without any difficulty. Treatment of this kind did much more good than any mechanical curettement.

Dr. HUGO O. PANTZER of Indianapolis said that the principle of conservatism enunciated by Dr. Dickinson in connection with our work led him to call attention to the newest science of menstruation. In brief, we realized that the ovaries were not singly the cause of menstruation; that we had not only the hormone of the ovary but the hormone of the endometrium, and perhaps it might be suggested some time later that we might have a hormone of the breast to consider. To ablate the entire endometrium would inflict unnecessary violence upon the sexual function and upon the chemism of the entire body, and it was with great hesitancy that we acted in a radical way in these cases, using the cautery for the destruction of the endometrium, or doing what was only a partial affair, removing a part of the endometrium as suggested by the essayist. A new view to him was that coming from the effects of toxemia upon all glandular structures, either a toxemia by intestinal statis, or the infectious focus located in the tonsils, the posterior nares, the gums, the jaw, or elsewhere. The immediate effect of such toxemia upon the glands of the body spelled blight of these glandular organs.

Physical Conditions in Women Warranting Sterilization.—Dr. E. W. HEDGES of Plainfield, N. J., said that sterilization should never be lightly undertaken, but there were conditions in women not infrequently met with, when this operation would save lives that otherwise would be needlessly sacrificed. In such cases, after a consultation, one should proceed to resect the tubes. Where a woman had had eclampsia in two suc-

cessive labors we were not warranted in risking another conception. Where real diabetes existed—not the transient glycosuria of pregnancy—we should sterilize. Otherwise 50 per cent. of the mothers would perish before or shortly after labor and two-thirds of the babies would be lost. Chronic nephritis cases should never marry or conceive, but if they did both—or if the disease developed after marriage, then they should be sterilized. If conception had begun we should do an abdominal hysterectomy at the same time. Exactly the same rule applied to pulmonary tuberculosis. Both diseases were aggravated by pregnancy and a fatal termination hastened and practically all hopes of recovery removed. Women with marked heart decompensation should not conceive. The vast majority of the children in such cases died in abortion, premature labor, or stillbirth, and a third of the mothers needlessly lost their lives. In all the classes of cases so far mentioned the children, even if born alive, entered life with such a physical handicap that no well-wisher of the race could give them welcome, and the risk for the mother was so great that it should be prevented by sterilization. If seen first when pregnancy had commenced an abdominal hysterotomy and sterilization should be done at the same time. If the child was near viability an attempt might be made to tide the case over a short time and then bring on labor. As to pyosalpinx the old rule held good. If the woman was well to do, let her alone with a nurse and a fountain syringe and an easy chair. But if she had to earn her living take out her tubes and give her health and sterility. Certain cases of insanity, the feeble-minded, and idiots, as well as epileptics should be cared for in institutions, but if living at home the question of sterilization should be carefully considered.

Dr. Edward J. Ill of Newark, N. J., stated that Dr. Hedges had touched upon a very serious question which was going to be abused just as much as the removal of the uterus or the removal of the ovaries was. The sterilization of women was a perfectly legitimate and proper thing, but we must be exceedingly careful which cases we subjected to this operation. He thought we all agreed that the state had a perfect right to sterilize epileptics, the criminals, the insane, and the idiotic, whether males or females, it did not make any difference. We could also say that cases of repeated cesarean sections should be sterilized. He had performed cesarean section three times in succession within a couple of years. He thought that was the limit, so he sterilized this woman. When it came to cases of chronic nephritis, he was not quite sure that we had a right to sterilize such women. In these days of commercial crazy surgery, it was well worth while to set a limit to what we were going to do in this particular field.

Dr. Herman E. Hayd of Buffalo said that there was no question but what Dr. Hedges' invocation was beautiful and that we should seriously, reverently, and with the fear of God operate upon women, but, it seemed to him, that Dr. Hedges suggested an omniscience on part of the surgeon that did not exist in this mundane sphere. For him to assume that such and such a case of diabetes, or such and such a case of chronic nephritis was going to die was absurd; it was unscientific; it was too sweeping, and, moreover, that we should possess in the way of surgical qualifications such an infinity that we were going to be able to carry these people through this surgical undertaking without a mortality was equally absurd in his judgment and equally extravagant. He believed that sterilization would be justifiable in these cases of chronic nephritis and of diabetes, provided these women were about to die of some unrelieved condition, such as a perforating ulcer of the stomach, a duodenal ulcer, and acute gangrene of the gall-bladder, or an acute appendicitis.

Dr. Gordon K. Dickinson of Jersey City, N. J., said he had never had the courage to sterilize women except for narrow pelves, and where the children could not be born except by repeated cesarean sections. If we felt the necessity of saving a woman from pregnancy; if after carefully studying the woman as well as the condition, we thought it was wise to sterilize her, we should do so, but not until we tried other measures which were well known and which were not surgical.

Dr. Charles L. Bonifield of Cincinnati stated that there were certain conditions which had been mentioned which justified sterilization; but the doctor's enthusiasm had carried him beyond the sphere of a private physician. If the State in its wisdom made laws to prohibit marriage, or if the State in its wisdom made laws to necessitate the sterilization of certain women, in obeying these laws we would be considered good citizens. But to make a law for ourselves as broad as the doctor had laid down, he was free to confess that his conscience would not permit it. He did not believe it was within the province of the doctor in some of these conditions to place a woman so that she could not become pregnant. If she should not become pregnant, it was the physician's place to tell her and her husband so, and it was their business to say that she shall not become pregnant, and not ours.

Dr. Robert T. Morris of New York City said that Dr. Hedges' paper was all right, but it required elaboration. He would not think of sterilizing a woman for diabetes until he had spent $200 trying to find out the cause of her diabetes. We must remember that diabetes was not a disease but a symptom. In connection with what Dr. Hedges said about tuberculosis, more than 50 per cent. of the people in all the civilized world had had evidences of this disease of one sort or another during some stage of their lives. We had postmortem records to that effect. In tuberculosis of the lungs, advancing and uncontrolled, he would say yes, sterilize the woman.

Dr. William E. Darnall of Atlantic City, N. J., sympathized with Dr. Hedges and the knocks he had received. He did not believe he meant to say that women in every one of these various classes that he had enumerated should be sterilized, but he did believe there were cases in each one of these classes that should be sterilized After a thorough study of the case and elaboration of the whole make-up of the woman's constitution and her tendencies, perhaps there might be found in each class some women who needed to be sterilized.

Dr. Hedges, in closing, said that if a woman presented anasarca, rapid heart, dyspnea, and extreme symptoms of poisoning from chronic nephritis he would not hesitate to sterilize her. He purposely omitted the milder cases of chronic nephritis which might go through. When the textbooks told us that thirty per cent. or more of mothers that became pregnant under conditions of chronic nephritis died, when otherwise they would not die, we were warranted in advocating sterilization of such women.

Demonstration of the Operation for the Cure of Complete Perineal Laceration.—Dr. Edward J. Ill of Newark, N. J., stated that in performing this operation he made an H-shaped incision which extended from just inside Bartholini's duct down to, to the outer side of, and behind the ends of the sphincter. The horizontal bar of the H started above the end of the sphincter and continued across the vagino-rectal junction. The anterior and posterior flaps were elevated, particular care being exercised to denude the ends of the sphincter. Submucous suture of the rectum by a double line of fine plain catgut was resorted to. The catgut never touched the rectal mucous membrane. Deep silver wire perineal sutures were used and the vagina was sutured with plain catgut.

Prolapse of the Uterus.—Dr. Charles L. Bonifield of Cincinnati said that recognizing how and why prolapse had occurred, the rational treatment was to decrease the weight of the uterus, replace it in its normal location and attitude and relieve it of all its abnormal burdens. The weight of the uterus might be decreased by rest in bed, curettage and amputation of the cervix, which was always hypertrophied in these cases. The uterus might be held in its normal place and attitude by a Gilliam operation, or if the patient be passed the child-bearing period, a ventral suspension, which was a little more easily and quickly done, and the uterus might be relieved of other burdens by the proper operations on the posterior vaginal wall and perineum and the anterior vaginal wall. Some surgeons did not like to take the time necessary to perform the surgical steps that resulted in an anatomical and physiological cure of

these cases. If the operator was determined to be very deliberate about his work, there was no reason why the operation should not be divided into two steps. He maintained that it was better to restore a woman to her normal condition by an operation that required time and care for its execution, than to mutilate her with one that seemed more brilliant and could be done in less time.

Operative Treatment of Procidentia.—Dr. ARTHUR T. JONES of Providence, R. I., said that numerous operations had been devised from time to time for the condition of procidentia, but few of these had been satisfactory and had given us the desired results. In the selection of an operation the age of the patient was one of the first things to be taken into consideration. If the woman was still in the child-bearing period and capable of becoming pregnant, it might be wise to choose a different operation from that we might choose in the woman who had passed the menopause. No operation which did not permit of pregnancy and the patient carrying her child to term should be performed upon a woman still within the child-bearing age. Hysterectomy should not be performed on a woman still in the child-bearing period, unless there were other indications than the mere presence of procidentia. If it was necessary to remove the uterus, the vagina and cervical stump might be suspended with the round and broad ligaments which, in connection with proper vaginal and perineal work, would prevent further prolapsing of the vagina and cervix. No operation for procidentia was satisfactory which did not include the proper vaginal and perineal work, as support was needed below in conjunction with any suspension or interposition operation. In women still within the child-bearing period, without complications or disease of the appendages, the Alexander operation in connection with proper vaginal work had been very satisfactory in his hands. In women past the menopause the interposition operation of Watkins-Wertheim had been the operation that had given greater satisfaction than any other method of treating this distressing condition.

Cervical Lacerations; Their Significance for the Patient.—Dr. FRANCIS REDER of St. Louis said that a cervical laceration of the uterus invited infection like any other trauma. The anatomical position of the cervix and the vaginal secretion with its bacterial defenses, were potential factors in frequently preventing an infection of a high degree. Cervical lacerations in a surgical sense must be considered portals of entry for infection. Such an infection might manifest itself in disturbed function of the uterus, tubes and ovaries, and, as a consequence, might cause in a woman having an unstable nervous organization a great loss of nerve tone. The immediate repair of a torn cervix was, as a rule, not permissable on account of its deformed and edematous condition. However, a cervical laceration six to eight weeks after accouchement, when the tissues had assumed quite their normal characteristics, was a trauma which should receive surgical attention, especially when the tear was lateral and extended into the zone of vaginal attachment. Gynecological and neurological sequelæ from this source were then avoided. The technique was simple. No general anesthetic was necessary, no special aftertreatment was required, and forty-eight hours of absolute quiet was all that was asked of the patient.

Acute Dilatation of the Uterus.—Dr. N. STONE SCOTT of Cleveland, Ohio, said that a review of the literature gave the impression that acute dilatation of the uterus was of frequent occurrence or of little more than didactic importance. A study of the six cases which formed the basis of his paper had brought him to the conclusion that acute dilatation was not rare and had furnished an explanation of this apparent scarcity. From a careful study of his own cases, and those of others, he had come to the following conclusions in his own mind. He realized that the number was too small and the territory traveled too new to furnish a basis for dogmatic assertions. Acute dilatation during the early months of pregnancy presented a marked difference from acute dilatation at term, in that it had no appreciable influence upon the bleeding. The more or less complete hemostasis occurring after the complete separation of the placenta after an ordinary miscarriage depended upon the hemostatic properties of the blood and blood vessels and this was not materially modified by an acute dilatation. A uterus at full term, which had been emptied of its contents, would have an alarming hemorrhage if it did not contract and control the bleeding by muscular action. This was due to the changes in the blood vessels which had taken place during the pregnancy. Should a contracted uterus lose its muscular tone and again dilate the same alarming hemorrhage would supervene. Some authors believed that acute dilatation was a phenomenon of sepsis. Maier thought that acute dilatation would only occur when there had been a prior disease of the muscle wall. The cases reported today bore out the theory that the disease must be in the uterine cornua, where interference with the uterine innervation would be most marked. Three of his cases had a placental implantation in one or the other horn, and the fourth had a small fibroid in the same place. Among the cases reported, great dilatation occurred only in those which had been recently pregnant.

Dr. HUGO O. PANTZER of Indianapolis, in confirmation of the doctor's observations, wished to report briefly a case occurring in his practice within the last seven weeks. The woman was 38 years of age, who was operated on for appendicitis, who had had continuous bleeding for six weeks. She had been married many years, but was never before pregnant. The breast changes were indifferent; a diagnosis of pregnancy was doubtful. A fibroid tumor as a possibility was entertained. On dilating the uterus he found a phenomenon described by the essayist and for a moment was in doubt as to whether he had perforated the uterus or not, and then with instrument he felt a perfectly intact wall, as he thought. He opened the abdomen from above and found the uterus relatively small and not perforated. He removed the fetus through the opening made in the uterus.

Dr. EDWARD J. ILL of Newark, N. J. had heard of this thing happening a number of times, but he had never seen it. What he had seen, when he thought he had that sort of thing, was that the curette or sound was passed through below the os internum, low down, through the posterior wall of the uterus into the peritoneal cavity. He rather thought in Dr. Pantzer's case there was a perforation of the uterus low down behind or at either side. He had seen a crochet needle go into the cellular tissue behind the uterus.

DR. WILLIAM H. HUMISTON of Cleveland, Ohio, said that in a case he was demonstrating to the class, the woman having had several attacks of appendicitis and had one then, abortion took place. He told the students how easy it was to perforate the uterus and how careful one should be. He took his dull curette, introduced it, and it kept going in without any effort. He found he had perforated the uterus after having told the students how to avoid it. He removed the placental tissue and opened the abdomen. Sure enough, there was a puncture in the posterior uterine wall. He removed the appendix, sewed up the hole in the uterus, cleaned out a few clots in the pelvis and she got well.

Dr. WILLIAM E. DARNALL of Atlantic City, N. J., said that we all had punctured the uterus, and we knew that we could do it very easily, but what Dr. Humiston said did not explain why a uterus that was three and a half or four inches deep suddenly became six inches deep.

Dr. JAMES E. DAVIS of Detroit wished to call attention to two or three points. When a muscle was stimulated with the electric current, for instance, the muscle bellied out. If we continued the application of the electric current until extreme irritation was reached, then the muscle would lengthen. Coupling that with the condition which Young had recently called attention to in regard to the enzymes or hormones that were produced by the epithelium of the chorion in pregnancy, which brought about a marked condition of edema in early pregnancy, it seemed we had two conditions which might explain what we had taking place. The epithelium of the chorionic villi threw out during the first three or four months of pregnancy, according to Young, who studied this question carefully from 75 histological sections, an enzyme which had the effect of producing first edema, and later on marked dilatation of the blood vessels. This edema might be so marked as to extend

throughout the entire body, making that condition which all of us had clinically taken to be some error in the kidney condition, but it had really been due to the enzymes produced by the trophoderm layer of the chorion.

Dr. J. Henry Carstens of Detroit said that we had a uterus that was firm, but as a result of profound anesthesia there was relaxation of the muscles. It was not such a dilatation as we got in the heart muscle, but it was simply a relaxation, and the muscles became flabby, and when you introduced a sound into the uterus, and the muscles had not undergone fatty degeneration or an edematous condition, you simply shoved the uterus away up and it seemed ballooned when it was not. The uterus was of normal size, except its walls were thin.

Dr. Scott, in closing, stated that the question of the anesthetic causing this dilatation of the uterus could be excluded.

Dr. Van Amber Brown of Detroit asked Dr. Scott if in any of his cases there was a marked anemia that antedated the pregnancy? That had been given as one cause of dilatation of the uterus.

Dr. Scott, in replying to Dr. Brown, said that he would not say that there was not any of them that had anemia, but some of them did not have bleeding of sufficient moment to produce anemia. Some of them were young women who were in a healthy condition and were not anemic.

Carcinoma Occurring in the Stump of the Cervix Following Suprapubic Hysterectomy.—Dr. Edgar A. Vander Veer of Albany, N. Y., stated that carcinoma of the cervix did occur in a few cases following suprapubic hysterectomy. Because it did so, it was not a point in favor of a panhysterectomy exclusively. The dangers of a panhysterectomy were greater than the risk of a carcinoma occurring secondarily in the cervical stump and being promptly treated. A careful examination should be made of every cervix before the hysterectomy was performed, particularly in women who had borne children. In every case of hysterectomy the patient should be advised to report promptly if there was any appearance of a vaginal discharge, a curettement done and a laboratory examination made. Removal of the cervix per vaginam was certainly to be preferred to opening the abdomen in every case where the disease had not progressed too far, as well as in cases having any discharge. All cases of this condition should be reported. Routine pathological examination of the myomatous uterus at the time of operation should be done, and in this way unsuspected cases of carcinoma of the uterus, also of the cervix, would be discovered, and the proper operation then performed.

Recurrences After the Five-Year Period in Carcinoma of the Cervix.—Dr. X. O. Werder of Pittsburgh stated that recurrences five to eleven years after operation had been reported from time to time from various sources. Most of these, however, had followed the older methods of operative treatment. The most important recent report of late recurrences had been furnished by the Wertheim Clinic through Weibel, whose investigation had shown in 185 cases surviving the five-year period 13 recurrences, or 7 per cent. In 59 cases of cancer of the cervix, operated upon by the radical cautery operation, he had 27 cases, or 45.76 per cent. living at the end of five years. In eight of these cases, or 29 per cent., recurrences were reported from five to nine years after operation. While the five-year recoveries after the cautery operation, therefore, showed better results than those of Wertheim, who was credited with 42½ per cent. of cures, the late results after five years were decidedly less favorable. The great difference in the percentage of late recurrences following these two methods of radical operation of carcinoma of the cervix was explained by the more unfavorable material dealt with as compared with that at the large European clinics. Late recurrences practically all developed in the glandular structures in which metastasis must have existed at the time of operation. It had been demonstrated that these might remain quiescent for years before active development took place. The greater frequency of late recurrences following the cautery operation must, therefore, be accounted for by a larger portion of lymphatic involvement, due to a more advanced stage of the disease at the time of operation. As only a small proportion of the regional glands liable to become invaded from the original cancer focus could be extirpated, this procedure was not considered as of any material influence in reducing the percentage of late recurrences. On the other hand, it might be argued that an agent which caused cancer metastases to remain dormant for so many years in such a large percentage of cases must have had some specific effect on the cancer cells, not present in the other operative procedures. It seemed possible that some product resulted from the intense heat in contact with living tissues which, while not absolutely destructive, rendered the cancer elements harmless—in many cases for years.

Dr. J. Henry Carstens of Detroit said that he had been fortunate enough in that he had never had a case of cancer of the cervix in any of his suprapubic hysterectomies. He recalled one patient who had a discharge and some irritation of the cervix. He took her uterus out per vaginam, had it examined carefully, and there was nothing malignant about it.

Dr. Edward A. Weiss of Pittsburgh stated that in 1898 Dr. Werder described the so-called combined operation for cancer of the cervix. He performed this operation and described it. Two years later Wertheim described identically the same operation. When Wertheim's attention was called to this fact he gave Dr. Werder priority, but in none of his subsequent writings had he given Werder credit for the operation. Dr. Werder was not satisfied with the results of this operation because the mortality was high and the morbidity very great. Twelve years ago he began to do what he now called igni-extirpation, and his results had been remarkable as compared with those from the old operation, both as to mortality and morbidity.

Dr. Werder, in closing, said that during the last two or three years he had had four cases in which he found carcinoma in the cervix, following the removal of the uterus some time previously. In most cases hysterectomy for fibroid antedated the operation for cancer of the cervix for a number of years, so that he was beginning to consider the removal of the cervix in cases of fibroid of the uterus, and where he did suprapubic hysterectomy he opened the uterus and inspected its cavity to see whether there was any evidence of carcinoma. In several instances he had found carcinoma present in the body of the uterus, and it was also advisable to do a preliminary curettement to be absolutely sure of the condition of the cervix. With those precautions we could safely continue to do suprapubic hysterectomy, which was far superior to a panhysterectomy, not even considering the fact that it was accompanied by a less mortality.

Radium; Further Clinical Observations.—Dr. Douglas C. Moriarta of Saratoga Springs, N. Y., stated that radium, as a therapeutic agent in certain cancerous conditions, had not received the consideration to which it was entitled, either as an adjunct to surgery when all the infected tissues were not or could not be removed, or as a palliative measure in inoperable cases. In a case of cancer of the rectum, the rectum and sphincters became functionless, and after the use of radium they functionated again. While this patient lived only a few months, the relief of the condition was a source of comfort to the patient and his family. While clinicians and physicists only conceded the gamma rays to be active at a distance of from three to five centimeters from the points of application, and claimed that beyond this distance they would stimulate the growth, he personally questioned the accuracy of their conclusions, believing that the distance at which the gamma rays acted might be influenced or stopped in some manner by the individual infection, or peculiar resistance of the tissues, and he would quote briefly two cases to justify this conclusion.

The first was a case of procidentia in which the uterus was four by six inches in size, with the cervix everted so that it had the appearance of a large cauliflower, five inches in diameter. Radium was applied, the growth relieved, the cervix resumed its normal contour, and the uterus diminished in size and receded to its normal position in the pelvis.

The other case was that of a negress, 46 years old, who had a fibroid of six years' duration, undergoing cancerous degeneration. It filled completely the abdominal cavity and extended to the ensiform process.

Radium was used, and now, after five months, the growth was about four inches in diameter and movable. The distance from the point of application of the radium in the first instance was from 12 to 15 centimeters, and in the latter case about 30 centimeters.

Mixed Cell Tumor of the Kidney Weighing Three Pounds in an Infant Ten Months Old.—Dr. WILLIAM E. DARNALL of Atlantic City, N. J., said that these tumors were considered malignant, but might be benign. Whether they were to be classed with carcinomas or sarcomas seemed to be a question pathologists had never definitely decided. Metastases were late, but eventually occurred. The adrenal tumor might arise from adrenal rests in ectopic portions of kidney, ovary, testicle, liver, mesentery, lungs, or bones. A review of the current literature of the reports of similar tumors to this one showed a hopeless failure to arrive at any adequate classification. Until the etiology was more definitely known no classification would be satisfactory. These tumors were always made up of mixed cells. Each pathologist seemed to have named the type of tumor according to the tissue cells he might have observed in the microscopic examination. The same pathologist would no doubt find many varying types of cells in different portions of the same tumor, and it was therefore necessary to examine every part of the tumor or some of its elements would be overlooked. The term hypernephroma had for convnience sake been applied to them, but hypernephroma might mean almost anything that was a kidney tumor. The immediate mortality from operation was high, but with improved technic it was lowered. Recurrences were said to take place in from 70 to 80 per cent. of the cases. Early diagnosis and operation are the only hope of saving more of these cases. A large percentage of them developed metastases and died. Some, however, had remained well after the removal of the tumor. More favorable results might be obtained, no doubt, if the cases could be discovered and operated upon earlier.

Dr. JAMES E. DAVIS of Detroit stated that the stigmata of arrested development were, from a pathological standpoint, very much neglected, and if we had more thorough pathological examinations of postmorten material, he was sure more cases of this particular type would be discovered. It was not an uncommon thing to find in the genitourinary system or the generative system, or in the kidney, embryonal rests which might for some unknown reason remain for years and years, did no harm whatsoever, but all at once some condition in the metabolism caused these rests to begin to grow very rapidly, and he was sure that pathologists had found a considerable number of these cases in very young children.

Dr. E. GUSTAV ZINKE of Cincinnati said that he had been engaged in the practice of medicine for nearly half a century and had gone through the various periods of theoretical hypotheses with reference to the origin of malignant growths, and every now and then, as he had today, he was vividly reminded of a theory of the occurrence of cancer that had been more or less abandoned, and that was, that all cancers were really of embryonal origin. Some of these embryonal cells became shut off from the rest; they went to sleep, as it were; they remained inactive and inert for years, and sometimes, as the result of an accident, a fall or a blow, or something of that kind, or in consequence of some irritation, they were reawakened, they became active, and the result was a malignant growth.

Dr. GORDON K. DICKINSON of Jersey City, N. J., said that as to the theory of cancer being produced by repeated irritation, Dr. Carstens very forcibly brought out at the meeting of the Association, a year or two ago, the fact that we might have many severe continued irritations, yet without producing carcinoma. The theory of Cohnheim that cancer was of embryonal origin appealed very strongly to him, consequently, in the near future it might be pointed out as one of the truths which would be proven to be the cause of some kinds of cancer. Irritation, traumatism, might enter the field for another type of carcinoma, and the chemical factor.

Gall-Bladder Trouble Complicating Disease of the Internal Genitals.—Dr. J. HENRY CARSTENS of Detroit stated that we frankly found gallstones connected with pelvic trouble, especially firboid tumors, pelvic adhesions, and displacements. It was claimed that five women had gallstones to one man. If we inquired into the history of these women we would find that they often had had puerperal fever, septic conditions following labor, or miscarriages, and were confined to bed for four to six weeks. Even if no symptoms were complained of by the patient, we could usually by palpation detect gall-bladder trouble, and be prepared to relieve it when operating for the other trouble. To sum up, he would say: (1) Many women with pelvic trouble had also disease of the gall-bladder and upper abdomen. (2) No patient, with even simple pelvic disease, should be operated unless a perfect diagnosis had been made of all abdominal troubles, if that was possible. (3) In cases of doubt, the incision should be large enough so that the whole abdomen could be explored. (4) In all pelvic operations, where gall-bladder disease existed, the latter should be operated at the same time, provided that the patient's life was not in danger by prolonging the operation.

Gall-Bladder Surgery.—Dr. JOSEPH H. BRANHAM of Baltimore said that the medical treatment of gall-bladder disease was of great importance. Although we knew that the removal of the gall-bladder was not followed by very serious conditions, and that drainage was not a dangerous procedure, yet our studies indicated that the gall-bladder had certain functions, and drainage always caused a certain amount of damage to this organ. The adhesions which followed an operation were a source of pain and inconvenience, and, therefore, operative procedure should not be resorted to until proper medical and hygienic treatment had proved ineffectual. Such treatment generally consisted of proper diet, remedies to keep the flow of bile free, and as near as possible normal, and more especially such a course of exercise as would restore the tone of the abdominal muscles and, if possible, the normal contour of the abdomen. The surgical treatment of gall-bladder disease was of recent development. The relative advisability of cholecystostomy and cholecystectomy had been discussed pro and con by hundreds of surgeons. The advantages of cholecystectomy were: (1) The number of permanent cures effected by it were greatly in excess of those effected by cholecystostomy. (2) Secondary operations were very rarely needed. (3) Malignant conditions were only to be detected by microscopic examinations, and not infrequently found upon removal of the gall-bladder, and thus the danger of malignant development was prevented. Cholecystectomy was also better where there were marked diseased conditions, such as irregularities of the mucosa, the presence of gallstones, fibrous thickening of the gall-bladder or stricture of the cystic duct, and because it did not leave in situ a diseased organ to cause future damage. But its greatest advantage was that it did away with the adhesions which always followed drainage and were a source of discomfort and danger.

(To be concluded.)

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS

TEXAS STATE BOARD OF MEDICAL EXAMINERS.

Austin, June 19, 20, 21, 1917.

(*Continued from page* 573.)

HISTOLOGY.

1. Describe synovial membrane and state where found.
2. Name the forms of muscle and state principal locations of each.
3. Give histological structure of male urethra.
4. Differentiate, histologically, blood and lymph.
5. Describe in brief the spleen.
6. Give structure of the gall-bladder.
7. Describe the prostate gland.
8. Draw a cross section of the sciatic nerve and name principal points.
9. Describe the structure of a long bone.
10. Describe the uterus histologically.

MEDICAL JURISPRUDENCE

1. What is an inquest? When is it necessary?
2. What is meant by "presumption of death"?
3. What is a privileged communication?
4. What three methods are used in examining blood stains?
5. Give signs of death from suffocation?
6. When does impotence or sterility constitute grounds for divorce proceedings?
7. What constitutes "live birth"?
8. When is abortion not a crime?
9. What legal test governs the practice of medicine with regard to malpractice?
10. Define pyromania.

BACTERIOLOGY.

1. Describe the process of producing diphtheria antitoxin.
2. Give the process of staining for the *Spirochæta pallida.*
3. Describe in detail the process of finding tubercle bacilli in a specimen of urine.
4. Give complete life cycle of *Plasmodium vivax.*
5. Give a brief classification of the pathogenic protozoa found in the human body and give example of each.
6. Name three pathogenic spirilla and give the morphology of one.
7. Explain the difference between active and passive immunity; illustrate by example how each may be acquired.
8. Describe *Bacillus anthracis* under the following heads: morphology, staining, cultural characters, pathogenicity, and manner of infection.
9. Define the following terms: germicide, antiseptic, asepsis, sterile, disinfectant.
10. How would you proceed to find the number of bacteria per cubic centimeter in water?

OBSTETRICS.

1. Give treatment in placenta prævia with frequent or profuse hemorrhage before viability of the child.
2. How would you treat post-partum hemorrhage?
3. Give some of the causes, diagnosis, and treatment of rupture of the uterus.
4. Give indications for cesarean section.
5. What is puerperal insanity?
6. How would you treat the after-coming head?
7. How would you apply the forceps in right occipito-posterior position?
8. Define eclampsia, hydramnios, spurious pregnancy, decidua vera.
9. What is the diagonal conjugate and how would you estimate the true conjugate from it?
10. Give Harris' method of dilating the cervix.

ANSWERS.

HISTOLOGY.

1. A synovial membrane is composed of fibrous tissue, with an imperfect covering of cells on its free surface. These cells are gathered into little patches, are branched and irregular in shape, and are known as epitheliod cells. In some places there are long villus-like projections, which are covered by small round cells. There are numerous blood vessels in synovial membranes. These membranes are found in joints, in places where the tendons of muscles run over bones, and also between parts which move upon each other (such as two muscles, two tendons, skin and a bone, tendon and bone).

2. The types of muscle tissue are voluntary and involuntary: also cardiac. The *voluntary* muscles are striped, are more or less under the control of the will, do not contract rhythmically, do not evince peristalsis, and the nerves to them end as "end-plates." The *involuntary* muscles are unstriped, are not under the control of the will, contract rhythmically, show peristalsis, and the nerves to them end as a "plexus." The cardiac muscle is the heart.

Voluntary muscle is found in all the skeletal muscles, pharynx, diaphragm, larynx, external ear, and eye. *Involuntary muscle* is found in the alimentary tract from the middle third of the esophagus to the anus, in the ducts of glands, in the trachea and bronchial tubes, within the eyeball, the internal urinary and genital systems, circulatory (except the heart) and lymphatic systems, and the capsules of some organs.

3. The *male urethra* is lined in the prostatic part by transitional, but elsewhere by columnar epithelium, except near its orifice, where the epithelium is stratified. The epithelium rests upon a vascular mucous membrane, and this again is supported by a coating of submucous tissue, containing two layers of plain muscular fiber—an inner longitudinal and an outer circular. Outside this again is a close plexus of small veins which is connected with, and may be said to form part of, the corpus spongiosum. The mucous membrane is beset with small mucous glands, simple and compound (glands of Littré). There are also a number of oblique recesses termed lacunæ.—(From Schaefer's *Essentials of Histology.*)

4. *Blood* contains plasma, erythrocytes, leucocytes, and platelets. *Lymph* contains plasma, leucocytes, blood platelets, fat, and thrombocytes.

5. "The *spleen* is invested by a thick capsule, consisting of a fibro-elastic tissue and a large proportion of visceral muscle fibres. The capsule sends trabeculæ into the interior of the organ. These are thick, and the nuclei of the muscle fibres in them stand out conspicuous in stained specimens. The bulk of the organ is deep red in color, and is called the spleen pulp. In the pulp are numerous whitish nodules, about the size of a pin's head. These nodules are composed of lymphoid tissue surrounding small arteries, and are called Malpighian corpuscles. The pulp consists of a network of fine fibers, with a number of flattened and branched cells situated on the fibres and at their crossings. In the spaces between the fibres are numerous red corpuscles, large lymphocytes, and other blood cells. Many of the red corpuscles undergo disintegration in the large lymphocytes, so that pigment, both intracellular and free, is present. An occasional giant cell of bone-marrow type is seen in the spleen pulp. The splenic artery breaks up at the hilus, and the branches pass into the interior of the organ along the trabeculæ. Passing away from the trabeculæ, their outer coat becomes surrounded at intervals by nodules of lymphoid tissue—the Malpighian corpuscles. Each corpuscle usually shows a germ center. The arteries open into capillaries, which, in turn, open into the interstices of the pulp. From the pulp spaces there open wide venous sinuses, which are encircled by fibres of the reticulum, and are lined by a very prominent endothelium. These sinuses open into the radicles of the splenic vein."—(*Aids to Histology.*)

6. "The *wall of the gall-bladder* consists of three coats, mucous, muscular, and serous. The mucous membrane is thrown into small folds or rugæ, which anastomose and give the mucous surface a reticular appearance. The epithelium is of the simple columnar variety, with nuclei situated at the basal ends of the cells. A few mucous glands are usually found in the stroma. The muscular coat consists of bundles of smooth muscle cells, which are disposed in a very irregular manner, and are separated by considerable fibrous tissue. A richly vascular layer just beneath the stroma is almost free from muscle and corresponds to a submucosa. It frequently contains small lymph nodules. The serous coat is a reflection of the peritoneum."—(Bailey's *Histology.*)

7. *Structure of prostate.* "The prostate is a compound tubulo-alveolar gland whose ducts open into the prostate portion of the urethra. Smooth muscle fibers not only surround the organ, but interlace radially toward its center, forming a network in whose meshes the glandular parts are located. Areolar tissue and blood-vessels accompany the muscle tissue. The alveoli of the glands are lined by simple columnal epithelium, which sometimes show two rows of nuclei. These alveoli contain a serous acid coagulum and usually oval laminated concretions called *prostatic bodies.* The latter are more numerous in old men. The numerous excretory ducts unite to form twelve to fifteen collecting tubes which open into the urethra, most of them into the *prostatic sinus.* These ducts are lined by simple columnar epithelium, except near their terminations, where it is transitional. The organ in front of the urethra is mostly smooth muscle tissue."—(Hill's *Histology.*)

8. The fibers that constitute the sciatic nerve are grouped into bundles called *funiculi*. Each funiculus is enclosed in a connective-tissue sheath, the *perineurium*, which sends septa, the *endoneurium*, in among the individual fibers. The whole nerve is enclosed in a firm connective-tissue sheath, the *epineurium*. Blood and lymph vessels accompany the connective-tissue elements and ramify through the nerve just as is the case in a muscle. Fat cells are also found in the connective tissue of the bundle.

9. A cross-section of a bone shows *Haversian canals;* around these the bone is arranged in rings or *lamellæ;* between these are spaces (*lacunæ*) in which are bone *corpuscles*. Each canal is connected with the lacunæ which are concentric with it, and the lacunæ with one another by means of fine canals (*canaliculi*) into which project processes of the bone corpuscles. A Haversian canal with its lamellæ, lacunæ, bone corpuscles, and canaliculi form a *Haversian system*. In a section of bone several of these systems may be seen, the spaces between them being occupied by *interstitial lamellæ*. Lamellæ which are on the surface of the bone, parallel with its circumference, are *circumferential lamellæ*. A longitudinal section of bone shows the Haversian canals to be what their name indicates, channels running through the bone. Their communications with one another are also seen. In each canal are an artery and a vein. If a piece of bone is treated with dilute nitric acid, so as to dissolve the lime salts which it contains, or by some other method of *decalcification*, a small portion may be torn off, which upon examination shows the fibrous structure of the lamellæ. Such specimens also show the *perforating fibers of Sharpey*, which hold the lamellæ together; elastic fibers may also be observed.—(Raymond's *Physiology.*)

10. "The *wall of the uterus* is formed of the following layers: (1) A serous layer, derived from the peritoneum, which covers the greater part of the fundus. (2) A muscular layer, which is of considerable thickness, and is formed of plain muscular fibers disposed in two strata. Of these the outer has its fibers arranged partly longitudinally, partly circularly. The inner muscular layer is thick, and its fibers run in different directions, but chiefly circularly, and it is prolonged internally into the deeper part of the mucous membrane, the extremities of the uterine glands extending between and amongst its fibers. It is imperfectly separated from the thinner external layer by the ramifications of the larger blood vessels, and according to some authorities represents a much hypertrophied muscularis mucosæ. (3) A mucous membrane, which is very thick and is composed of soft connective tissue containing a large number of spindle-shaped cells. It contains long, simple, tubular glands, which take a curved or convoluted course in passing through the membrane. They are lined by ciliated epithelium continuous with that which covers the inner surface of the mucous membrane. In the cervix the mucous membrane is marked by longitudinal and oblique ridges, and the glands are shorter than those of the body of the uterus. Near the os uteri the epithelium becomes stratified and overlies vascular papillæ of the corium. The mucous membrane is exceedingly vascular, and it also contains a large number of lymphatic vessels."—(Schäfer's *Histology.*)

MEDICAL JURISPRUDENCE.

1. An inquest is an inquiry made into the cause of death. It is generally made by a coroner with the assistance of a jury. It is necessary when there is a doubt as to the cause of death, when death occurs suddenly or under suspicious circumstances, and in unknown or unexplained cases of violent or sudden death.

2. *Presumption of death.* "In a general way it is held usually that if a person, having no material reason for disappearing or absconding, having family, friends, or business relations, who might reasonably be expected to know as to his whereabouts, is not heard from or known to have been living within seven years, the presumption of death is a reasonable one. In some cases, however, the law does not demand a lack of any knowledge for so long a period, and cases have been closed within two years after the disappearance. The circumstances associated with the disappearance frequently control the decision. If a person under suspicion or conviction of crime, in business or any family difficulties, disappears, a much more extended time would be necessary to establish this presumption."—(Dwight's *Epitome of Medical Jurisprudence.*)

3. *Privileged communications.* "In some States certain information acquired in the performance of professional duties is deemed privileged—that is, the physician cannot be compelled in court, in fact, may not be allowed, to disclose such information without the consent of the individual from whom it was so obtained. Under this ruling, information obtained by medical men in their professional capacity is held in the same light as information obtained by the clergy in the confessional or by the attorney from his client. In other states no privileges are granted the physician, and he may be compelled against his wish and the wishes of his patient to testify to any knowledge, however obtained, which he may have. In those states where such communications are not recognized as privileged such testimony cannot be considered as a breach of confidence, and under the orders of the court it should be given freely no mater how distasteful to the witness it may be."—(Dwight's *Medical Jurisprudence.*)

4. *To identify blood stains:* (1) Some of the material from the suspected stain is thoroughly mixed with a few drops of a saturated solution of sodium chloride, and then allowed to evaporate to dryness on a slide covered with a cover-glass. Now add a drop of glacial acetic acid to the slide, and allow it to enter under the cover slip; then apply gentle warmth. If the suspected stain is *blood*, crystals of hemin will form later, and can be seen under the microscope.

Other tests are: (2) The demonstration of the *corpuscles* by the aid of the *microscope;* (3) *spectroscopic* appearance of two dark absorption bands in the green rays, and at the junction of the green and yellow rays; (4) *chemical* tests, and as the action of guaiacum and ozonic ether, nitric acid, or caustic potash.

5. *Signs of death from suffocation:* "Lividity and swelling of the face and lips are usual, but in accidental cases the face may be placid; the eyes are congested; minute ecchymoses appear on the neck and chest; with mucous froth, sometimes bloody, about the mouth and nose; the lungs and right side of the heart may be gorged with dark blood; but in some cases, especially in young children, the lungs may be empty of blood and emphysematous. Hence, the condition of the lungs and heart, as it varies so much, cannot be relied on in diagnosis. Stress has been laid upon the presence of minute punctiform ecchymoses, especially on the lungs of newborn infants who have been suffocated. These spots are also found on the pleura, lining membrane of the heart, membranes of the brain, peritoneum, and mucous lining of the windpipe, but their value is not universally acknowledged. The blood is dark and very fluid. The kidneys are deeply congested."—(Reese's *Medical Jurisprudence.*)

6. Impotence or sterility gives grounds for divorce proceedings when the incapacity for sexual intercourse existed at and before marriage, when such incapacity is incurable, when the condition was known to the party suffering from it, and when too long a time has not elapsed between the discovery of the condition and the beginning of the divorce proceedings.

7. To constitute a "live birth," there must be (1) complete extrusion of the child from its mother's body, and (2) some certain sign of life. The latter would be established by one or more of the following: pulsation of the cord, beating of the child's heart, motions of the limbs, twitchings of the muscles, wrinkling of the brows, puckering of the face, opening of the eyes, even if respiration does not take place.—(From Witthaus and Becker's *Medical Jurisprudence*, etc.)

8. When abortion is undertaken by properly qualified physicians after due consultation with other physicians, and for the purpose of saving the life or health of the mother, it is *justifiable;* under all other circumstances it is *criminal*. The former is a perfectly lawful medical procedure; the latter is illegal.

9. *Malpractice* is a failure on the part of a medical practitioner to use such skill, care, and judgment in the treatment of a patient as the law requires; and thereby the patient suffers damage. If due to negligence only, it is *civil* malpractice. But if done deliberately, or wrongfully, or if gross carelessness or neg-

lect have been shown, or if some illegal operation (such as criminal abortion) be performed, it is *criminal malpractice.*

10. *Pyromania* is that form of monomania in which a person sets fire to buildings and other objects, for the mere delight of seeing them burn.

BACTERIOLOGY.

1. "Diphtheria antitoxin is obtained from the horse, the animal having been rendered artificially immune by repeated injections extending over a period of several months of gradually increasing quantities of the strongest diphtheria toxin. As the bacilli themselves are not injected, the horse does not become infected with diphtheria, but he gradually acquires a tolerance for the toxins of the disease and develops in his blood a substance (antitoxin) which has the power to neutralize those toxins. At the proper time, when it is thought that his blood has acquired the requisite degree of potency, the animal is bled, and the serum—the part of the blood containing the antitoxin—is carefully separated from the clot, filtered, and standardized. The last procedure is accomplished by determining the quantity of antitoxin serum required to offset the effects of the minimum quantity of toxin necessary to kill a guinea-pig in a definite time. The strength of the antitoxin is measured in units, a unit containing the amount of antitoxin required to save the life of a guinea-pig which has been injected with 100 fatal doses of toxin."—(Stevens, *Materia Medica.*)

2. *Process of staining for the Spirochæta pallida.* "Giemsa's stain is probably the most widely used. It is best purchased ready prepared. Smears are fixed in absolute alcohol for fifteen minutes. Ten drops of the stain are added to 10 c.c. of faintly alkaline distilled water (1 drop of a 1 per cent. solution of potassium carbonate to 10 c.c. of the water), and the fixed smear is immersed in this diluted stain for one to three hours or longer. It is then rinsed in distilled water, dried, and mounted. In well-stained specimens *Spirochæta pallida* is reddish; most other microorganisms, bluish. More intense staining may be obtained by gently warming the stain."—(Todd's *Clinical Diagnosis.*)

3. *To find tubercle bacilli in the urine:* "Withdraw the urine by a sterile catheter into a sterile conical urine glass. The urine so withdrawn is allowed to stand until the sediment collects. The supernatant fluid is poured off and the sediment is centrifuged. The supernatant fluid is poured out of the centrifuge tube, the tube is filled with distilled water that is free from tubercle bacilli, shaken so as to wash out the urinary salts, which interfere with the staining, and centrifuged again. This process is repeated once or twice. The sediment remaining after the third centrifugation is smeared on clean glass slides and allowed to dry in the air. The smears are fixed by passing three times through the flame, and then stained for five minutes with warm carbolfuchsin, washed in water, submitted to the action of the acid-alcohol solution for one minute, washed in water, counterstained with Löffler's alkaline methylene-blue for thirty seconds, dried, and examined under a 1/12-inch oil immersion objective. If acid-fast bacilli are found by this method, a second smear should be decolorized in the acid solution overnight, washed in water, and counterstained in the Löffler's alkaline methylene-blue in order to be sure that they are not smegma bacilli. Urine obtained by the catheterization of the ureters may be treated in the same way."—(Anders and Boston's *Medical Diagnosis.*)

4. *Life cycle of Plasmodium vivax.* This is a protozoan parasite, and is the organism of tertian malaria. In its earliest stage it appears within the red blood corpuscles as a colorless ameboid body, which grows rapidly, becomes pigmented, and when it has nearly filled the red corpuscle it undergoes segmentation, dividing into a rosette-shaped body containing some 15 to 20 spores. The corpuscle ruptures, and the spores are liberated and attack fresh corpuscles, and repeat the cycle of development, which lasts 48 hours. The above describes the asexual cycle; but some of the ameboid bodies do not become segmented, merely enlarging within the corpuscles to form rounded gametocytes, of which the male element is smaller than the female. When these are drawn into the stomach of the anopheles mosquito they burst the corpuscles, and the microgametocyte or male element puts forth three or four flagella, which become detached, and then penetrate and fertilize the female cell. This now becomes an elongated pointed body, which penetrates the mosquito's stomach wall, and develops on its outer surface into a capsule filled with thread-like exotospores. The capsule ruptures, and the exotospores are carried to the salivary gland and duct of the mosquito, entering the human blood at the insect's next bite, and there penetrating the red cells and becoming the colorless ameboid bodies.

5. *Classification of protozoa:* (1) *Sarcodina*, example Entemaba histolytica, causing dysentery. (2) *Mastigophora* or *Flagellata*, example *Treponema pallidum*, causing syphilis. (3) *Infusoria*, example *Balantidium coli.* (4) *Sporozoa*, example *Plasmodium vivax*, causing tertian malaria.

6. *Three pathogenic spirilla:* The spirillum of cholera, the spirillum of relapsing fever, and *Treponema pallidum* which causes syphilis.

The germ of syphilis is the *Treponema pallidum*, also called the *Spirochæta pallida.* It is a slender spirillum, with regular turns, the curves varying in number from three or four to twelve or even twenty; it is about 4 to 20 mikrons long, actively motile, with a fine flagellum at each pole; it is flexible, hard to stain, and has not been cultivated on artificial media. How it divides is not known. It stains best with Giemsa's eosin solution and azur.

7. *Immunity*, or the power to resist invasion by microorganisms with the subsequent development of disease, is *active* when the cells or tissues of the invaded individual bring about this immunity, either by destroying the bacteria or by neutralizing their poisonous products. Such an immunity may be acquired in several ways; one is by inoculation, another is by vaccination; this latter is used as a prophylactic measure against smallpox. Immunity is said to be *passive* when it is caused by the injection of the blood serum of an animal which has been actively immunized.

8. BACILLUS ANTHRACIS. *Morphology:* It is a large, rod-shaped microorganism, with slightly thickened ends; it is from 5 to 20 mikrons in length, and a little more than one mikron in breadth; it has a tendency to form long threads; it is nonmotile and nonflagellated; it is aërobic.

Staining: It stains by all the alkaline aniline dyes, and also by Gram's method.

Cultural characters: It grows on practically all media, as a film on potato, in tree form in gelatin stab, it liquefies gelatin and also serum.

Pathogenicity: It causes anthrax, splenic fever, malignant pustule, and woolsorter's disease. Infection takes place through wounds, or by the respiratory or alimentary tract. The bacilli are probably destroyed by the gastric juices, but not so the spores.

9. *Germicide* is an agent which destroys bacteria and their germs.

Antiseptic is a substance which prevents or restrains putrefaction.

Asepsis is the absence of pathogenic microorganisms.

Sterile is free from microorganisms or spores.

Disinfectant is an agent which restrains infectious diseases by destroying or removing their specific poisons.

10. "The standard medium for determining *the number of bacteria in water* is a nutrient agar having a reaction of +1 per cent., using phenolphthalein as an indicator. The agar is made by using distilled water and an infusion of fresh lean meat, and not meat extract. The medium contains 1 per cent. of Witte's peptone and 1 per cent. of agar. The sample of water must be shaken vigorously at least 25 times in order to break up the bacterial clusters and to obtain a uniform suspension. If the water contains less than 200 bacteria per c.c., 1 c.c. of it may be placed directly in the petri dish, then add 10 c.c. of the standard medium. Mix well, congeal, and incubate at 37° C. for 48 hours in a dark, well-ventilated incubator where the atmosphere is practically saturated with moisture. When gelatin is used the plates should be incubated at 20° C. for 4 days. If there is reason to believe that the number of bacteria is more than 200 per c.c., dilute by mixing 1 c.c. of the sample with 9 c.c. of sterilized tap or distilled water. Again shake 25 times and plate

1 c.c. of the dilution. . . . Count the colonies upon a Wolffluegel apparatus or a Jeffer's plate. A successful plate should contain not more than 200 colonies. The whole number of colonies on a plate should be counted, the practice of counting a fractional part being resorted to only in cases of necessity."—(Rosenau's *Preventive Medicine and Hygiene.*)

OBSTETRICS.

1. As a rule the pregnancy should be terminated when the hemorrhage is profuse and the fetus not yet viable; hence, empty the uterus.

2. *Treatment of postpartum hemorrhage:* Grasp the uterus at once, through the abdominal wall, and massage it firmly. Anything in the uterus should at once be cleaned out. Pass one hand into the uterus, and with the other on the outside make firm pressure. A hypodermic of ergotin or ergot can be given by an assistant. An intrauterine douche of hot sterilized water (about 115° F.) may be given. Sometimes a very thorough packing and plugging of gauze of uterus and vagina may be necessary. Whatever is done must be done promptly; and everything likely to be needed for this emergency should be prepared beforehand in every labor.

3. RUPTURE OF THE UTERUS. *Etiology:* Pathological conditions of the uterus, cicatricial tissue in the uterus, obstructed labor, contracted pelvis, malposition of the fetus, and violent operative procedures.

Ruptured uterus is announced by a sudden, acute, and persistent pain. Sometimes the sound of the rupture is heard by the patient; the symptoms of internal hemorrhage and shock are present—collapse, air-hunger, cyanosis, rapid, feeble pulse; the uterine contractions cease. Vaginal examination shows that the presenting part of the child has receded from its former situation owing to escape of the fetus (partially or completely) through the rent into the abdominal cavity, where it may be felt by abdominal palpation.

Treatment of rupture of the uterus: "After rupture has occurred, especially if it be 'complete' and extensive, and the child should have escaped, wholly or in great part, through the rent into the abdominal cavity, laparotomy should be done at once, child, placenta, blood clots, etc., being removed through the abdominal incision; then peritoneal cavity cleansed with hot saline solution; the rent in the uterus repaired by suture; or in case of an infected uterus, or one that will not contract, or in which the rupture cannot be well secured, the entire uterus should be removed."—(King's *Obstetrics.*)

4. *Cesarean section.*—"*Indications:* The cases in which it is performed are: (1) Extreme deformity of the pelvis, in which delivery by forceps and version is excluded, and in which craniotomy is either impossible or would be more dangerous to the mother than cutting into the abdomen and uterus; and in which there is not room for a successful symphyseotomy. Such cases present the '*positive*' indication for cesarean section; there is nothing else to be done. Flat pelves having a conjugata vera of 2¼ inches or less, and justo-minor pelves with a conjugata vera of 2½ inches or less, present this positive indication; (2) cases of more moderate pelvic contraction in which craniotomy is possible; but cesarean section is agreed upon to *save the life of the child;* (3) mechanical obstruction in the pelvis from fibroid, cancerous, bony, or other tumors which cannot be pushed up out of the way or be safely removed; (4) irreducible impaction of a *living* child in transverse presentations; (5) in women dying near the end of pregnancy the child, if alive, is rapidly delivered by *post-mortem* cesarean section; (6) various other obstructions from inflammatory adhesions, atresia, constrictions, etc., of the vagina, and uterine displacements, may rarely require the operation; (7) recently the operation has been done in eclampsia cases, where more conservative methods of rapid delivery were impracticable; and (8) in placenta prævia, chiefly with a view to lessen the infant mortality atttending the usual treatment of this complication."—(King's *Obstetrics.*)

5. *Puerperal insanity:* Heredity and personal predisposition, exhausting and debilitating conditions, postpartum hemorrhage, excessive lactation, intoxications, primiparity, mental distress, and septic infection are generally given as the etiological factors. The condition generally comes on early, in the first week; it is of a maniacal type, and may be suicidal or infanticidal; persistent insomnia is said to be a precursor of this insanity; when menstruation returns the condition often improves. Puerperal insanity is to be distinguished from lactational insanity; this latter generally comes on later, about the fourth month, and is apt to be of a depressed and melancholic type.

6. *Extraction of the after-coming head:* "If the arms are extended by the side of the child's head, they should be delivered first. The posterior arm is located by the position of the trunk and shoulders. To deliver the right arm, the child's ankles should be grasped with the left hand, and the body raised upward and outward over the mother's right thigh. The fingers of the right hand are passed along the posterior surface of the arm beyond the elbow. The fingers are hooked in the elbow, and traction is exerted; the forearm is then delivered by extension. The left arm is delivered in a similar manner. In the *Wiegand-Martin method* extraction of the after-coming head is effected by the insertion of the index finger of the supinated right hand into the child's mouth and making traction upon it, while pressure is exerted through the abdominal wall by the left hand. In the *Mauriceau* or *Veit-Smellie method,* in addition to the right hand index finger in the mouth, the left hand is also introduced into the vagina, along the back of the child, the middle finger presses against the occiput, while the remaining fingers exert traction over the clavicles. In the *Prague method* the child's ankles are grasped in the right hand, the fingers of the left are flexed over the clavicles, and traction is made. In these methods, when the perineum is distended, the child's body is raised toward the mother's abdomen. *Forceps* may be applied after the child's body has been raised and traction made in the direction of the axis of the parturient canal."—(*Pocket Cyclopedia.*)

7. *Forceps in occipito-posterior positions:* "The blades are put in exactly as for cases where the occiput has rotated anteriorly. But since the occiput is now toward the sacrum, the *extension will, of course, be downward and backward over the perineum,* instead of upward toward the pubes; hence the handles of the instrument, at first lifted somewhat upward toward the pubes to draw the occiput up to the edge of the perineum, must, when the head emerges, be directed *downward and backward,* instead of toward the *mons veneris.* A moment's reflection will show that the short *straight* forceps (without any sacral curves) should be used in these cases; for the said curve is only adapted to follow the axis of the pelvic canal, but during *backward* extension of the occiput over the perineum the head departs from the axial line and goes in an almost opposite direction. If the *curved* forceps were used, the ends of the blades would impinge against the pubic arch while the handles were being depressed in following the movement of backward extension. Again, owing to the depth of the posterior pelvic wall being three times as great as that of the anterior one, there is so much more difficulty in getting the occipital end of the occipitomental diameter to escape over the edge of the perineum, hence greater danger of laceration, and necessity for extra care that the occipital pole *really* shall have cleared the perineum before extension is attempted."—(King's *Obstetrics.*)

8. *Puerperal eclampsia* is an acute morbid condition occurring during pregnancy, labor, or the puerperal state, and is characterized by tonic and clonic convulsions, which affect first the voluntary and then the involuntary muscles; there is total loss of consciousness, which tends either to coma or to sleep, and the condition may terminate in recovery or death.

Hydramnios is the condition in which there is an excess of liquor amnii.

Spurious pregnancy is the condition in which a woman who is not pregnant really believes that she is pregnant, and simulates as many of the subjective symptoms of pregnancy as she is acquainted with. Often the abdominal tumor only subsides when an anesthetic is administered.

Decidua vera is the thickened mucous membrane lining the pregnant uterus.

9. The *diagonal conjugate* is the length of a line extending from the middle of the promontory of the

sacrum to the lower border of the symphysis pubis. The *true conjugate* may be determined by subtracting ½ to ¾ of an inch from the diagonal conjugate.

10. *Harris' method of dilating the cervix:* "It should never be attempted unless the cervical canal is obliterated. The woman is placed in the lithotomy position, under an anesthetic. The usual aseptic preparation is carried out. The operator then lubricates his gloved hand well with aseptic glycerin. Coning the fingers, the hand is introduced into the vagina. One finger is passed through the cervix. After a time the cervix relaxes till a second finger can be passed, then one finger after another until the whole hand is introduced. The fist is then slowly and cautiously closed in the grasp of the cervix. By this time the dilatation is sufficient for the passage of the head, and, at the same time, active uterine contractions have been established. The dilatation must be done with the least possible muscular effort, to prevent cramping of the hand. To prevent laceration of the cervix, extreme care must be used, taking plenty of time for each step. The danger of tearing is greatest in the latter part of the dilatation. The uterus is steadied by counter-pressure over the fundus, lest by pushing the uterus upward the vagina be exposed to too great strain."—(Polak's *Manual of Obstetrics.*)

(*To be concludcd*)

Miscellany.

The Treatment of Neuritis with Special Reference to Sciatica.—Harrington Sainsbury gives the treatment outlined to him by Hugh Wingfield. Sciatica is such an obstinate affection and so resistant to treatment that it has come to be regarded as an *opprobrium medicinæ.* This method of treatment is offered on account of its simplicity and effectiveness, with an additional reason of the considerable prevalence of neuralgias and myalgias among the invalided British soldiers.

The treatment consists in the direct application of the strong hydrochloric acid of the B. P., in common parlance fuming hydrochloric acid, to the skin along the line of the inflamed and painful nerve. The acid contains 31.75 per cent. of gaseous hydrochloric acid and has a specific gravity of 1.160; it is considered in the textbooks to be an *escharotic.*

The *modus operandi* is first to mark out the line of the nerve pain and tenderness as it happens to present itself in the individual. Gowers gives the following areas as the most intense pain points: (1) Above the hip joint, near the posterior iliac spine; (2) at the sciatic notch, (3) about the middle of the thigh; (4) behind the knee; (5) below the head of the fibula; (6) behind the external malleolus; (7) on the back of the foot. These areas are to be selected when present. In general it has been Sainsbury's practice to carry a broad line of application, some 1½ inches across, straight down the back of the thigh from the gluteal fold to the popliteal space; another application of like breadth for about 3 inches behind the head of the fibula along the oblique course of the external popliteal nerve at this spot; lastly, for some 5 to 6 inches behind the external malleolus directly downwards; and below the malleolus obliquely on to the dorsum of the foot.

The extent of the tenderness will serve more or less as a guide as to the extent of the application. A wad of cotton-wool, firmly compressed into a knob of the size of the knuckle of the middle finger, is used to suck up the acid, of which from one-half to a drachm will be required. The charged wad, grasped by the finger and thumb (previously vaselined), is then carried gently along the line of application above described. The degree of firmness may be increased subsequently if necessary, and the part may be painted two or three times at one sitting if the skin bears the acid well; the first application should be light and single in order to gauge the sensitiveness of the part, and if the integument happens to be thin and delicate it should receive correspondingly light treatment: Dr. Wingfield prefers to apply the acid with a camel-hair brush.

A considerable smarting is sometimes complained of; in other cases little more than a tingling or sense of mild heat is felt. After the application a light covering may be thrown over the part till the skin is dry. The smarting soon passes off and the slight redness induced disappears also; no dressing is required. Rarely, in delicate skins, is a papular rash excited; it should be allowed to subside before reapplication of the acid. Blistering has not been observed either by Dr. Wingfield or the writer. The treatment may be repeated twice a week if need be, perhaps oftener; it should be continued so long as the pain and tenderness continue. Massage may with advantage supplement the treatment, and particularly if there has been obvious wasting.

In three cases of sciatica recently admitted into the Bermondsey Military Hospital, Ladywell, the results have been striking and greatly appreciated by the patients themselves. Two of these were bad cases of long duration, and in one there was marked wasting of the muscles of the leg and thigh.—*British Medical Journal.*

Mortality in Uruguay.—The death rate of Uruguay according to the most recent compilations is 13.66 per 1000 inhabitants. In Spain during the same period it was not far in some years from double that figure. The only diseases to destroy over one person per 1000 inhabitants were pulmonary consumption and bowel troubles—the latter chiefly in the first two years of life. Of this total material, however, almost one-half the deaths could not be definitely explained, for 1.83 deaths per 1000 are set down to miscellaneous causes, while in 3.53 per 1000 no diagnosis was made. These two classifications are the bane of statistics, particularly in certain countries.

If now we take the Spanish statistics as a control, less than 1 death per 1000 is set down to undiagnosticated disease, although over 4 per cent. belong under "miscellaneous." In order to explain the increased death rate of Spain as compared with that of Uruguay the following figures may be of significance. Apparently there are in Spain 3 deaths from cerebral hemorrhage and softening of the brain to 1 in Uruguay and a similar ratio is seen in heart disease. The low incidence in Uruguay of such plagues as cancer and pneumonia is startling. Unless one brings his disease with him this republic would seem to be ideal for avoiding the very afflictions which are most deadly in the .Northern Hemisphere, always excepting tuberculosis. The foregoing data are to be found in the Bulletin of the Office International d'Hygiène Publique for July.

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THE ARMY MEDICAL MUSEUMS.

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To all those interested in the literature of medicine and surgery, it is well known that, early in our Civil War, steps were promptly inaugurated not only to collect together all possible material sent in from the operating tents on the fields of battle and from the great army of hospitals which had come into existence, but also to gather from various other sources anything and everything which would in any way illustrate those two most important departments of the healing art, in so far as they referred to military practice. The then Surgeon General of the Army, and various other far-seeing officers of the medical department of that branch of the government, were the ones principally responsible for the prompt action that was taken in this matter. Through these several channels it was arranged that all the material thus preserved should come to Washington, and there be properly taken care of until such time as it could be duly assorted, placed on exhibition, and otherwise made available for the use of the physicians and surgeons of the world.

In the main this material consisted of medical and surgical specimens collected at post mortems made upon officers and men of our armies in the field; of

FIG. 1.—The present Army Medical Museum in Washington.

parts removed at operations upon the same; of missiles and weapons of offense and defense; of contrivances for the transportation and care of the wounded—indeed, of anything and everything that would in any way illustrate military medicine and surgery along the lines indicated. At first this valuable material was duly stored in any building in Washington that could be obtained to accommodate it; but so rapid was its accumulation, and so formidable was it in amount, that after various housings it

FIG. 2.—Main museum hall in the present building.

finally came to be placed on exhibition in the old Ford's Theater on Tenth Street in that city, where it remained for many years, and long after the war was over.

During all this time there also came to this Army Medical Museum—as it was eventually called—all the field reports of the army surgeons at the front, and likewise the special histories of specimens and other material forwarded. At different periods in the history of all this, various medical officers of rank were appointed by the Surgeon General to take charge of this museum; and in due time a large body of workers, having divers duties to perform in connection with what this great collection in a few years came to be, were also made a part of the force required to care for it and to put it in shape for practical use. In a way, too, it was connected with the Pension Bureau, the whole forming its due part of the Surgeon General's Office of the Army

Later on, classification of cases came into play; a taxonomy of material; a weeding out of the non-essential cases and histories, and a placing in order for publication with hundreds of illustrations of all the rest. This required a long time and many

FIG. 3.—Cases on lower floor of the present Museum, showing crowded condition of the specimens.

hands and minds to accomplish; but the final outcome of it all was a superb series of quarto volumes and other treatises, which constitute the most formidable, as well as the most useful contribution, as a whole, to military medicine and surgery that the world has ever known.

As years passed, the old Ford's Theater building —known far and wide as the Army Medical Museum—came to be altogether too small to contain this growing collection, and it was abundantly added to from many sources long after the Civil War had ended. Then, too, it was not fireproof, making it especially dangerous on account of the great quantities of alcohol in the building, used to preserve the specimens; and its floorings were too insecure to sustain the great weight demanded of them by reason of the large number of persons and material occupying each of them. This dangerous state of things was constantly called to the attention of Congress, with the view of securing a new building, one in all particulars adequate to accommodate this priceless collection. Finally, one day a crash came —a floor collapsed; several clerks were either killed or wounded, and not long after the government supplied the money for a new building, to which in due time the entire collection, the superb medical and surgical library, and the rest were removed.

The history of all this, and the happenings of all the years that have followed, has only very recently (September, 1917) been compiled and properly illustrated by one of the veterans of the museum, Dr. D. S. Lamb, a member of the present, as well as the old staff of the institution. This very important and most interesting compilation is entirely ready for publication; when issued it will form one of the series of Bulletins published by the Surgeon General's Office of the Army. It is temporarily held in check owing to the lack of funds to issue it—a barrier that should not be allowed to block the way for the prompt publication of such literature for a single day. This, however, is a point that will be touched upon in another connection in the near future.

As stated, Dr. Lamb is still a member of the museum's staff, while other departments are under the charge of regular officers of the Army Medical Corps, Col. William O. Owen having the museum, and Col. Champe C. McCulloch, Jr., the magnificent library that the building harbors. The latter department is in a flourishing condition, and many new books, pamphlets, journals, and all current medical literature are daily added to its shelves.

This, however, is not the case with the museum.

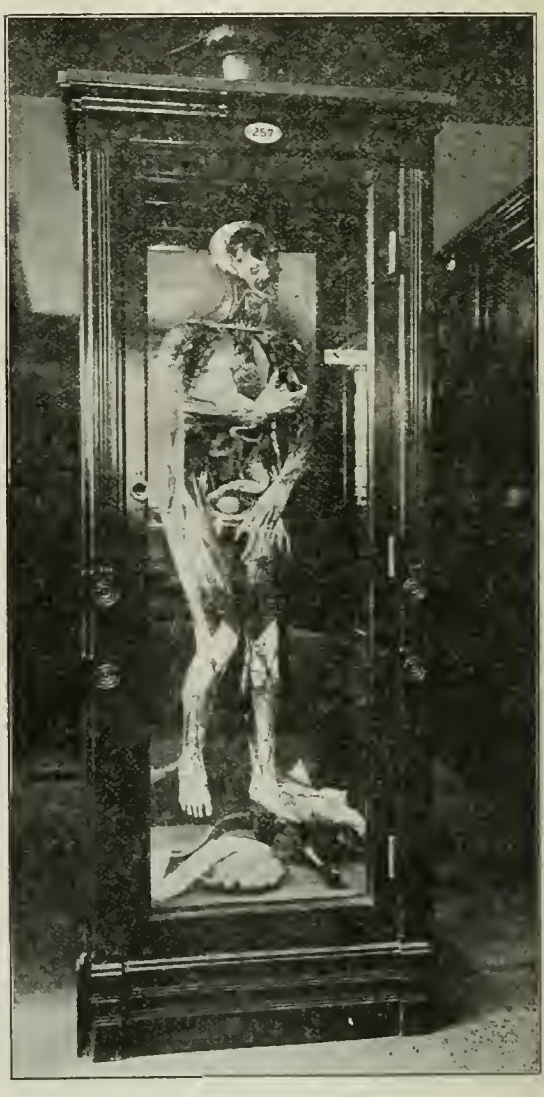

FIG. 4.—Human manikin on lower floor of the present Museum.

For many years past every nook and corner in that division have been filled to the utmost capacity by the various objects constituting the collection as a whole. From the standpoints of antiquity and history, this collection will always be of enormous

value; but from the viewpoint of a growing collection, and an up-to-date exposition of modern medicine in all of its varied departments, it has, for only too long a time, been a supreme joke. Strenuous attempts from many, often influential sources have been made for years to remedy this crying need for a new building. Beautiful plans for the structure have been prepared by the well-known Washington architect, Mr. A. Burch FitzSimons, while a fine location for a new building has likewise been selected and approved. Here, however, the matter at present rests; the financial means are not yet in sight to erect and properly equip the building. Colonel Owen is doing everything in his power to further these much needed new acommodations, but with little or no avail up to date. Unfortunately he cannot give it his entire attention; in these strenuous war times many other matters of importance seriously cut into his available time. There is large room vacant for another officer of the medical department of the proper rank, to second his efforts in this matter and field of operations.

nishing the material that results from operations of many, many kinds. The enemy's weapons, of every conceivable description, will soon be captured by our troops at the front; new methods for transporting the wounded are already in operation—indeed, all this, with much else besides of the greatest possible value to our physicians and surgeons of the future, in civil as well as in military life, needs to be cared for immediately, and proper accommodations of a permanent character made for it in Washington. As many reports as possible of medical officers at the various seats of war should be accompanied by the removed parts at operations, when of especial interest. There should be a photographic department at the museum to illustrate all this history, and, whenever possible, photographs of operations and conditions in the field of a medical character should also be sent in with the reports of medical officers. In fact, the necessary steps to furnish a complete medical and surgical history of the present war, in all the various branches and departments involved—in so far as this country is

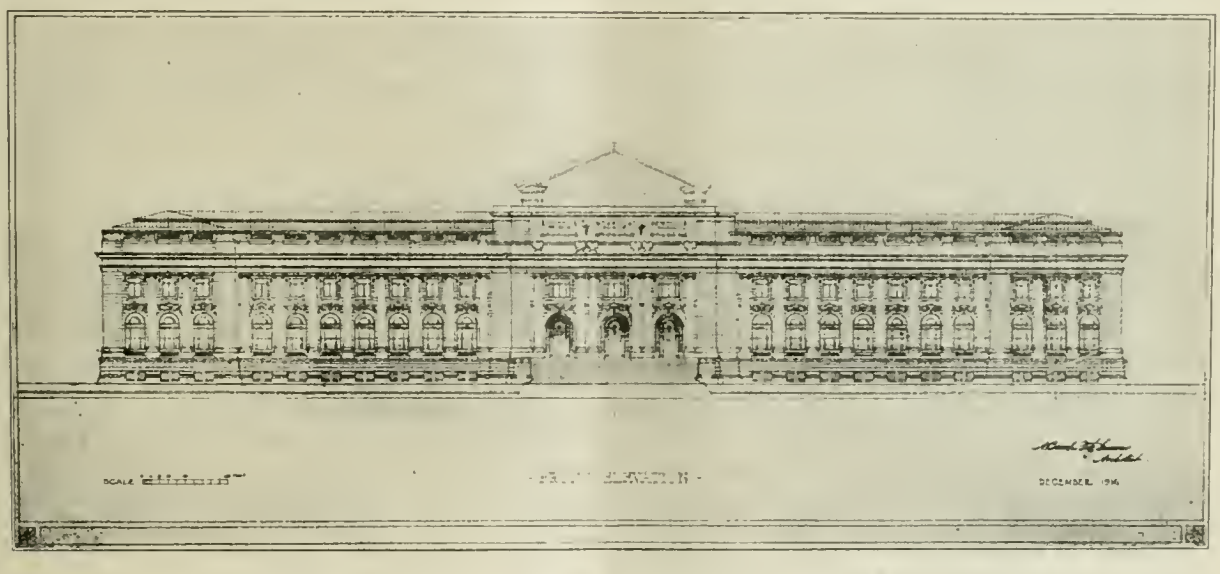

Fig. 5.—Front elevation of the proposed new building of the Army Medical Museum.

The above referred to "The Medical and Surgical History of the Civil War" is already past history, as many, many years have gone by since it was published. It is reflected in the museum collection of specimens, illustrating the then military medical and surgical practice. This is likewise true of the machinery, missiles, weapons, contrivances for bodily defense, and similar exhibits in the collection. All these, in each and all of the departments, have, in due course, entirely changed. Different methods of treatment of every conceivable character have been instituted; the nature of many wounds, burns, and injuries of all kinds is different, owing to the modern arms, tools, gases, and the like that inflict them. All this needs most complete illustration in kind; it needs a *new museum* of great capacity to contain the required collection, and the proper assistance to conduct it.

In so far as the United States is concerned, the war is still in its earliest stages; but very soon things will be different. The field hospitals, operating tables, dead and wounded on the fields of battle, general hospitals here and abroad, will soon be furconcerned—should be substantially put on foot without another day's delay.

All this will require the necessary appropriations to be made promptly by Congress—that is, the means to erect the new museum building; to equip it properly, and to bring into existence, under Colonel Owen's command, the necessary additions to the staff and other force to care for that history, until it is safely published and landed as a series of sumptuous quarto volumes on the shelves of the *new* library in the *new* Army Medical Museum; and this latter erected as designed, on the site selected at the capital of these United States of America.

3356 Eighteenth Street.

Suprarenal Asystole. — The secretion of the suprarenals is indispensable for cardiac contractions in the opinion of Josué. An hypertrophy of the heart means a parallel hypertrophy of the suprarenals. The weight of the heart should be thirty fold that of the latter. If there is absence of this compensatory enlargement, suprarenal asystole may develop with sudden death.—*Paris Médical.*

ALCOHOL AND THERAPEUTICS.

By EDWARD HUNTINGTON WILLIAMS, M.D.,

LOS ANGELES, CAL.

SOMETHING like five years ago, at a meeting of the World's W. C. T. U., a somewhat overwrought feminine member of the audience suggested that a federal law should be passed forbidding doctors to use alcohol in any form in the practice of their profession. The suggestion was quietly but firmly suppressed by the more thoughtful and less choleric members of the conference, because they believed that, although alcohol was a bad master, it was a good servant—a good medical servant, at least.

Very few members of the medical profession, of course, ever heard of this little flash-pan incident; and those who did for the most part regarded it as one of those pleasantries which characterize our emotional, over-petticoated present day legislation. When, however, the House of Delegates of our great American Medical Association at the 1917 meeting tacitly championed the suppressed W. C. T. U. member's suggestion by declaring that alcohol's "use in therapeutics, as a tonic or a stimulant or as a food has no scientific basis," and that its use as a therapeutic agent should be discouraged, it was evident that our temperance fanatic's little pleasantry had been making progress. To some, at least, it seemed to have developed into a formidable medical boomerang.

It has been suggested that this action of the House of Delegates may have been merely a "war measure" —an attempt to emphasize the evils of alcoholic abuses at this critical time, and largely for lay consumption. Certainly, it was contrary to the teaching of practically every medical text-book, and not in accord with the experiences of most physicians.

But, unfortunately, the laymen of America have a habit of thinking for themselves, even in medical matters. We have taught them to do so. And, in any event, it is futile to try to convince a man who has lulled a toothache, eased a "colic," or warmed a benumbed body with some form of spirits, that he he had done nothing of the kind. We are likely to lose his confidence if we attempt to do so. And, it is not merely his confidence in us individually that may be affected, but confidence in the whole fabric of modern medicine.

Moreover, it is evident to any one if practically all medical books teach that alcohol is a useful drug; and that meanwhile the official sponsors for the greatest medical organization of the country declare that it is not—it is quite evident that one or the other must be mistaken. And this will lead inevitably to the suspicion that if they are mistaken about the effects of such a universal drug as alcohol, which has been studied since ancient times, they are much more likely to be mistaken about the less well known drugs, such as digitalis, opium, belladonna, and a dozen others.

Kraepelin, the champion of temperance, has pointed out that observations about therapeutics, to be of value, must "harmonize with the experiences of every-day life." The dogmatic statements of the House of Delegates, therefore, may be measured by this standard, and, if correct, should harmonize with the opinions of the majority of physiologists, pharmacologists, and clinicians. As a matter of fact they do not "harmonize" at all, as any physician may demonstrate for himself by reaching into his bookcase and picking at random almost any one of his text-books. The result will be the same whether the volume he hits upon happens to be one of the old sheep-bound books, or one of the more recent cloth creations.

As I write this, a copy of the MEDICAL RECORD for August 18, 1917, comes to my desk. On the first page I find an article by Dr. Horatio C. Wood, Jr., in which he says: "Personally, I am convinced that, under certain circumstances, alcohol is a valuable remedy." Dr. Hobart Amory Hare went on record two months earlier, in the *Journal of the A. M. A.*, protesting against the action of the House of Delegates in condemning the medicinal use of alcohol as being, "in the opinion of many eminent medical men, untrue and not supported by the majority of evidence." And it is probable that the opinions expressed by Dr. Wood and Dr. Hare indicate the belief of a vast majority of physicians everywhere. Moreover, most experimental research workers have found evidence that supports the views of the clinicians.

Thus, Sir Michael Foster, acting as spokesman for the International Physiological Congress, asserted that: " . . . The results of careful experiments show that alcohol, so taken (in diluted form and in small doses), is oxidized within the body and so supplies energy like common articles of food, and that it is physiologically incorrect to designate it as a poison, that is, a substance which can only do harm and never do good to the body." Sir Michael's opinion was expressed several years ago; but a majority of "up to date" physiologists still accept the opinion of the great Englishman. Howell of Johns Hopkins, for example, asserts in his text-book of physiology as the result of experiments, that "These results indicate, therefore, that alcohol may actually take the place physiologically of fat or carbohydrates as a source of energy and as a protector of protein metabolism." And this view is held by Newman, Atwater, and most other competent observers.

These physiologists, to be sure, are referring to the action of alcohol in normal, rather than pathological conditions. But clinicians who have earned the right to a hearing, not only advocate the use of alcohol as a therapeutic agent, but are ready to name specific conditions in which it is helpful. Osler, for example, says: "I should be sorry to give up its use in the severe forms of enteric and pneumonia." And Dr. G. B. Twitchell, writing in the *Boston Medical and Surgical Journal*, asserts that when alcohol is given in the severe cases of pneumonia where the patient appears moribund—a condition that every practitioner has seen, and dreads—the temperature comes down a little, the pulse is quieted and strengthened, and the livid face is flushed. "Keep it up and the case, apparently lost, will meet the crisis successfully. The trouble from alcohol in this disease is that we give it too sparingly."

These are typical examples of the kind of observations one finds everywhere in authoritative medical literature. They dispute flatly the assertion of the House of Delegates that alcohol does not act as a stimulant in the ordinarily accepted meaning of the

term. "That it does act as a powerful cordial in heart failure," says Sir Clifford Allbutt, "is undeniable by any one who has averted a faint by a glass of wine, or watched its effect upon certain feeble, irregular pulses."

It is not merely as a "stimulant," however, that alcohol has made a place for itself in therapeutics. Indeed, judged by medical literature, it is doubtful if any other single drug has been so highly and universally recommended for the treatment of so many specific conditions, even in recent years, as alcohol.

Thus we find such men as Dr. Abraham Jacobi, former president of the American Medical Association, accurate observer, and a man of tremendous experience, advocating the use of heroic doses of whisky in the treatment of sepsis, and emphasizing what he believes to be a fact that "no amount of whisky will produce intoxication when its effects are wanted to combat sepsis." And Dr. George H. Weaver declaring that: "For general toxic disturbances, manifested by rapid and irregular heart, occasionally by slow heart, and sometimes by vomiting, alcohol is to be given freely and frequently repeated. Strychnine is of value, but not equally with alcohol."

Evidently, Dr. Weaver takes issue with those who maintain that alcohol may be dispensed with in the practice of medicine because other less harmful substances act equally well.

In another field, Lathem, writing on the treatment of tuberculosis in the London *Practitioner*, says: "Experience has shown that alcohol is of the greatest possible service when fever is present. It saves the body protein, stimulates the appetite, and in small doses hastens gastric digestion." And the American physicians, Butler, Favill, and Norman Bridge, in the volume for which they stand sponsors, agree that "the use of alcohol to relieve gastric distress is rational and effective."

Speaking of the treatment of diabetes, Meyer and Gottlieb assert that: "In diabetic acidosis the administration of alcohol like that of carbohydrates decreases the formation of acetone, and also that of the pathologically more important oxybutyric acid." And von Noorden declares that, in certain phases of diabetes, whisky in heroic does—a "veritable drenching of the system"—is life saving. At these critical periods he gives no food whatever. Yet "large quantities of whisky are well borne even when the patient is not accustomed to them. It is followed by a large reduction of ketonuria and the general condition of the patient is greatly improved."

In acute infectious diseases, to name but one instance, Dr. Jay F. Schamberg says that in the treatment of variola: "It is a wise plan not to wait for the development of such manifestations (tremor, pallor, delirium, etc.), but to anticipate them and strengthen the vital forces by the timely employment of alcohol." And similar statements as regards the effects of alcohol are found everywhere in medical literature.

Thus it appears that in the printed opinions of a vast majority of authoritative writers, alcohol ranges in therapeutic usefulness in the treatment of certain conditions, between a substance that is positively helpful to one that is absolutely indispensable. And the conditions for which it has been found helpful include many varied types of maladies, from acute infections to chronic organic diseases.

Yet we are asked to believe that these assertions are all wrong—that our observers did not see what they thought they did at all. In short, the action of the House of Delegates leaves us no middle ground; we are obliged to doubt the wisdom of a vast majority of observers who believe that alcohol is a useful remedy, or doubt the wisdom of the House of Delegates in declaring that it is not.

This rift in medical harmony would be of little importance if almost any remedy other than alcohol were involved. But, unfortunately, the problem of alcohol is not merely a medical one, but a political, moral, ethical, financial, and religious one as well. Needless to say, therefore, the action of the House of Delegates has stirred up a tempest, whereas, in a less emotional field it would scarcely have caused a ripple.

Roughly speaking, the people who are being directly affected by the action of the House of Delegates fall into one of four groups, namely, physicians, laymen in general, temperance advocates (including both the sincere and the professional types), and the opponents to scientific medicine, most of whom belong to one or another of the "drugless healing" cults.

Curiously enough, the persons whose opinions seem to be least influenced by the action of their official representatives, are the members of the first group, the physicians. The reason for this is readily understood. Every physician, even of very limited clinical experience, has had occasion to test the therapeutic effects of alcohol. Mostly he has been able to note what he considers some very definite effects in certain cases. It is what he expects, because the weight of clinical evidence has taught him to expect it. And once this physician has tided a pneumonia case over a critical period with alcohol, or "watched its effect upon certain feeble, irregular pulses," as inevitably he will, he is not likely to change his opinion about what he considers the "evidence of his own senses." In any event, he is accustomed to "going it alone" in the treatment of his cases; and it will cause him very little perturbation to know that certain officials of his Society do not see things as he does.

As far as the layman is concerned, the decision of the House of Delegates is likely to have about as little effect as in the case of the average physician. The layman has had the subject of strong drink hammered into him from so many different angles, and for so long, that for the most part his ideas about it have become ingrained. In any event, if he has any doubt in the matter he will probably ask his family physician about it the next time he sees him, and will be at once set right in the matter.

But the effect produced in the ranks of two other groups of people—the professional prohibitionist and the drugless healing votaries, professional and otherwise—is very, very different. Even before the ink was dry on the announcements of the action of the House of Delegates, the one class was "sharpening her claws and the other fingering its axe helve." Thus Dr. Hare, who did not agree with the opinion of the Council that alcohol was useless in medicine, received a letter from a body interested in "prohibition" even before he could finish his

letter stating his opinion, asking him to "telegraph the President" confirming the statement of the Council. This represents a characteristic attitude of mind of such people, but it is probably merely of "pin prick" significance. For "temperance cranks" are so accustomed to juggling alleged facts which have no particular relationship to truth, that one additional item is of little consequence.

The really important effect—the thing that will keep cropping out continually, and making its appearance from every legislative angle—is the fact that the "drugless healers" and their followers have been handed an official "jimmy," fashioned very much to their liking. It is now a matter of official record that the whole medical fraternity has been entirely mistaken about the use of one of its most important drugs. Which is precisely what the drugless healers have contended all the time about *all* drugs.

And make no mistake, this army of drugless healers is far from being a contemptible one. Its variously ramifying branches, it is estimated, take in one quarter of the population of this country—twenty-five million scalp-hunters of regular practitioners—who have won pretty decisive victories in practically every State in the Union already, and are pressing the fight everywhere. One need not exercise any very great amount of imagination to conceive the use these fighters will make (are making, indeed, at this very moment) of the discord in the ranks of the medical men—the diametrically opposed views about the effects of the oldest and most thoroughly studied drug in the whole category.

It is this disagreement about the effects of alcohol as a therapeutic agent, rather than the actual fact about it, that is unfortunate. If it were a clearly established fact that we had been mistaken about any phase of medicine, the sooner the error was recognized officially the better, regardless of temporary consequences. But in this case the facts are subordinated by the weight of mere official opinions, with the preponderance of evidence indicating that alcohol is indeed a very useful therapeutic agent.

Moreover, there seems to have been a doubt even in the minds of the members of the Council of Health and Public Instruction that declared the use of alcohol in therapeutics "has no scientific basis," if we may take the word of its secretary, Frederick R. Green, in a statement printed in the *Journal of the A. M. A.* for July 21, 1917. "The subject was not taken up by the Council on its own initiative," says Dr. Green. "At the Detroit session a memorial from the National W. C. T. U. was presented to the Association through the secretary in which the Association was asked for an expression of opinion on alcohol from a social rather than a therapeutic standpoint."

This led to the action taken later by the Council and approved by the House of Delegates. But, despite the fact that the House of Delegates have gone on record in declaring the use of alcohol to be "unscientific," it appears, according to Dr. Green, that the Council attributed a certain flexibility to the word "scientific" which is sarcely permissible in the field of exact science.

"The resolutions adopted by the House of Delegates," writes Dr. Green, "are an expression of opinion on the part of this representative body of the medical profession of the United States as to the harmfulness of alcohol, *especially from a social standpoint.* They are to be regarded as a statement of general principles rather than a dogmatic, dictatorial, and infallible rule to be applied to all cases without exception." And he adds: "They will doubtless be so considered by the mapority of the members of the Association."

It appears, then, that the effects of alcohol were considered "from a social standpoint" rather than a strictly scientific one by the members of the Council. But, unfortunately, they failed to make this important point entirely clear in their official statement.

718 Brockman Building.

NASAL INSUFFLATIONS IN THE DIAGNOSIS, PROGNOSIS, AND TREATMENT OF TUBERCULOSIS.

By OWEN PAGET, M.D.,

FREEMANTLE, WEST AUSTRALIA.

MEDICAL OFFICER OF HEALTH OF FREEMANTLE.

In the Medical Record of February 16, 1915, is published a paper of mine entitled "The Prevention, the Treatment, and the Cure of Tuberculosis." The theoretical considerations put forward in that paper were further elaborated in two later papers. The first of these, "Epithelial Function in Relation to Disease," was published in the Medical Record on Sept. 18, 1915, and the second, "Autosecretion in the Treatment of Cancer," was printed in the same periodical on April 22, 1916.

These articles contain the results of theoretical considerations and experimental work. Even to those interested in them, they must seem lacking in practicality, and for this reason I am publishing the following cases to show the everyday application of these ideas in the diagnosis, prognosis, and treatment of tuberculosis.

Although engaged a large part of the time since the commencement of the war in military duties, I have yet found opportunity to carry out investigations on some 200 cases of tuberculosis. A large majority of these cases were hopeless derelicts. My technique was constantly found to be faulty and lacked what must be the essentials of any form of satisfactory treatment, namely, (1) simplicity of application by others; (2) uniformity of action in all cases; (3) obviously beneficial results; (4) absence of harmful effects. It is not of great interest to recite my mistakes, my difficulties, or hostile criticisms. At times these have been such as almost to dishearten me. It is, however, important to state definitely the premises on which my methods of treatment are based, for much criticism engages matters of side issue, and is irrelevant.

My hypothesis is as follows:

1. Epithelial cells are probably a primary and essential factor of our resistance against disease.

2. They so act by internally secreting, when stimulated to do so, what may be called for want of a better term, "antibodies."

3. The epithelial cells of the turbinates and nasal sinuses seem to have a special capacity to form "antibodies" against tuberculosis.

4. If this is the case, one would expect to find that the application as a fine powder of dead tubercle bacilli to the nasal mucous membrane would lead to some modification of tuberculosis, even when established in such organs as the lungs, bones, and glands.

5. Experimentally I have conclusively convinced myself that this is the case, and physicians who have seen some of my cases consider me justified in my beliefs.

6. Through the courtesy and assistance of Messrs. Parke Davis & Co. I have been able to carry out a considerable number of experiments with tablet preparations of dead tubercle bacilli insufflated on to the nasal mucous membrane.

7. I have, however, given up these preparations for certain mechanical and technical reasons, of which perhaps bulk of powder, variation in virulence, and necessity for constant administration were among the most important.

8. I now employ, as in my original experiments, Tuberculin BE, but my present method of application is a vast improvement on that formerly.

9. My reasons for employing Tuberclin BE are the same as those guiding physicians who employ strychnine rather than nux vomica, and quinine rather than cinchona bark. It is neater, can be used in a very small bulk, is more potent, and less variable in its action.

10. But I must enter a most sincere protest against suggestions that this is a treatment by tuberculin. It is a treatment by broken-up tubercle bacilli applied to the mucous membrane of the nose. I know full well the results of tuberculin injected into the system. These haphazard effects and the misfortunes arising from the use of tuberculin hypodermically can, I think, be explained by my theories, but it will take too long to discuss such side issues. I will merely reiterate that in employing Tuberculin BE, I am simply using an emulsion of tubercle bacilli, which, on account of its smallness of bulk, disintegration, and uniformity of strength, is peculiarly useful for my method of treatment. The universal appreciation by physicians of standardized drugs is an analogous sentiment to my own. Both express a desire for accuracy of dosage and reaction. In bringing to the notice of the medical profession the cases to be narrated, I am guided by certain definite reasons: Perhaps the first of these is to draw the attention of physicians to my theories, in which I have such profound belief. Again, I have now carried out so many experiments with their varied results of failures, brilliant success, and partial success, that I am anxious to detail my methods, which I believe now will give uniformity of result. And lastly it is extremely probable that I shall shortly be reengaged in military work, with possibly no chances of carrying on my investigations and treatment of tuberculosis. The publishing of these cases is regarded as only a stepping stone to a series of 50 consecutive cases, watched over a period of, say, 6 months.

But first I will explain the technique of application, for much of the simplicity of which I am indebted to Dr. T. P. Woo, late assistant Resident Medical Officer at the Brompton Hospital, London.

The instrument consists of (1) a glass tube bent at a right angle. One end of the tube, the end, in fact, which is passed into the nose, is drawn out to a fairly fine point. The other end is slightly flanged outward to facilitate emptying the powder into the tube. (2) An ordinary rubber bulb syringe with a nozzle, which will fit into the large end of the glass tube.

The method of procedure is as follows: The dose of tuberculin BE powder, which varies from mgm. 1 20 in severe cases to mgm. 1 10 in the more ordinary cases, is poured into the glass tube at the large opening. The outward turned flange has the good quality of preventing the powder from falling outside the tube. It is essential that the tube be perfectly dry inside, otherwise the powder sticks and cannot be insufflated. The powder when poured into the tube naturally stops at the angle. The tube is next taken in the hand, and with care to prevent the powder falling out, the pointed end is directed into the nose. This end should be carried as high up into the nostril as can be comfortably tolerated by the patient, and a matter of great importance is that the point shall be directed toward the frontal sinus. On no account should the tube be directed backward toward the pharynx. After the tube is in place the patient is directed to hold it firmly in his hand. He must hold it firmly, as otherwise there is a danger at the moment of insufflation

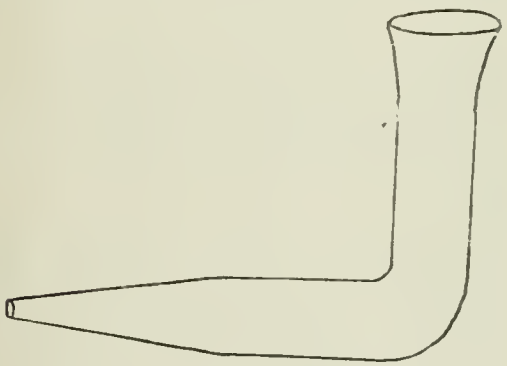

Fig. 1.—Tube for nasal application.

of the point of the tube moving, and perhaps causing pain and discomfort in the patient's nose. The glass tube in place, and firmly held by the patient, the physician inserts the nozzle of the rubber-bulb syringe into the large end of the glass tube and by a quick squeeze blows the powder in the tube high up into the nose.

Patients can generally tell by a transient tingling the point where the powder has reached, and when they indicate the region of the frontal sinuses or over the eyebrows I am in the habit of regarding the insufflation as a successful one.

It seems as if the capacity of the epithelial cells to form antibodies is more highly developed in the upper regions of the nose than in the region of the lower part of the septum, and the inferior turbinates. Pouring the powder into the tube, inserting the tube into the nostril, and squeezing the insufflator, takes perhaps one minute.

The advantage of this method in hospitals is quite marked. It is cheap. Each patient has his own glass tube, and all the medical officer requires is a rubber-bulb syringe, with which he can insufflate numberless patients.

I have now been investigating the relationship be-

tween tuberculosis and the nasal mucous membrane for over four years, and though through faulty technique and many other blunders I have had failures, yet on the other hand, whether using semi-dried sputum, or sputum prepared by ether and alcohol, or dead tubercle bacilli insufflation, or tuberculin BE insufflations, I have obtained results which other medical men, who either attended on or saw the cases, considered might justly be ascribed to the treatment.

Of course, there are differences in the reactions and methods of administration of these different products, but certain phenomena remain constant. For instance, in a severe case of tuberculosis, the period of six weeks constantly recurs as the period of time which it takes definitely to abate the disease.

So far as the temperature is concerned, this can be brought down by crisis or lysis. Crisis entails what may be called shock doses, with a preliminary rise of temperature of two or three degrees, and even more. The phenomena arising under these circumstances are similar to those occurring in the crisis of pneumococcic pneumonia; and I am convinced that the process which I bring about is akin to that which causes an ordinary pneumonia to resolve. And this resolution of an ordinary pneumonia is an occurrence which we accept, though we do not explain. Another point is that all the symptoms improve concurrently, and to me one of the most striking indications of the probability of success is the change in the appearance of the skin. I am unable to describe this change more graphically than to say that it looks less muddy and more healthy.

A criticism which may be made is that the treatment causes a temporary rise of temperature, which must be harmful. I accept the fact that tuberculin injected hypodermically in too large doses produces sometimes very harmful effects, and can actually cause extension of disease. But though I have given large doses of tuberculin as insufflations, and produced severe reactions of temperature, I have not been able to find that they produced extension of disease, and some of these cases have been carefully examined by medical men skilled in tuberculosis work. These severely reacting cases have, after the reaction passed off, done remarkably well. Again, the rise in temperature may be due to two causes: (1) A local reaction in the nose akin to a severe cold; (2) the general reaction.

Now, though I do not advocate a violent reaction, on the other hand the meaning of the temperature does not seem to be always grasped by the tuberculosis physician. To me, though a raised temperature expresses an insufficient capacity to resist disease, yet on the other hand it expresses an endeavor to do so up to the height of such capacity; and if we artificially increase resistance by the production of antibodies then such endeavors may be successful.

The tuberculosis physician feels most secure when both he and his patient are doing nothing. Yet he is often illogical, for does he not prescribe at times autoinoculation treatment by forced exercise, which raises the temperature? Perhaps it is as well to discuss here the character of the temperature curve produced by insufflations, as also its relation to the malady and its effect on the patient. The height and the length of the rise of the temperature produced by insufflations vary, and are, I believe, governed by the size of the dose and the already existing capacity of the patient to resist the disease.

In the case of a large dosage, such as mgm. ½, a sharp rise of two or even more degrees may take place suddenly, and the patient may also react in himself; that is, look flushed and ill. The rise in temperature is followed by a fall, which is that of either crisis or lysis.

Contrary to the experience with tuberculin (hypodermically), I have only found good following these cases, but I do not advise such dosage, and consider that it may certainly be harmful in long-standing cases and in patients over 40.

The fall in temperature is accompanied by a general improvement of all the symptoms. The character of the temperature curve produced by moderate dosage is best studied by examining the accompanying chart of a former case.

When treatment commenced, the temperature level was from 99° to 101°. Treatment consisted of insufflation of mgm. 1/10 on four consecutive days. The day after the last insufflation the temperature rose to 102°, and from then onward steadily fell, so that eight days after the last insufflation it was down to the 98-100° level.

In such a manner can a 101-102° type of temperature be brought down to the 99° level in six weeks, for the dosage is repeated when a lower level is definitely reached.

With the fall in temperature there is a corresponding improvement in physical signs and general condition. Usually, even at the height of the curve, the patient's appetite is good, and he is taking his food freely and willingly.

My method of administration for such cases as cervical adenitis and other office cases is an insufflation every second day. These cases, which have an evening temperature of 98.6° to 99°, seem to react very little, and after about the tenth day settle down to normal. It is from the tenth day on that their general condition starts improving, and especially the appetite.

In tuberculosis, in a general way, the temperature is an expression of the virulence of the malady. The argument that a rise of temperature for a day or two is harmful when it is followed by a lengthy lowering of temperature and general improvement of symptoms is absurd. I regard the rise in temperature as merely an expression of the poverty of natural resistance.

My theories as to the action and reaction of epithelial cells are so entirely my own, and as yet so imperfect, that the discussion of a possible analogy to circumstances which arise when microbic products are injected hypodermically, and hence directly into the circulation, is futile.

As a matter of fact, as said before, the rise in temperature is probably produced by two causes: (1) A local reaction akin to a severe cold; and (2) a general reaction.

The desire to eliminate the local reaction is one of my reasons for adopting tuberculin rather than dead tubercle bacilli. The effect of the rise of temperature on the patient when moderate doses are used seems to be very small. As already stated,

their appetite is usually singularly good at this time, and I have not noticed any extension of physical signs.

What is the value of insufflations in simplifying the practical diagnosis of tuberculosis and in enabling us to prognose the severity of the attack?—The diagnosis of tuberculosis, even with expert tuberculosis physicians and bacteriologists in a well-ordered institution, is not always easy. To the practitioner who sees the early case it causes endless bother, especially in those cases which are expressed by a general malaise with few or very indefinite physical signs. In military work it is as bad, if not worse.

Now, my method of treatment by insufflations removes all these difficulties. The physician can, without alarming his patient, say that he will test the possibility of the disease being present. He gives an insufflation of mgm. 1/12 every second day for six doses. This occupies a period of roughly a fortnight. If at the end of that time, or before, the patient's temperature has definitely reacted, then it is probably a severe case.

On the other hand, if the patient is definitely improved in health, with a fall of temperature to normal, then a diagnosis of tuberculosis in a mild form is made, and the insufflations as a treatment are carried on for another two to four weeks. At the end of this time the patient should, in a mild and early case, be either well or sufficiently nearly so to require only a few days' holiday. A reaction with insufflations of moderate dosage is an expression of a distinctly enfeebled resistance against the disease, and the amount of reaction is probably in direct proportion to the poverty of resisting power, and hence enables a definite prognosis to be given.

If a decided reaction is produced with moderate dosage the patient should be treated on conventional tuberculosis lines, in so far as rest in bed is concerned. He should, in fact, be regarded in the same light as one suffering from enteric fever.

The severity of the attack having been estimated by the temperature and by the reaction, the treatment by insufflations should be continued until practically no reaction is produced. To what extent the nasal sinuses are always or never affected by tuberculosis it is difficult to state. I am inclining more and more to the belief in such affection. Certain it is that cases of tuberculosis have with exceeding frequency postnasal catarrh. The insufflations of tuberculin, though they temporarily produce congestion of the nasal sinuses, and may even cause bleeding, ultimately seem to have a distinctly beneficial effect upon the catarrh.

Congestion of the frontal sinuses often seems to be a precursor of a febrile attack in tuberculosis, and it seems as if an insufflation of tuberculin can not only relieve this but even abort the attack of fever.

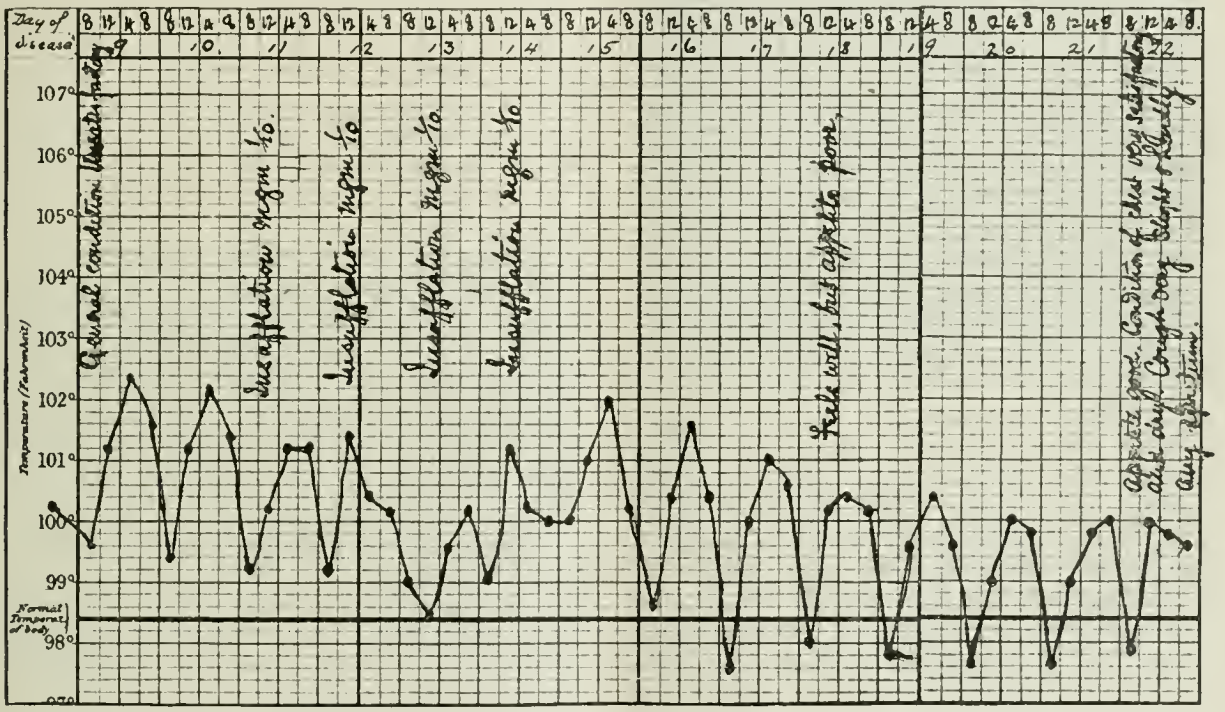

Fig. 2.—Temperature curve in a course of nasal insufflation.

To relieve the congestion in the nose I employ either a normal saline wash or a paraffin inhalant with a nasal spray. As stated in my original paper, the acquirement of a permanent immunity is accomplished by establishing nose breathing. This can be done by means of nasal props or by an operation such as the one described by me in the *Medical Review of Reviews* for 1915. I feel more justified than ever in stating this, but if a case relapse through carelessness in wearing the props a fresh immunity can easily be established by means of insufflations.

The following cases are representative of medical and surgical tuberculosis:

Case I.—S. M., age 5½. Mother had tuberculosis. Stocky built, well nourished boy, with depressed bridge to his nose. Suffers from adenoids and decayed teeth. Just below the angle of each jaw there is a large lump due to enlarged cervical glands. The swelling is larger on the left side than on the right, possibly the result of a crack of the skin at the point where the lobe of

the pinna joins the cheek. These enlarged glands are said to be of two years' duration. The treatment, which consisted of insufflations of 1/10 mgm. tuberculin BE every second day in alternate nostrils was carried on for six weeks. No nasal props were inserted. At the end of six weeks the glands had been reduced 70 per cent. and the general condition was excellent.

In this case the treatment should, of course, have been, first of all, the removal of the adenoids and the septic teeth, and afterward the insufflations. But I was anxious to ascertain whether it was possible to produce beneficial effects under adverse circumstances and to convince myself that the result was due to the insufflations and not to other treatment.

Case II.—M. S., male, age 28, lawyer; disease. cervical adenitis. Nine years ago had an attack of pneumonia, probably tuberculous. Shortly after this he was struck by a cricket ball on the neck, and after that there was extensive enlargement of the cervical glands, especially on the left side. I operated at that time and removed the whole of the glands on the left side from mastoid to clavicle. As isolated glands kept cropping up on the right side, hypodermic injections of tuberculin were given. The benefit received from these injections was not great, for in the end I had to send my patient up on to a cattle station (the equivalent of an American ranch) and advise him to live out of doors and eat as much meat as possible. He remained there one year with benefit and then returned to his professional work. Since then he has had varied experiences. The glands enlarge at times of stress, and again quiet down with rest and open-air life. Last October, at a time when he was working very hard professionally, he consulted another medical man during my absence, and had operations on isolated glands, and in addition treatment by the *x*-rays. There was not much benefit, and there were some ugly scars.

Present condition: The patient came to me about the end of April, asking to have all the glands on the right side removed, as I had done on the left side some years previously. He was very hard pressed with work and wished to get back as quickly as possible. The glands on the right side of the neck from mastoid to clavicle are enlarged to such an extent as to form unsightly bosses. They have never been so bad before. In addition his appetite is poor, and he has a chronic morning cough and morning spit. Evening temperature 99.2°. His nasal respiration is imperfect. I advised against operation and in favor of nasal insufflations. Patient continued at his work during the whole time of treatment. April 30 nasal props were inserted and nasal respiration established. The props were used intermittently during treatment, which lasted from May 2 to June 28, and consisted of insufflations of mgm. 1/12 of tuberculin BE into alternate nostrils three times a week.

At the latter date the patient's condition was as follows: There were only three slightly enlarged glands to be felt. Temperature normal. Cough practically disappeared. Chest quite dry. General vitality much improved. Gain in weight of 5 lbs. Nasal catarrh also improved. Appetite excellent.

The treatment saved the patient an operation for which he was distinctly unsuited on account of his general condition. The result has far excelled that obtained by former methods.

Case III.—Mrs. D., age 29; housework; three children, aged 6, 4 and 2 years respectively. Ten years ago she had a bad cold on the chest. Her medical adviser told her that the lung was slightly affected. Before the confinement with her second child, four years ago, she had a cough. Before the confinement with her third child, two years ago, she had a cough, with a touch of pleurisy. Just before Christmas she was laid up in bed with bronchopneumonia. When first seen, on May 10, she had been ill for ten days. Purulent expectoration. Appetite very poor. Dullness and crepitations over both apices back and front, extending well below the clavicles. Slight pleuritic effusion left base. When first seen she refused to go to bed, but was compelled to do so on May 15.

May 16, 17, 18, 19 insufflations of mgm. 1/12 of tuberculin BE. Subsequent highest temperature recorded 99.2°. From May 29 to June 13 an insufflation of mgm. 1/12 every second day. June 13 general condition very satisfactory. No cough. No sputum. Appetite good. Temperature normal. Still a little dullness and a few crepitations at left apex. Advised to take fourteen days' holiday in the country. June 29: Has returned from country with a gain of 2 lbs. in weight and feeling splendid. Left apex better. Right apex quite clear.

From June 29 to July 10 insufflations of mgm. 1/10 every second day in alternate nostrils. Improvement is continued.

Although the area of the lungs affected was very considerable, the preliminary insufflations enabled me to give a good prognosis. This was confirmed by her past history and the result. In other words, she has a considerable natural resistance, which is in correspondence with the character of her nose and nose breathing.

Case IV.—P. N., male, age 46; general agent. He has been an energetic, wiry man engaged in many pursuits. I operated on one of his children four years ago for tuberculous glands in the neck. Patient six months ago began to suffer from general malaise and at last did not care what happened. Is taking brandy to pull himself together. Has had a bad cough with purulent sputum for last month. Also wheezing like asthma. Pains over apices of both lungs. He looks thin and tired; is 14 lbs. below his normal weight. There is considerable dullness over both apices. Suffers from morning cough with purulent sputum. Loss of appetite, debility and malaise.

May 19, props inserted. They were worn intermittently, but fairly well, during treatment. Patient was not laid up and followed his usual occupations. On May 21, 24, 26, 28 and 30 insufflations of mgm. 1/12 were given. The note on May 30 reads: Condition satisfactory. Vomiting and sinking at stomach better. No need for so much brandy. Sleeps better. Appetite better. Cough less and more mucous. Treatment by insufflations three times a week was continued through June and on July 10 the general condition was thoroughly satisfactory. Patient had regained his old "vim," was forceful rather than erratically energetic. Cough practically gone. Appetite good. A very slight gain in weight of 1 lb. No need for brandy. Nasal catarrh much better. No longer morning cough. Sleeps well. There was a little setback during treatment in the shape of a bad cold, when the patient did not feel so well for a few days. He volunteered the statement that formerly he always had to go to bed, but that this time he felt still able to keep about.

In conclusion I will quote a paragraph from Professor Adami's "Pathology," for it explains succinctly the *raison d'être* of my method of treatment. Professor Adami, in discussing tissue susceptibility, comes to the following important conclusion, and writes: "In infection, the body is never involved as a whole. Coincidently with the growth of the specific germs in individual organs, there tends to be a reaction to and destruction of the same in other parts."

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London, W., England.

Hypophysis Lesion in Dercum's Disease. — Exposel describes a case of adiposis dolorosa with asthenia and neurasthenia in which with proved lesion of the hypophysis there were also symptoms pointing to this organ. The Fröhlich syndrome was in nowise suggested. The author assumes that a lesion of the posterior lobe so modified the combustion that a deposit of fat resulted. The case has been made the subject of a graduation thesis by Dr. Monte Serra.—*Brazil-Médico.*

REPORT OF TWO CASES OF MULTIPLE KELOIDS.*

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In the broad chapter of skin diseases due to the hypertrophy of the cutaneous tissue there is one that by its strangeness and clinical interest is worthy of attentive study. I am referring to the multiple keloid.

The first case is one in which the new growths appeared after a generalized fununculous acne. The second case was different in its origin.

Case I.—M. Crespo, white, male, 22 years of age; occupation, milkman. His father complained of vitilige and died at an advanced age; he has three brothers in apparently perfect health.

During his early life his health was good with only a suspicion of helminthiasis. At 18 he had an attack of sebaceous acne on the face, signs of the disease being still evident. His present trouble dates from 1910. It began with a generalized furunculosis of the back, arms and breast, accompanied with great itching and presenting the appearance of real pustules, persisted for a considerable time and on disappearing left rounded scars, punctuate in some places, elongated in others, of a whitish color and slightly preeminent. These scars continued growing slowly, changing in color, acquiring a reddish aspect till they took the present appearance.

Examination of the skin shows the following condi

Fig. 1.—Case 1, back view.

tion: In the iliac-to-rib region, on the left side, there are irregular patches of a brownish color. On the back there are old scars, rounded and elongated, that contrast strongly with the normal color of the skin. The hair is scanty. The digestive, respiratory, genito-urinary and circulatory tracts are normal. Nervous system shows normal sensibility and reflexes. The patient does not drink or smoke.

Case II.—R. Hernandez, male, negro, 31 years of age. In his infancy he had measles and chicken pox. At 21

Fig. 2.—Case 1, enlarged view of back of shoulder region.

he fought in the War of Independence and while in the army had an attack of parotiditis and one of pneumonia. Since then he has not been ill.

Four years ago he had a little furuncle in the suprahyoid region, accompanied by others that took a sycosis aspect, with a formation of a cyst that suppurated and was operated upon in the Hospital Mercedes. After this operation the other furuncles followed an identical course. They were treated by an electric-cauterization which was followed by the formation of fibrous scars. Two years ago he had a seborrheic acne of the sternal region and from each scar a keloid was developed. There are similar lesions to the inner side of the right mammary gland and clavicle, and another of rounded form and of corrugated surface just above the umbilicus.

Physical examination shows a well developed man, 137 pounds in weight. In the suprahyoid region the hair emerges from the borders of the connective tissue of the new growth. Digestive, circulatory, respiratory, urogenital, and nervous systems present nothing abnormal.

We will now note the features of the lesions peculiar to each case.

Case I.—The special features of the lesion in this case are the following:

1. Its symmetrical aspect. This can be observed especially in the third upper of the external and lateral side of the arm.

2. The confluence of the keloids. This can be seen in the sternal region, where each little new growth corresponds to a furuncle scar, which tends to extend in the neighboring tissue, forming a uniform mass; in early stages can be seen the apex of the furuncles, but as the process continues fibrous tissue is developed, forming a preeminence that varies in height from 2 to 20 millimeters.

*Read before the Sociedad de Estudios Clinicos de la Habana, February, 1916.

3. Its reddish color that contrasts with the color of the surrounding skin.
4. Its presence in an individual of the white race.
5. Its multiplicity, 374 in number.
6. Its origin in scars of generalized acne.

CASE II.—The following are the characteristic appearances in this case:

FIG. 3.—Case 1, front view.

1. The size of the keloids. The suprahyoid lesion is of considerable size, extending from lobule to lobule.
2. The small number of the growths.
3. The hardness of the lesion that gives it a woody feel.
4. In this case the lesions appear in the usual locations.
5. The conservation of some of the hair follicles of the chin imprisoned by the connective tissue of the tumors.
6. The origin of the lesion.

Wilson,[1] Schwimmer,[2] De Amicis,[3] W. G. Smith,[4] and Vidal[5] have reported similar cases of multiple keloid.

The etiology of this condition is unknown. Some authors give a tuberculous origin, for the following reasons: (1) The coexistence in the same subject of tuberculous lesions and keloid growths. (2) Its frequency in the black race, where tuberculosis is so common.

In neither of my cases was I able to find tuberculous signs. In the second case the patient had suffered from pneumonia, but disease had not left any signs denoting chronic condition in the lungs. The von Pirquet cutireaction was negative in both cases.

Histopathology.—The growth commences in the corium by dense bundles of fibrous connective tissue, rich in blood vessels. The blood vessels in the neighborhood of the keloid are affected; this explains why the growth recurs after its removal or excision; they are surrounded by spindle-shaped nucleated cells that are concerned in the keloid formation.

Formerly only two varieties of keloid were recognized: (1) False keloid, scar keloid, secondary keloid, and (2) primary keloid, ideopathic keloid, spontaneous keloid or true keloid. According to Unna,[6] however, this second form of keloid does not exist. The reason why the sternal region is the most frequent place for the so-called spontaneous keloid is because that region is the usual site of the dermatitis seborrheica, which precedes the development of fibrous tissue (Stelwagon[7]).

According to the histological structure Kaposi[8] divides keloids in three classes: (1) Spontaneous keloid. (2) False keloid or keloid developing on a scar, and (3) Hypertrophic cicatrix.

In the first class the epidermis and the papillary layer of the corium are not affected; in the hypertrophic scar the papillæ are destroyed by the growth or by traumatism; and in the false keloid both lesions are commonly associated.

Notwithstanding this classification based on the histopathology of keloid recent studies show us that there is not sufficient differentiation in the histological elements of the tumor to warrant such a division (Heidingsfeld[9]).

The modern theory of the etiology of keloids put forward by Bruntz and Spillmann[10] is that the passage of the leucocytes irritates the connective tissue elements, with proliferation and fibrous tissue formation as its consequence.

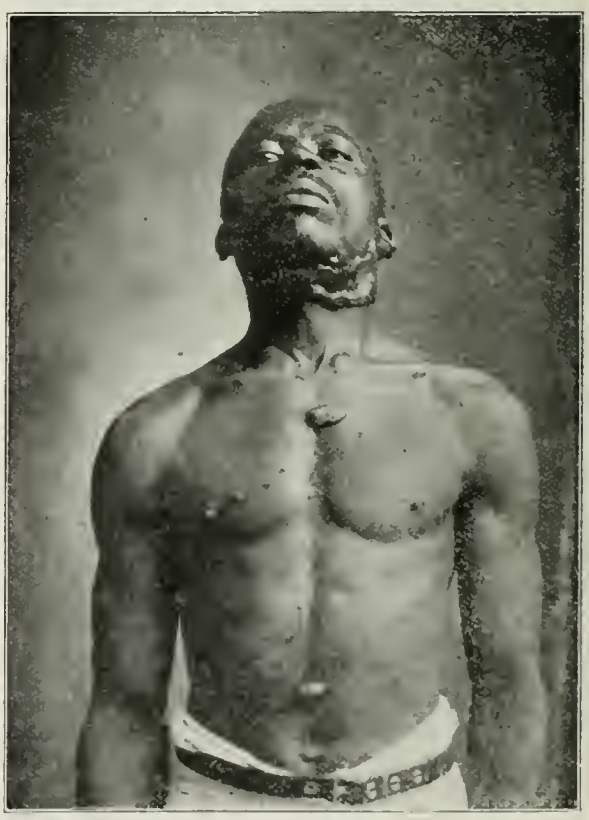

FIG. 4.—Case II.

Here in Cuba I have seen many cases of keloids in individuals of the black race, so I do not consider this malady so rare among us as many think.

In the times of negro slavery the punishments

of the slaves were terrible. Whipping constituted one of the principal penalties, and in the scars made by the lashes keloid often developed (Henri Dumont[11] and Manuel J. Castro[12]). The same occurred in the cicatrices of smallpox pustules (Galvez[13]).

Differential Diagnosis.—(1) From fibroma or molluscum fibrosum, by the normal appearance of the skin; by the pedicle of the molluscum, and its free movability.

(2) From framboesia, pian or bouba, by the general disturbances of this disease, the eruption of papules, and its transformation in papillomatous nodules that develop in a cauliflower form.

(3) From circumscribed scleroderma or morphea, by the stiffness, rigidity, and induration of the skin, nervous disturbances, etc.

(4) From the commencement of a malignant new growth, by the progress of the case, although it is to be remembered that a malignant neoplasm can originate in a keloid.

Prognosis.—It is a very rebellious disease. In some cases after a longer or shorter period keloid tends to diminish and sometimes disappear spontaneously (Hutchinson[14]). In others no change is observed, except in old keloids in which constant irritation may result in a malignant change.

Treatment.—Local: The continuous application of salicylic, ichthiolated, or mercurial ointments can be recommended in some cases. A solution of creosote, 5 grams, in olive oil, 25 grams, injected into the base of the tumor, sometimes gives good results (Marie[15]).

Thiosinamine in 10 per cent. solution by injection locally has been recommended by Tousey,[16] Crocker and Pernet[17] as useful. Others have failed with the same treatment. The use of the remedy in my cases has not been successful.

Linear and punctuate scarifications followed by the application of an antiseptic dressing of wet or dry boric acid (Leloir and Vidal[18]) has given me better results.

The surgical method of excision generally has no effect, and recurrences usually take place.

Electrolysis has the advantage of diminishing the pain and size of the tumor; the same is true of the *x*-rays. With an electric current of 5 milliamperes the needle is introduced from the outside to the center of the keloid; and the operation is repeated, the punctures being made close together. This procedure may be successful when the growth is small.

The *x*-ray treatment combined with excision ultimately has given good results in keloid developed in scars following war wounds (Vautrin et Ettienne[19]).

The Finsen phototherapy is supposed to be at least as efficacious as the *x*-ray, but the light has less power of penetration. Vautrin recommends excision followed by radium or *x*-ray treatment.

REFERENCES.

1. Wilson: Diseases of the Skin, 1867. (39 growths.)
2. Schwimmer: Die multiple Keloid, Archv, 1880. (105 growths.)
3. De Amicis: Chéloide Spontanée Multiple, Trans. Internat. Dermatolog. Congr., Paris, 1889.
4. W. G. Smith: *British Dermatolog. Journal*, 1889.
5. Vidal: Trans. Internat. Dermatolog. Congrs., Paris, 1889.
6. Unna: Histopathology.
7. Stelwagon: Diseases of the Skin, 1914.
8. Kaposi: Pathologie und Therapie der Hautkrankheiten, Wien, 1880.
9. Heidingsfeld: Keloid, a Comparative Histologic Study. *Journ. Am. Med. Assoc.*, 1909.
10. Bruntz and Spillmann: Le leucocyte eliminateur en physiologie et en pathologie.
11. Henri Dumont: Antropologia y Patologia Comparada de los Negros Esclavos. *Revista Bimestre Cubana*, Vol. XI., 1916.
12. M. J. Castro: *Croniea Medico-Quirúrgica*, Vol. XVI., Año de 1890.
13. Galvez: *Revista Médica*, 1857.
14. Hutchinson: *Med. Times and Gazette*, 1885.
15. Marie: Bull. et Mem. Soc. Méd. des Hôp., 1893.
16. Tousey: Thiosinamine.—A treatment of inoperable tumors and cicatricial contractures, *N. Y. Med. Journal*, 1896.
17. Crocker and Pernet: *British Journal Derm.*, 1899.
18. Leloir et Vidal: *Annales Derm.*, Paris, Mars, 1890.
19. Vautrin et Etienne: *Presse Médicale*, Mars 8, 1917.

5*a*, 105, Vedado.

THE MASTIC REACTION ON THE CEREBROSPINAL FLUID.

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Recent investigations, particularly those of Novy, in the chemistry of colloidal substances have shown that it is probable that the physical properties and condition of these substances have a profound effect on their biological activities, and also that these conditions are very labile. Both of these factors should render their study interesting and important. Although colloidal substances have been used to some extent in therapy and chemical investigations of various natures have been made, the problems associated with their biological relations remain unsolved. But little use has been made of the properties of colloids in testing organic fluids. Lange first suggested the use of a solution of colloidal gold as a reagent for testing cerebrospinal fluid and many interesting and instructive results have been obtained from its use. It has been demonstrated that while not a substitute for the Wassermann reaction, it gives positive results with spinal fluids from cases of syphilis of the central nervous system and that some peculiarities of the reaction correspond fairly closely with the clinical aspects of the cases tested, *i.e.* the "curves" are different. Furthermore, it is determined that the curve is different and also fairly characteristic in certain non-syphilitic diseases of the central nervous system. This evidently affords a valuable means of positive diagnosis in doubtful cases. The difficulty in the preparation of the reagent is the chief clinical objection to the test.

In 1915, Emmanuel suggested the use of a mastic emulsion as a substitute for the gold colloid, the general principles of the test having been given by H. Sachs. This test has not attracted much attention (recent German literature has not been available). However, Cutting and later Lowrey have reported its use in asylum cases in this country. Emmanuel found that the reaction was positive in paresis, faintly positive in apoplexy, traumatic neurosis, and in one case of dementia precox, but negative in other cases of dementia precox and in functional cases.

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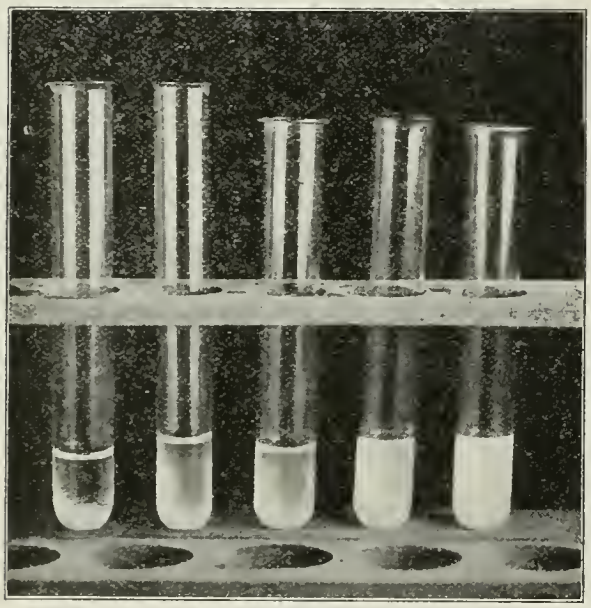
The technique suggested and used by Emmanuel is as follows: A stock solution of ten grams of gum mastic in 100 c.c. of absolute alcohol is made. One cubic centimeter of this solution is added to 9 c.c. of absolute alcohol and this "insufflated" with 40 c.c. of distilled water. This gives an opalescent fluid. A 1.25 per cent. solution of sodium chloride is also prepared, which is put in five test tubes, one and one-half c.c. in the first and 1 c.c. in each of the remaining. To the first tube $\frac{1}{2}$ c.c. of cerebrospinal fluid is added. The content of the first tube is then thoroughly mixed and 1 c.c. of it is transferred to the second. The content of the second tube is likewise mixed and 1 c.c. transferred to the third and so on. None of the mixture of the fourth tube is put into the fifth, which acts as control, the extra c.c. from the fourth tube being thrown out. To each of the tubes there is then added 1 c.c. of the mastic emulsion and the tube contents are thoroughly mixed. The tubes are allowed to stand for from twelve to twenty-four hours. In all cases



Showing degrees of precipitation in Mastic Test. The tube on the left is a No. 4, complete precipitation. The tube on the right is a negative (control).

by this method the fifth or control tube is precipitated (a white precipitate with a clear supernatant fluid). In negative fluids the first four tubes are unchanged, the colloid remaining in suspension, but in positive cases some or all of the tubes are precipitated. Lowrey's results, using the same technique, were practically identical with those of Emmanuel. It would seem from these results that normal spinal fluids contain something, even though in high dilution, that prevents the precipitation of the colloid and this is apparently the theory on which the test is based.

Cutting found that the addition of a small amount of potassium carbonate to the salt solution prevented the precipitation of the mastic in the control tube, although the precipitation occurred in the tubes to which the spinal fluid from positive cases had been added, but not when normal fluid was tested. It may be inferred from this that the reason the mastic was not precipitated in the first four tubes in negative cases tested by the Emmanuel technique was because of the normal alkalinity of the spinal fluid that was added and that the precipitation of the mastic in positive cases was not due to the removal of the inhibiting substance, but was due to some additional substance which was present, since even though sufficient alkali is added to keep the control from precipitating, the positive fluid still causes precipitation. The results obtained by Cutting in asylum cases were sufficiently definite to suggest that the test might be useful as a substitute for the gold-sol. Being cheaper and much easier to prepare the reagent, the test is within the reach of any well equipped physician.

In order to be as useful as the gold-sol reaction, it is necessary that the precipitation occur in varying degrees in the different tubes in the series, as it does in the gold test, and that curves plotted from these tubes correspond to clinical syndromes and to the other biological tests. Other workers with this test have been content to report their findings as either positive or negative.

The technique that we have followed is that of Cutting, which is the same as Emmanuel's, with the important exception that to every 99 c.c. of the salt solution there is added 1 c.c. of a 0.5 per cent. solution of potassium carbonate. Made in this way the mastic is not precipitated in the control tube even though it is allowed to stand for days. The mastic is not precipitated in any of the tubes to which the spinal fluid is added if the test is entirely negative. With pathological fluids varying degrees of precipitation occur and in order to define these briefly we have divided them into four (much as the change of color in the gold-sol is divided into four or five degrees). One, denotes a milky fluid, loss of opalescence with a very slight precipitate; two, a distinct precipitate but a milky supernatant fluid; three, marked precipitate with slight clouding of the fluid; four, complete precipitate, clear fluid (see illustration). These changes are sufficiently definite to be easily recognized and a curve can be plotted from the results. We have usually employed eight or more tubes to obtain the full length of the curve. The mastic emulsion should be used freshly made, otherwise it turns a little milky and the change from control to a number one tube is difficult to determine. The spinal fluid may be allowed to stand for 24 or even 36 hours before being tested and will give the same curve as if tested while fresh (we have tested the same fluid on successive days and found the same type of curve, though after 36 hours the maximum change is not so great, *i.e.* the curve is flattened). Boiling the fluid before testing lessens the reaction, although it does not render a strongly positive fluid negative. Keeping the fluid at a temperature of 57° C. for one hour before testing does not change the result, although the precipitation in positive tubes takes place more rapidly than when the fluid is not heated. The presence of fresh blood in the fluid changes the type of the curve quite decidedly. We tested the clear spinal fluid and also some fluid obtained at the same puncture in which there was a slight admixture of blood caused by inserting the needle a second time with the trocar out. The specimen containing the blood gave a curve reading 12333210, whereas the clear specimen gave 44444210. In another case the same experiment gave: with the blood 24443000, without the blood 44321000.

The results of a series of tests are summarized in tabular form together with the diagnosis and the results of other biological and chemical tests on the spinal fluid.

It will be noticed that the reaction is positive, *i.e.* there is precipitation in some of the tubes, in all of the cases where it would be expected as a result either of clinical diagnosis or of the other findings. Both the gold-sol reaction and the mastic reaction are positive in multiple sclerosis. That the gold-sol reaction is positive in these cases has been pointed out by de Crinis and Frank. In one of the cases of multiple sclerosis in our table the diagnosis was confirmed by autopsy. The epileptic with positive gold-sol and mastic reactions probably had some organic disease of the brain, although its nature was not determined.

In case No. 29 in the table there was a history of syphilitic infection and intensive treatment, but at the time of our examination all findings were negative. The patient with multiple arthritis (No. 28) had an Argyl-Robertson pupil, but no other evidence of syphilis of the nervous system. She had not had antisyphilitic treatment and did not know of her infection. As the Wassermann reaction on the spinal fluid, the Nonne-Apelt reaction, the carbolic acid reaction of Pandi, and the cell count were all negative, it might be argued that the gold-sol and mastic reactions were the most sensitive of all tests for the involvement of the central nervous system and in view of the presence of pupillary disturbances this statement would seem quite likely.

Our results would seem to justify the conclusion that the mastic reaction is a valuable addition to the tests on the spinal fluid that are in general use and that information obtained from it is the same as that obtained from the Lange test.

Summarized Data.*

No.	Clinical Diagnosis	Remarks	Blood Wassermann	Cerebro-spinal Fluid Wassermann	Cell Count	Protein Reaction	Mastic Reaction	Gold-sol. Reaction
1	General paralysis		××××	××××	48	×	444321000	5555431000
1a	General paralysis	Same case as No. 1 taken four weeks later	××××	××××	96	×	443321000	3455421000
2	General paralysis	Juvenile (congenital lues)	××××	××××	46	×	44442100	5555531000
2a	General paralysis	Same case as No. 2 four weeks later	××××	××××	38	×	444442100	5555532000
3	General paralysis		××××	××××	54	×	344320000	Not made
4	General paralysis		××××	××××	190	×	444443100	555552000
5	General paralysis		××××	××××	178	×	344421000	Not made
6	General paralysis		××××	××××	88	×	334443100	455553100
7	General paralysis		××××	××××	69	×	44443200	Not made
8	Tabes dorsalis	Early stage	××××	××××	74	×	123421000	1124100000
9	Tabes dorsalis	Late stage	–	××××	20	×	144310000	1234310000
10	Tabes dorsalis (?)		–	××	13	×	003310000	0111221000
11	Cerebro-spinal lues		××××	×××	42	×	03443210	Not made
12	Cerebro-spinal lues		××××	××××	2	×	02443220	Not made
13	Cerebro-spinal lues		××××	××××	30	×	013110000	Not made
14	Cerebro-spinal lues	Paresis (?)	××××	×××	29	×	014443200	Not made
15	Cerebro-spinal syph.?	Alcoholic multiple neuritis and Korsakoff Syndrome	××	–	10	×	001244410	Not made
16	Cerebro-spinal syph.?	Lues II	××××	××	115	×	01122110	Not made
17	Cerebro-spinal syph.?	Lues III	××××	××××	?	×	01332000	Not made
18	Cerebro-spinal syph.?	Lues II and III	××××	×××	1	×	01210000	Not made
19	Cerebro-spinal syph.?	Lues II	××××	××××	48	×	002210000	Not made
20	Lues II	No clinical signs of involvement of the nervous system	××××	××	4	–	122000000	Not made
21	Lues II	No clinical signs of involvement of the nervous system	××××	××××	0	–	221000000	Not made
22	Lues I	No clinical signs of involvement of the nervous system	××××	×	2	–	111000000	Not made
23	Lues I	No clinical signs of involvement of the nervous system	××	–	2	×	121000000	Not made
24	Lues III	No clinical signs of involvement of the nervous system	××××	–	3	–	All tubes neg.	Not made
25	Lues II	No clinical signs of involvement of the nervous system	××××	–	7	–	011000000	Not made
26	Lues I	No clinical signs of involvement of the nervous system	××	–	7	–	All tubes neg.	Not made
27	Lues latens	No clinical signs of involvement of the nervous system	××××	–	3	–	All tubes neg.	Not made
28	Luetic arthritis	A-R pupils	××××	–	2	–	023100000	0122100000
29	Headache	History of syphilis and treatment for it	–	–	5	–	All tubes neg.	Not made
30	Headache	History of syphilis and treatment for it. Morphinism and syphilophobia. Husband has syphilis	–	×	2	–	011000000	0012100000
31	Multiple sclerosis		–	–	35	–	011100000	0011000000
32	Multiple sclerosis		–	–	2	–	0234320	0133210000
33	Multiple sclerosis	Diagnosis confirmed at autopsy	–	–	3	–	023311000	0012110000
34	Spastic paraplegia	Probably spinal type of multiple sclerosis	–	–	2	–	012100000	001100000
35	Cerebral arterio-sclerosis	A-R pupils	–	–	3	–	122210000	
36	Myelitis	Paraplegia	–	–	2	–	All tubes neg.	All tubes neg.
37	Acute anterior poliomyelitis	Obtained same result four days later	–	–	500	×	00233120	0024453100
38	Epilepsy	Brain lesion?	–	–	2	–	010000000	0012100000
39	Epilepsy		–	–	3	–	All tubes neg.	All tubes neg.
40	Epilepsy		–	–	4	–	All tubes neg.	All tubes neg.
41	Chorea		–	–	14	–	All tubes neg.	All tubes neg.
42	Traumatic neurosis		–	–	2	–	All tubes neg.	All tubes neg.
43	Depressive psychosis		–	–	1	–	All tubes neg.	All tubes neg.
43a	Depressive psychosis	Same case two weeks later	–	–	7	–	All tubes neg.	Not made
44	Depressive psychosis		–	–	2	–	All tubes neg.	Not made
45	Depressive psychosis		–	–	2	–	All tubes neg.	Not made

*The clinical diagnoses were made by Dr. Carl D. Camp without prior knowledge of the biological reactions. For the fluid in Cases Nos. 11 to 27, inclusive, I am indebted to the Clinic for Dermatology and Syphilology of the University Hospital (Dr. Udo Wile) where the clinical diagnoses in these cases were made also. The Wassermann tests and the gold-sol reactions on the spinal fluid were made by Dr. S. Ide in the laboratory of the State Psychopathic Hospital.

BIBLIOGRAPHY.

Cutting: A New Mastic Test for the Spinal Fluid. *Journ. of the American Med. Assoc.*, June 16, 1917, p. 1810.

de Crinis and Frank: *Münch. med. Wochenschr*, 1914, No. 22, p. 1216.

Emmanuel: Eine neue Reaktion zur Untersuchung des Liquor Cerebrospinalis. *Berl. klin. Wochenschr.*, July 26, 1915, p. 792.

Lowery, L. G.: The Mastic and Potassium Permanganate Tests Applied to the Cerebrospinal Fluid of the Insane. *Boston Med. and Surg. Jour.*, July 26, 1917.

THE WASSERMANN REACTION AND PULMONARY TUBERCULOSIS.*

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Two years ago one of our patients complained one morning that he had an uncomfortable feeling in his throat every time he ate or drank. Examination of his pharynx revealed three or four ulcerations about the size of an almond having a punched out appearance and covered with a nasty dirty gray membrane. There was also rather an offensive odor from them. Questioning revealed the fact that the patient, while in the Navy a few years before, had identically the same lesions which he said cleared up under muscular injections of some kind. A specimen of blood was obtained for a Wassermann reaction and this was reported as positive. An injection of neo-salvarsan was then given but before any results could be noticed from it, the patient left the sanatorium.

It then occurred to us that it would be a wise procedure to have a Wassermann test upon all of our new patients and this we have done in practically every case admitted during the past two years.

We thought in the beginning that this would bring to light a fairly good percentage of patients harboring a syphilitic infection, innocently or otherwise, but as time went on we discovered surprisingly few positive cases of lues and our figures are at decided variance with some of the other American observers. In the positive cases we found the histories absolutely unreliable, but by close questioning following the receipt of the laboratory report we have been able in all cases but two to get the patient to acknowledge his infection or else elicit a history pointing to a congenital type of disease.

From the very inception of this work we have never accepted as final evidence of syphilis one positive test but have always sent another specimen of blood for examination the following week and in many of the cases at odd intervals while the patient was under our care. In this way we fully believe that we have secured absolute proof, so far as the accuracy of the test can furnish it, of the presence of any syphilitic infection, but a case not showing a persistently positive reaction has been set down as non-luetic. The insistence upon more than one positive test before putting the stigma of syphilis on a patient may be criticized by some but I feel strongly that this is only fair to the individual.

Even though many serologists claim that tuberculosis will give a positive Wassermann reaction, our experience has been that it will not give these results persistently even when no antiluetic treatment has been instituted. Nor does it seem plausible that all our cases, who the first time showed a positive test, with four or five later ones negative, underwent a spontaneous cure of a spirochete infection. No less an authority than E. L. Keyes, Jr.,[1] cites cases of positive reaction in tuberculous individuals and gives the impression that he believes that their infection with the tubercle bacillus was the factor in giving this result. With all respect for so eminent an authority, I must disagree with him for our observations bear out the statement that not one single case of a straight infection from tuberculosis gives a persistently positive Wassermann. Our experience has been limited to about 330 cases and while the number is small, it is large enough to allow some deductions.

I will not go into detail as to the various steps of the test but will simply state that in all cases a cholesterinized antigen was employed and that in a large percentage an acetone insoluble antigen and plain alcoholic extract of guinea pig's heart were used as controls. Thus we believe that once again we guarded against every source of error in arriving at our ultimate results. It has been argued[2] that cholesterinized antigens are more sensitive and less specific than the antigen, not so fortified, and this is the reason given by some for obtaining a high percentage of positive reactions in definitely known non-syphilitic sera. Snow and Cooper[3] give as an explanation for positive tests that "as cholesterin originates as a cleavage product from destroyed tissue and, as in tuberculosis there is always going on destruction and necrosis, the body will react to it as to any other antigen by the production of antibodies and that these antibodies will, when the Wassermann test is applied, find the complement." However attractive the above hypothesis may be, our experience has shown us that within one week's time a three plus may be changed to a negative and remain so and within that same period of time no very marked change could possibly occur in the pulmonary lesion. It is my belief that even with a cholesterinized antigen a positive Wassermann will not persist unless there is an accompanying lues as well.

In the beginning of our work we were rather struck by the fact that practically all our laryngeal cases gave a positive result on the first test but on subsequent tests were all negative. For the past year we have not had a single throat case reported as positive although the same antigen and technic have been employed throughout. Our early results seem to parallel those of many other observers. In comparing our results with those of some other American observers we find that we have had a smaller percentage of positive tests that were really syphilitic as well as a lessened number of positive reactions that were given with non-syphilitic sera.

J. A. Lyons[4] reports 29, or 6.2 per cent. positive out of 471 patients and adds that the results with twelve, or 3 per cent., other sera were doubtful or unsatisfactory; Jones[5] of Seattle, reports 73, or 29

*Read before National Association for the Study and Prevention of Tuberculosis at Cincinnati, Ohio, May 10, 1917.

per cent., positive out of 251 patients coming to the public clinics. Snow and Cooper[3] report 20 per cent. of 290 definitely syphilitic and that 31 per cent. of their non-luetic cases gave a positive result, while Petroff[6] results show 82 cases, or 21.8 per cent. out of 376 gave a positive reaction when a cholesterinized antigen was used while only 9, or 2.4 per cent. gave the same result when an antigen minus the cholesterin was used. Our own results show that of 328 patients whose sera were tested 302, 92 per cent., gave a negative result on the first examination; 16, 5 per cent., that were one or two plus the first examination gave a negative result the following week and were always negative thereafter. In three, 1 per cent., sera, that were three plus the first examination were reported as negative two weeks later and remained so afterward while seven, 2 per cent., showed a three or four plus Wassermann persistently positive. In five of these seven cases we were able to elicit a specific history, while with the other two no amount of questioning could bring the slightest information that might lead to a clinical diagnosis.

Never have I seen a serum that was reported as four plus change without energetic antisyphilitic treatment being instituted and believe this degree of fixation to be very rare in straight cases of tuberculous disease.

In conclusion then, we feel that[1] only a persistently positive Wassermann reaction should make one certain of a diagnosis of syphilis in a patient suffering from pulmonary tuberculosis and[2] that a cholesterinized antigen, in our series, has made practically little difference in the ultimate results.

This work was carried on at Gaylord Farm Sanatorium, at Wallingford, Connecticut, and I take this opportunity of thanking Doctor David R. Lyman for his cooperation and also Mr. Ivy Hiscock, of the Connecticut State Board of Health, for the performance of these tests.

REFERENCES.

1. E. L. Keyes, Jr.: Some Clinical Features of the Wassermann Reaction. *Journal of the American Medical Association*, March 6, 1915.

2. C. W. McClure and E. S. Lott: Results with Cholesterinized Antigens in Non-syphilitic Sera. *American Journal of the Medical Sciences*, Vol. CLI, page 712, May, 1916.

3. Corydon C. Snow and Alexander T. Cooper: The Wassermann Reaction in Its Relation to Tuberculosis. *American Journal of the Medical Sciences*, Vol. CLII, page 185, August, 1916.

4. Lyons, James A.: Contact Points Between Tuberculosis and syphilis. *Boston Medical and Surgical Journal*, Vol. CLXXV, page 285, August 31, 1916.

5. W. Ray Jones: The Wassermann Reaction in Two Hundred and Fifty-one Tuberculous Dispensary Cases. MEDICAL RECORD, Vol. IXC, page 418, September 2, 1916.

6. Petroff, S. A.: Serology in Tuberculosis. *American Review of Tuberculosis*, Vol. I, No. 1, page 33.

Leprosy in Italy.—In 1912 a census of lepers was taken in both continental and insular Italy. The Minister of the Interior then notified the local practitioners of the whereabouts of the disease and recommended that all new cases be reported. In 1916, according to Bordoni-Uffreduzzi, the most unfavorable aspect of the problem is the part played by returned emigrants who have contracted the disease in Africa and South America.—*Annali d'Igiene.*

OPERATIONS FOR HARELIP AND CLEFT PALATE.*

By W. C. GEWIN, M.D.,

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THERE are several different varieties of harelip and, according to T. W. Brophy, as high as fifteen varieties of cleft palate; there are, strictly speaking, four different methods of technique, with many variations, according to the operator's skill and ingenuity. These methods are: compression, which must be done in earliest infancy; flaps formed of bone and mucoperiosteum, according to Ferguson; flaps reversing operations introduced by Sir Arbuthnot Lane; and mucoperiosteal flap-sliding operations by the Von Langenbeck-Warren method.

Sir Arbuthnot Lane closes the palatal fissure by a reversion of the flap, not working with the bone at all; to follow this method exclusively with any great measure of success, the operator must have an expert acquaintance with this technique, and it must be remembered that correct speech in after life is one of the most important conditions. This is most difficult to procure without bony union of the hard palate

The operation by median suture and mucoperiosteal flap-sliding procedure, according to von Langenbeck, has won great favor; clefts of the soft palate are especially amenable to this method. Doubtless, if it is possible, it is best to wait until the patient is between two and three years of age, in cleft of the hard palate, the natural bone changes necessarily making it an easier operation.

The Ferguson operation includes the transplanting of the bone as well as of the soft parts. Doubtless a large degree of success may be met by using this method—when it *is* successful—by which we mean that, if an infection should occur, and the separated bone be destroyed, it would be a very serious matter.

Under the present technique I do not believe that the best results are to be obtained by the strict adherence to any one method—in the future we may perfect a way of operating upon all such cases, obtaining a uniformity of results, under the one technique.

It is generally conceded that the earlier in life the operation is performed the more advantageous it is for the production of good results; yet many adult patients are received and operated upon, the operation being followed by almost perfect results.

When we consider the physical discomfort of a baby afflicted with cleft palate and harelip, and his inability to obtain his nourishment properly, thus causing an under-nourished condition which invites various ailments, and that, if he survives the ills of his infancy, he is confronted by lessened physical and mental health and growth and the constant humiliation of his deformity, we have sufficient reason to advise an early operation.

The harelip should be closed in earliest infancy, and as soon after the healing of the wound as the surgeon considers advisable, the palate should receive attention. It is, of course, understood that the child must be in good physical condition, as compli-

*Read at the annual meeting of the Chattahoochee Valley Medical and Surgical Association, held at Warm Springs, Ga., July 10-12, 1917.

cations may occur even in the most favorable cases. There is not usually an accompanying hemorrhage, yet one of the large arteries may very easily be cut, and a most persistent leakage result. It is also very difficult to prevent the swallowing of blood, which may be followed by an alarmingly high temperature, most difficult to control.

In selecting the method to be used, it must be remembered that not only the immediate result of the operation is to be considered, but the effect that years of growth may have upon it. It is often possible to cover the palate fissure with tissue, but let us remember that even then the faculty of perfect speech may not be procured. Above all things, we should be careful to conserve all tissue that may be of use in the future growth of the patient; the preservation of the tooth germs should be most carefully watched. I do not think the various plates, wirings, etc., should be used if it is possible to dispense with them and still obtain the desired result, as in many cases the wiring itself may cause complications.

It is a sad fact that many cases are brought back again, and yet again, for reoperation. Our technique must be greatly improved, ere we may truthfully assure ourselves of our proficiency.

It is highly desirable to keep a continuous record of each patient after he leaves the hospital, to watch the child through its growth and development, in order to determine the success of our operation, for success can be measured only by the end results. We may be able, in this way, to correct our own personal defects of procedure.

I keep as nearly complete a record as possible, consisting of the history upon admittance, the description of the deformity, etc.; next, the method of operation, the immediate recovery, and the appearance of the wound at leaving the hospital. I also endeavor to keep in touch with the patient to ascertain his speech development and final formation of lip, palate, nose, etc.

This is the only way I have of fully determining the faults of my technique, and I am as keenly searching for my faults as I am searching for the virtues of the technique of other men, for it is only by eliminating our own faults, exercising our own ingenuity, and adapting to our own use, the best methods of other men, that we may hope finally to achieve the perfection we are striving for.

A COSMETICALLY PERFECT, BLOODLESS CIRCUMCISION.

By HENRY J. MILLSTONE, M.D.,

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It will be noticed that in the treatment of a given disease where practically every drug in the category of therapeutics has been recommended, nothing seems satisfactory, so with our operation of circumcision.

Bevan states that "in order for a surgeon to launch himself into the literary field he must devise some new method of circumcision."

Though this was probably the first known surgical procedure, having its origin in prehistoric and biblical times, still daily someone "comes out" with another improvement, and those of us who constantly observe what are called adult circumcisions can realize then why we are still looking for some better method. I therefore owe no apology for submitting this paper, hoping that in so doing I have gone a step further toward perfecting this minor yet very important operation.

Probably the commonest operation used today is

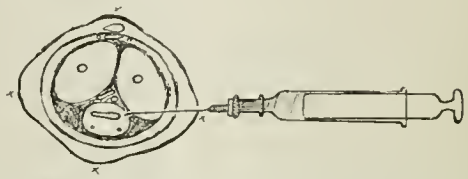


Fig. 1.—Method of nerve blocking. A bleb is inserted at the 4 points marked x, then the needle passed down to the urethra and withdrawn, depositing in its track about 5 drops of a ½ per cent. solution of novocaine.

the "clamp" operation, which is very unsatisfactory, as it really is a prepucotomy and not a prepucectomy. The other operation commonly used is the "cuff" operation, which can also be dispensed with; those who have done it know full well its disadvantages.

In reviewing the recent literature on the subject, Hessert[1] and Thornton,[2] whose operations are very much alike, approach very near to the performance of what might be considered a perfect circumcision. I have been doing this operation for about a year and it certainly offers many advantages over our old procedures.

An operation to be considered a perfect circum-

Fig. 2.—The mid-lateral cutaneous junction on each side of the prepuce is grasped with fine mosquito forceps and traction applied.

cision must fulfill the following requirements: 1. We must bear in mind that we are doing a prepucectomy and not a prepucotomy, so that the penis even in its flaccid state should not have a large fold in the "gutter" of the corona.

2. We must obtain a perfect cosmetic result. There is nothing more discouraging to the surgeon and disgusting to the patient than to find after about two weeks following the operation that the "corona" is crowned by a "beautiful cauliflower-like collar."

3. We must have perfect hemostasis. On account of the redundancy of the skin covering the penis, if

Fig. 3.—An 8 in. forceps is placed close on each side of the mosquito forceps and carried down to the corona.

there is any oozing it usually means the formation of a large hematoma, which furnishes a fertile field for infection.

4. We must preserve the frenum. As to how to dispense with the frenum. There has been much discussion as to the importance of the frenum, some

saying it has no importance whatever, others claiming it is of great importance. Estever and Chiappaori[3] tells us that the frenum contains highly specialized nerve endings and claim them to be the "terminals" for the erection center in the cord. They have some very interesting experiments and

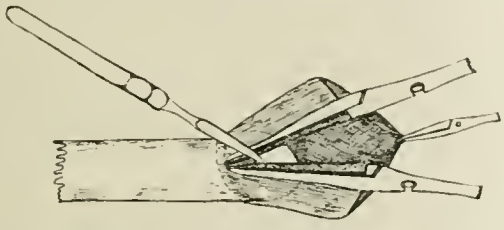


Fig. 4.—The mosquito forceps is released and a scalpel cuts between the two 8 in. forceps. Lateral traction is applied with the 8 in. forceps.

data to substantiate their argument and come to the conclusion that it is a structure which must be preserved, claiming "it is a spoke, essential in the erective cycle." An old axiom in surgery is "if you do not wish to injure a structure keep away from it," and if we are to give Estever and Chiappaori's work any consideration I think this structure should be handled with a certain degree of care.

5. We must have a short operation. The time element should never be a factor in accomplishing good work, still in this operation which so many men make an office procedure, using local anesthesia or gas, time should play some part.

Thus far all operations devised for circumcision have been by making a ventral and a dorsal incision into the prepuce.

Anesthetic.—This is an ideal operation to do under local anesthesia. I much prefer the nerve blocking method to the infiltration method, as it overcomes the marked edema and prevents distortion of the landmarks produced by infiltrating around the corona. About one inch from the corona in the midventral line a bleb of ½ per cent. novocaine solution is deposited under the skin and the needle is then thrust into the deep tissue to the urethra and about five drops deposited as the needle is withdrawn. The same is done in the middorsal line and on each side, as illustrated in Fig. 1. This, after the lapse of about two minutes, gives us a perfect anesthesia. Should one desire to employ a general anesthetic, on account of the rapidity with which the operation can be done, nitrous oxide will be found ideal.

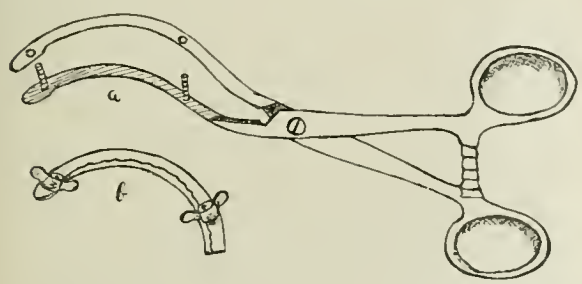


Fig. 5.—The prepuce clamp; (*a*) unlocked; (*b*) locked.

All rules pertaining to asepsis and antisepsis should be strictly observed.

Technique.—By means of mosquito forceps one grasps the midlateral point of the prepuce at the nucocutaneous junction on each side and applies traction. (Fig. 2.) An eight inch forceps is now passed along each side of each mosquito forceps and carried down to the corona and locked. (Fig. 3.) These eight inch forceps should be placed close together.

A scalpel now cuts between the two eight inch

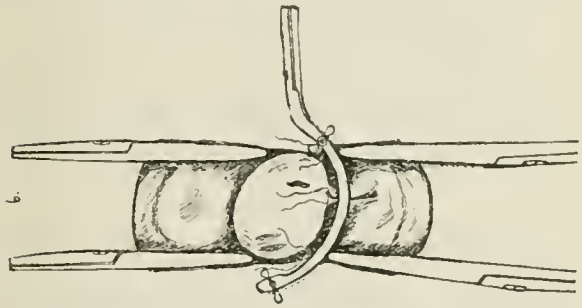


Fig. 6.—Shows anterior and posterior flaps made by cutting between the two 8 in. forceps on each side. The prepuce clamp is placed in the "gutter" of the coronal sulcus just in front of the two 8 in. forceps and locked. A through and through No. 0 chromic catgut suture is placed on each end of the clamp; a purse string suture takes care of the frenum.

forceps, giving us an anterior and posterior quadrilateral flap. (Fig. 4.)

Next the instrument which I devised (Fig. 5) and which I called a "prepuce clamp" is simply a stomach clamp curved so that it fits into the "gutter" of the coronal sulcus and has a lock on each end, so that it renders the tissues perfectly bloodless. This is placed just in front of the two eight inch forceps and locked perfectly tight. This instrument gives perfect coaptation between the skin and mucous membrane in the coronal sulcus. It is this point which is so essential in obtaining a perfect cosmetic result. (Fig. 6.)

A No. 1 plain catgut suture is placed as shown in Fig. 6, one at each end of the prepuce clamp, and tied. The best method I have found of dealing with the frenum is to place a purse-string suture around it. This procedure preserves all structures in the frenum and controls all ventral bleeding.

After the sutures are tied the scalpel cuts off the quadrilateral flap behind and close to the prepuce clamp, thereby leaving no tags. (Fig. 7.)

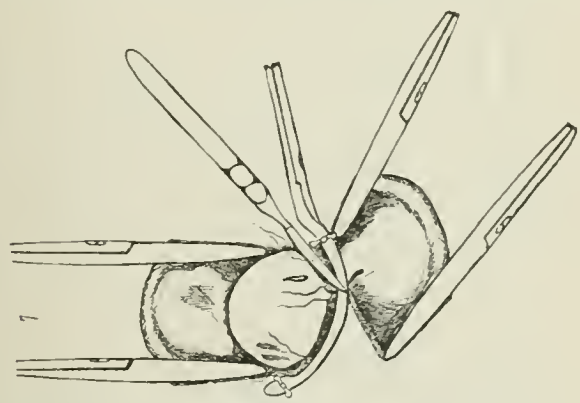


Fig. 7.—After the sutures are tied, the ventral flap is removed by cutting just behind and close to the "prepuce clamp."

The same method is used on the dorsal side. A half-inch bandage is now dipped in melted zinc oxide ointment and rolled around the line of incision a few times. A dry dressing is placed over this. This completes the technique of the operation,

which I am sure fulfills every requirement necessary for a perfect circumcision.

Its advantages are the following:

1. It gives a perfect cosmetic result, giving us perfect coaptation between skin and mucus membrane in the coronal sulcus and doing away with "tags."

2. The operation is practically bloodless.

3. It preserves the frenum.

4. It can be done under local anesthesia and is absolutely painless.

5. It can be made an office procedure and does not incapacitate your patient longer than 24 hours.

6. It can be done in about ten minutes.

REFERENCES.

1. Hessert: *Surgery, Gynecology and Obstet.*, May, 1911.
2. Thornton: *Ibid.*, August, 1911.
3. Estever and Chiappaori: *Prensa Medica Argentina*, LV, 30.

9119 Commercial Avenue.

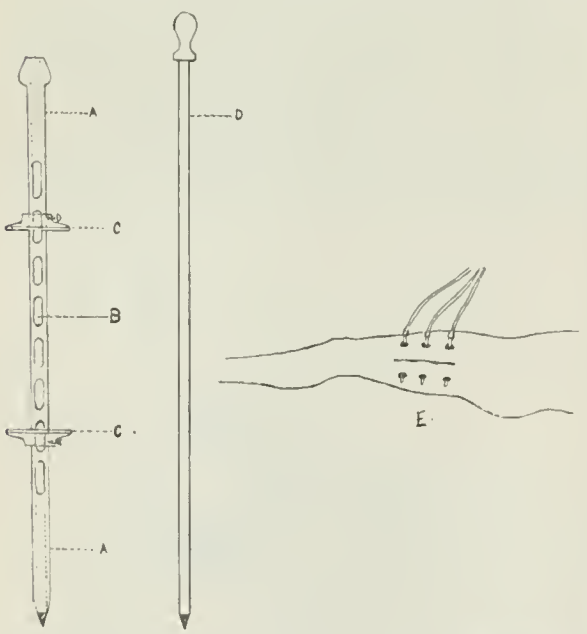
A CANNULA FOR USE WITH THE CARREL METHOD.

By E. E. Endicott, M.D.,
Jackson, Cal.

Since the advent of the Carrel method of irrigating large wounds, and the use of Dakin's solution, the decrease of the numbers of amputated limbs on the war front is simply marvelous. The virtue of the method depends upon a thorough and continuous irrigation with a non-irritating antiseptic.

It has occurred to the writer that the technique, while meritorious, is susceptible of improvement or modification.

The following drawing and description are presented for this purpose and for want of a better name the apparatus is called the apposition-irrigating-cannula. It consists of a large-sized fenestrated cannula with trocar, varying in length to suit the individual case.



Irrigating cannula fo rantiseptic wound treatment. A, A, cannula; B, fenestra; C, C, adjustable aluminum pads with set screws; D, trocar; E, three cannulæ applied to wound.

The cannula is fitted with adjustable aluminum pads, one inch in diameter, held in place with thumb screws.

After the wound is enlarged and cleansed, the cannula with trocar is introduced through the depth of the wound, its points of entrance and exit being through healthy tissue. The walls of the wound are brought into perfect apposition and held so by the adjustable aluminum pads.

The trocar is now removed, and the cannula connected with the apparatus supplying the Dakin or other solution. At each dressing the trocar is passed through the cannula to clear its lumen and insure a perfect flow of the antiseptic.

This method does away with deep buried sutures, insures perfect irrigation, approximates the walls of the cavity, and the aluminum pads distribute the traction over a greater surface than in other forms of sutures.

Thomas Building.

Medicolegal Notes.

License to Practise Osteopathy.—The Montana statute, Rev. Codes Sections 1594-1606, provides that every person who practises osteopathy in the State must secure a license from the State Board of Examiners, and provides a penalty for violation of the statute. Section 1605 defines the practice of osteopathy, and subdivision "b" provides that nothing in this section shall restrain any legally licensed physician or surgeon in the practice of his profession. Section 1597 provides that the secretary of the board of osteopathy examiners may, upon examination, grant a certificate to practise osteopathy until the next meeting of said board, when the temporary certificate shall expire. The practice of medicine and surgery is regulated by Sections 1585-1593. Section 1591 defines "practising medicine or surgery," and then provides that the section shall not be construed to restrict any legally licensed osteopathic practitioner practising under the laws of the State. In a prosecution under the statute for practising osteopathy without a license, it was held that the provision in Section 1591 does not permit an osteopathic practitioner to practise surgery without a certificate from the State Board of Medical Examiners, and the provision in Section 1605b does not exempt physicians or surgeons from the operation of the statute prohibiting the practice of osteopathy without the required license, and neither of the compensating provisions are "exceptions" within the meaning of that term as applied to statutory construction, as an "exception" takes out of an engagement or enactment something that would otherwise be a part of the subject-matter of it.—State vs. Wood, Montana Supreme Court, 165 Pac. 592.

Unauthorized Prescription of Intoxicating Liquors.—In a prosecution of a licensed physician for issuing a prescription for whiskey without good reason to believe that one to whom it was issued required it as medicine, in violation of a city ordinance, evidence that the defendant had during six weeks over which the inquiry extended given 673 prescriptions for intoxicating liquor, the usual quantity prescribed being one quart, that he issued as many as forty in a day, and examined the prosecuting witness very superficially when the prescription set forth in the complaint was given, was held sufficient to justify a finding of guilty.—City of Everett vs. Cowles, Washington Supreme Court, 166 Pac. 786.

Waiver of Privileged Communications Privilege—Under the Michigan statute prohibiting disclosure by a physician of information imparted to him in his professional capacity by a patient, with an exception in case of a contest of the will of such patient, the Michigan Supreme Court holds that a waiver by an insured, in a fraternal benefit policy, of a privilege relating to the disclosure by attending physician of information obtained while acting as such, was inoperative to render a physician's testimony admissible in a suit on the policy.—Gilchrist vs. Mystic Workmen, 163 N. W. 10.

Military Medicine.

A COUPLE OF POINTS IN WAR SURGERY.

THE surgical experience gained in the present war has not been, on the whole, particularly encouraging. At any rate, sepsis at the various fronts has been more or less rampant. Col. T. H. Goodwin of the British Army Medical Service, writing in the *Military Surgeon* for September, 1917, says that the antiseptic treatment of wounds has proved somewhat disappointing. He states that adequate drainage and mechanical cleansing form the first essential steps and adds that the following antiseptics have been found useful: (1) Two per cent. iodine in spirit; not advisable for interior of large wounds. (2) Carbolic acid, 2½ to 5 per cent. (3) Lysol, a dram to a pint. (4) Hydrogen peroxide, 5 to 10 volumes. (5) One per cent. watery solution of picric acid for multiple superficial wounds. (6) Flavine; this antiseptic promises extremely well, as it appears to have powerful antiseptic action with but slight toxic action on the tissues.

With regard to gas gangrene the following treatment is recommended: Free incisions; removal of dead tissue; thorough cleansing of the wound; hydrogen peroxide; drainage. If hand or foot is warm one should not amputate. If it is cold and insensitive, one should amputate at once, if the general condition of the patient permits.

As for wounds of the abdomen the writer points out that a large proportion of men shot through the abdomen die on the field. Wounds of the small intestines are usually multiple. A primary operation may reasonably be performed under the following conditions: (1) If seen within twenty-four hours of injury and the general condition is good; (2) if only a small part of the whole abdomen has been traversed; (3) if it is certain that the peritoneum has been opened; (4) if the patient's condition is becoming worse; (5) if the conditions for operation are satisfactory; (6) if the pulse is becoming more rapid or the rigidity of the abdomen is increasing.

EVOLUTION OF GENERAL PARALYSIS AMONG TROOPS.

IN theory an officer's duties on the fighting front should be well calculated to accelerate the evolution of paresis. Mignot, a French psychiatrist (*La Presse Médieale*, August 23) has found that in peace times only about 8 per cent. of paretics die of their disease within a year. Since August 1, 1914, the Charenton Asylum has admitted 145 paretics, and during the three years of the war 50 of this number have perished. The privates and non-commissioned officers, however, make but a temporary sojourn here, so that the author can only submit details of the cases of commissioned officers who remain in the asylum. These are carefully distinguished from the lay patients who always made up the great majority of permanent incumbents. He has completed notes of the cases of 16 officers who did not fight at the front, and of this number but one died within the first year of evolution of the disease. The average duration was thirty-six months. He also has notes of the cases of 11 officers who had either fought or had been on duty in the fighting zone, and in these the disease developed within a year in no less than 7 (4 of these within 6 months). The average duration of evolution in these 11 patients was but 10 months. This rapidity of evolution does not only mean very early decease but complete absence of any tendency to remissions while the socalled terminal symptoms appear at a very early date. Ordinarily interning paretics is followed by temporary arrest or improvement of symtoms, but in the author's material only 4 officers who had been in the fighting zone showed any such conservative tendency. Clearly the fatigue, the emotions, and traumatisms of warfare exert a very bad influence on the course of the disease.

Gunshot Wounds of the Peripheral Nerves.—Injuries of peripheral nerves have occurred with great frequency during the present war owing to the use of projectiles of high velocity. It is obvious that their successful treatment is of the highest importance in the prevention of permanent disabilities of the most serious kind. Lieut.-Col. J. Michell Clarke, writing in the Bristol *Medico-Chirurgical Journal*, summer number, 1917, says that we are not yet in a position to make positive statements as to what the ultimate results of nerve injuries and the operations undertaken for their relief will be.

The nerves most frequently affected are the musculospiral, median, and ulnar in the arm, the sciatic, and especially its external popliteal branch, in the leg. Injuries to the brachial plexus are also common.

A nerve may be completely divided; when this is so there is rarely a clean cut through it, but more often destruction or obliteration of it for a considerable distance, from one to several inches; or it may be partially divided; or it may be injured by compression in scar-tissue by callus, by fragments of bone, by a lodged bullet or portions of clothing, by a traumatic aneurysm, by bruising, or concussion.

It is important to remember that perineural scars and adhesions, though conspicuous at operation, may not be responsible for blocking the passage of impulses, but that this may be due to concomitant intraneural hemorrhage, fibrosis, or molecular changes following concussion. Trotter and Davis have shown the intolerance of the ordinarily isolated nerve tissue to the contact of connective tissue, and that the active outgrowth of nerve fibrils of a divided nerve is a response to the contact of non-nervous tissue which, on its part, forms a tough fibrous capsule around them and prevents their further extension: this may lead to irritation of the nerve and hypersensitiveness.

The location of the injury to the nerve rests on anatomical data and on the course of the projectile, aided, perhaps, by the *x*-ray. In multiple wounds the diagnosis of the one causing the lesion is based on anatomical considerations. The extent of damage to the nerve is estimated by investigation of motor and sensory paralysis, muscular wasting, pains and hyperesthesia, trophic lesions, and electrical reactions, and all of these symptoms which are present should be compared and the diagnosis

based upon the full results. There is no short cut to diagnosis. Many consider that sensory changes give more important information as to extent and progress of the lesion than motor paralysis or electrical reactions. It has been claimed that in incomplete division of a nerve the area of loss to protopathic sensation is greater than that to epicritic sensation, and that the borders of the respective areas approach and recede or cross each other. This is not yet established, but it is certain that the distinction between complete anatomical division of a nerve and physiological blocking of it by involvement in scar tissue cannot always be made. Pains and hyperesthesia signify partial injury of a nerve. When these gradually disappear and give place to analgesia and tactile anesthesia compression of the nerve by scar tissue, callus, etc., is probably taking place.

Hysterical anesthesia of the sleeve, glove, or stocking type may be present as a complication of peripheral nerve injuries, generally in partial ones. In gunshot wounds, however, especially in those of plexuses, the symptoms are often very complicated, and the sensory loss may not at first correspond with the known distribution of the nerves and may resemble hysterical anesthesia, but after a few weeks the picture partially clears up leaving a residual loss in recognized areas of nerve supply. The severe forms of trophic disturbance, such as deep and intractable ulcers, usually occur in complete division of a nerve, the milder forms in partial lesions.

With regard to electrical reactions of damaged nerves, it may be said that such reactions give no information as to what is going on in the nerve at the seat of injury. Their most important function is to decide whether there are any excitable fibers peripheral to the injury. When all have been lost voluntary power usually returns before the muscles respond to faradism or the condenser.

As to treatment before operation can be done (1) The wound must be soundly healed, and (2) there must be a sufficient interval after the injury before exact diagnosis is possible, partly because characteristic signs of division of a nerve take time to develop, and partly because in most cases of gunshot wounds of nerves the immediate paralysis is of greater extent than it remains permanently.

While waiting preliminary treatment must be carried out. This consists in wrapping the limb up warmly; in placing it on a suitable splint to keep the paralyzed muscles relaxed, a point of the greatest importance; daily gentle massage and movements, during which the paralyzed muscle must he kept relaxed, and electrical treatment by the passage of a constant current, or condensed discharge, rhythmically interrupted by a metronome and just strong enough to cause a contraction of the muscle.

It is desirable before operation to give a prophylactic dose of tetanus antitoxin, as tetanus may develop after operation is undertaken, even some months after the original injury.

Operation is advisable (and the earlier it is done the better are the results, as a rule): (1) In case of complete division of a nerve; (2) in incomplete lesions; (a) where the condition is stationary with a definite residue of paralysis after three to four months, (b) where improvement has begun but stopped abruptly, with signs of compression of the nerve by scar tissue, callus, etc.; (c) where there is great pain, not relieved after some weeks' careful treatment; in such a case the nerve should always be explored for pieces of bone, foreign bodies or shreds of clothing may be found in the wound, and (d) in cases of long standing with intractable trophic lesions, for even if no good to the paralysis results, the trophic lesions quickly heal.

In the majority of cases there is little difficulty in deciding whether operation is necessary or not. Even slight return of voluntary power negatives operation. In doubtful cases nothing is lost and often much gained by an exploratory operation.

In plexus lesions where several trunks have been divided, often at different levels with much resultant perineural scar tissue, accurate identification of trunks for end-to-end suture is often most difficult, and if it is found impossible, it is probably better to leave things alone than to do indiscriminate nerve crossing. Trotter advises early operation in cauda equina lesions in every case where there is the least suspicion of an element of pressure.

The postoperative treatment, and that of cases of partial division of nerves is the same as advised above in preliminary treatment, and should be continued daily until there is a return of voluntary impulses which may take weeks or years. In the lower extremity a walking machine must also be provided for dropped feet. After end-to-end suture of a nerve electrical treatment should not be begun for some little time and then with great care.

In all cases, especially in the early stages, care must be taken to avoid fatigue of the muscles by electrical treatment; the balance of evidence is that contractions due to electrical stimulation are beneficial in the stage of regeneration, but have no effect on muscular wasting as to results. Cases of nerve concussion should recover within four to six weeks; partial division of a nerve should go to complete recovery in several months.

Intoxication with Asphyxiating Gases and Its Treatment.—While this subject has pretty well crystallized out in literature there is always the possibility that the introduction of a new gas on a huge scale may necessitate a revision of our knowledge. The subject has been comparatively simple only because chlorine has been the one gas used in actual work. All others seem never to have made good in extensive try outs, with the possible exception of lacrymating gas supposed to be or contain bromine.

An article by Colard and Spehl in the *Archives Médicales Belges* for July discusses an experience with gas during the present year, probably in the spring offensive, of a Belgian command on the Yser front. Nothing is said of the nature of the gas used although delivery from cylinders was the method used; but all points to the fact that chlorine is still employed to the exclusion of all other substances. The respiratory phenomena are those chiefly in evidence in gassing and the grouping of cases depends on the gravity of these symptoms.

The authors eliminate the cases which end in rapid death with the brief symptom picture of intense cyanosis, foaming at mouth, and abundant vomiting of blood. With these out we have two principal syndromes, viz., acute asphyxia and caustic tracheobronchitis.

In victims of acute asphyxia there are no evidences of profound general intoxication, as in the fatal cases. The symptoms are local, and their severity lies in the fact that a large enough portion of the respiratory surface is involved to produce asphyxia, as shown by marked cyanosis and characteristic pulse and respiration. The victims of caustic tracheobronchitis do not suffer from asphyxia, for there is enough breathing surface to guarantee hematosis. In this group the patient's life is not necessarily endangered.

In the asphyxia group, which is the least numerous, there is a persistent cough with a sensation of laceration of the chest. But after the passage of the gas-wave there is sometimes relief, which, however, is deceptive. Not long afterward the symptoms increase, and dyspnea, intense cough, and foamy expectoration indicate the presence of edema of the lungs. Upon arrival at hospital these patients are cyanotic and prostrated. The picture is too familiar on all fronts to be detailed here, and has been fully described again and again with all the graphic realism of the old clinicians, when in the absence of clinical material they sought to visualize clinical pictures. There are important distinctions here, for the badly gassed subject may show a forced, labored, and consequently slow respiratory rhythm, while the man not so badly off breathes rapidly in a compensatory effort. In forced breathing the pulse may be suppressed or only enfeebled, irregular, and unequal. If these patients survive a certain cardiac rhythm follows in a few days which denotes a weakened myocardium and is manifested by a bigeminal, pseudo alternating pulse in which the arrhythmia is of extrasystolic origin. Here the excitability and not the contractility of the heart is prejudiced. In such cases the cardiac affection is shortlived and in five or six days the patient will be over the worst of his troubles. Auscultation gives moist, finely bubbling râles over all the lungs. In cases with recovery as to life caustic tracheobronchitis is the normal sequela.

As already stated the last named condition is often the primary manifestation. This is the secondary bronchitis of authors, which like the picture of acute asphyxia from edema of the lungs has been described to death. In the interest of simplicity the authors represent the two types of gassing (with survival) as follows: A—Caustic tracheobronchitis plus asphyxia (due to a certain degree of involvement of breathing surface) and B—Caustic tracheobronchitis without asphyxia. In other words the (aseptic) inflammation of the mucosa is present from the very start. This is a restatement of older accounts of gassing which made of bronchitis an inevitable sequela, developing after a period of latency.

Treatment of these cases shows some modification, for venesection and oxygen inhalation are the remedies *sine que non* for asphyxia cases. Blood is invariably taken from an arm vein to the amount of 300 c.c. in these subjects. This step may be repeated if advisable on the following day; and in certain cases more blood—up to 500 c.c.—may be taken at a time. That bleeding is indispensable seems well shown by the character of the blood flow, for the blood is tarry, blackish, and viscid. In bleeding, no attention should be paid to a low tension pulse. Oxygen should always be given early with the idea of recovery—not late to mitigate suffering in a doomed patient. The authors administer it by means of Wulff's bottles and a catheter introduced through a nostril.

Treatment of Gunshot Wounds of Peripheral Nerves.—Capt. Rendle Short writes in the *British Medico-Chirurgical Journal*, Summer Number, 1917, on the treatment of gunshot wounds of peripheral nerves. In cases of complete division of the nerve, with a bulbous swelling at the end of the upper segment, succeeded by a mass of scar tissue of variable thickness, and adherent to the surrounding tissue, the two ends of the nerve should be freed, and then the upper segment should be divided through the upper end of or above the bulbous swelling, so as to expose visible nerve bundles with no excess of interstitial fibrous tissue; when this is done the ends should be sutured with catgut. Some surgeons wrap the junction in Cargile membrane; others sometimes use a segment of the saphena vein, but often nothing is used.

It frequently happens that the ends cannot be brought together because of a gap of one or two inches. In such a case a bridge is formed of two or three pieces of internal cutaneous nerve taken from the upper arm, or by catgut strands; or the surgeon may resort to nerve anastomosis.

There may be a bulbous swelling on the nerve, adherent to the track of the bullet, and it may be doubtful whether the nerve fibers pass through it or are interrupted. In such a case one should stimulate the nerve electrically above and below the bulb. If, in the case of a small or medium-sized nerve, not the sciatic, any muscles supplied by it contract, the scar is freed and wrapped in a segment of saphena vein. If there is no response, one should excise the scar and suture. A large nerve, such as the sciatic, may show symptoms of a partial division, and at operation part of the nerve shows a scar. The best procedure is to take out a quadrilateral, including the scar, and, by splitting the nerve trunk up and down, to bring the two ends together, leaving the intact portion of the nerve undisturbed.

Finally, the nerve may be intact, but pressed upon by a bullet or by shattered bone. The treatment then is, of course, to remove the cause of pressure; but although this relieves pain at the time, it is unfortunately apt to return during the process of healing and prove very intractable.

Over 69,000 Men in the Army Medical Service.—The Medical Service of the Army now has a personnel of more than 69,000 men, compared with 6,600 just before the outbreak of the war. Nearly 13,000 officers had accepted commissions in the Medical Reserve Corps up to October 1, 1917. The Dental Reserve Corps now has over 2,600 commissioned officers and the Sanitary Corps about 240. The organization of the Surgeon General's Office has added sections on internal medicine; medical

officers' training camps; medical military instruction; psychology, neurology, and psychiatry; surgery, infectious diseases, and laboratories; head, eye, ear, mouth, and brain; military orthopedics; special hospitals and physical reconstruction; gas defense; food; office development and filing system. The Surgeon General's office now has over 500 clerks and messengers and more than 100 officers, compared with 140 clerks and messengers and 10 officers in March, 1917.

Professor Devine Heads Red Cross Bureau in France.—A recent cablegram announced the appointment of Edward T. Devine, professor of social economics at Columbia University and widely known as a social worker, as chief of the bureau of refugees and home relief, under the American Red Cross Commission in France. Some idea of the task with which Professor Devine is confronted may be gained when it is known that there are some 850,000 refugees embracing all classes and ages except able-bodied men in the departments of France outside the Seine. The Red Cross hopes to lessen the congestion and discomfort under which these people are living by providing better quarters and erecting temporary shelter when necessary. It is proposed to establish in cooperation with the French authorities health centers from which useful work can be done without compromising the self-respect and independence of those who accept it. Dr. Devine's work will be to coordinate the many voluntary relief agencies as well as the public relief authorities and arrange for constructive relief work for the victims of the war who have not yet returned to their homes.

"Psychological Gradings" for Soldiers.—Each man of about 160,000 in four National Army cantonments will be given an "intelligence rating," by psychological examination conducted by the section of psychology of the Surgeon General's office. Each man's record will be placed at the disposal of his company commander to assist him in picking men for promotion or for special lines of work. The various methods and tests used in making these examinations have been selected by a committee appointed by the Council of the American Phychological Association. The psychological staff which will make the tests at each of the cantonments will comprise four officers and six civilians.

Red Cross Units for Cities Near Camps.—Fifteen cities are now receiving the cooperation of the Red Cross in making the communities around the camps safe for the soldiers and in taking measures to prevent the spread of disease or epidemics. The three latest cities to receive such aid are Greenville, S. C.; Macon, Ga.; and Manhattan, Kan. Each of the sanitary units operates under the direction of an officer of the Public Health Service, and the field directors of the Red Cross Bureau of camp service have been made the business agents of the units. These units cooperate not only with the Public Health Service but with the State and local boards of health in establishing full and efficient sanitary organizations for the inspection of milk and water supplies, the control of infectious diseases, and the general sanitary inspection of the community. In the southern communities, considerable work is being done in the eradication of malaria bearing mosquitos in the vicinity of the camps.

Americans Win War Medals.—A cablegram from Paris announces that the Army Medical Service has awarded 136 war medals, 11 silver gilt, 50 silver, and 75 bronze, to workers in the American Hospital in Neuilly. The recipients of the medals are 37 men and 99 women, mostly Americans.

Discuss Problem of Disabled Soldier.—The Inter-allied Committee on Post-War Treatment of Permanently Disabled Soldiers met in London, England, on October 9, for a several days' session. The American delegates are Col. Birmingham, Major R. B. Osgood, Dr. Veditz, and Miss Grace Harper. There are similar delegations representing Great Britain, France, Russia, Italy, Belgium, Serbia, Montenegro and Portugal.

Association of Military Surgeons.—The twenty-fifth annual meeting of this association was held at the Medical Officers' Training Camp, Fort Benjamin Harrison, Ind., on October 8, 9, and 10, under the presidency of Surgeon General Rupert Blue, U. S. P. H. S. Among the papers on the program were: "Practical Medical Military Lessons of the War," by Col. T. H. Goodwin of the Royal Army Medical Corps; "Cooperation of the Civilian Medical Profession with the Medical Services of the Government in Time of War," by Major Victor C. Vaughan of the Medical Reserve Corps, U. S. A.; "How Military Medical Services of the Government May Best Cooperate in Time of War," by Col. Louis A. La Garde, M. C., U. S. A., P. A. Surgeon H. B. Eaton, U. S. N., and Assistant Surgeon General W. C. Rucker, U. S. P. H. S.; "Medical Service on the Western Front," by Col. Charles Dircle of the French Army Medical Department; "Transportation of Wounded on the Western Front," by Capt. J. Gilmour, R. A. M. C.; "Trench Warfare," by Lieut. Henri Haye of the French Infantry; "War Neuroses," by Major Thomas H. Salmon, M. R. C., U. S. A.; "An Efficient State Medical Department," by Lt. Col. Jacob Frank, M. C., Ills. N. G. Addresses were also made by Surgeon General W. C. Gorgas, U. S. A., Surgeon General Rupert Blue, U. S. P. H. S., president of the association; Surgeon Wm. Seaman Bainbridge, U. S. Navy, R. F.; Col. T. H. Goodwin, R. A. M. C.; Major Jos. C. Bloodgood, M. R. C., U. S. A. The election of officers for the coming year resulted as follows: *President*, Medical Director George A. Lung, U. S. N.; *First Vice-President*, Lieut. Col. Henry Allers, M. C., N. J. N. G.; *Second Vice-President*, Brigadier General Henry P. Birmingham, U. S. A.; *Third Vice-President*, Assistant Surgeon General J. S. Kerr, U. S. P. H. S.; *Secretary*, Col. Edward Munson, M. C., U. S. A.; *Treasurer*, Assistant Surgeon General W. Colby Rucker, U. S. P. H. S.

Camp Wadsworth Base Hospital.—The big base hospital at Camp Wadsworth is about finished, the contract calling for its completion by November 1. The hospital will consist of fifty-nine buildings, all connected with covered passageways, and giving accommodations for 1,000 beds. The cost of this hospital will be $450,000. Complaint is made, however, that thus far no provision has been made for installing a heating plant or for stoves, while provision has been made for heating all other buildings in the camp and for installing stoves even in the tents. The method for the disposal of sewage is also said to be defective.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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New York, October 20, 1917.

A RAPID TEST FOR OCCULT BLOOD.

IN spite of the fact that the excessive growth of specialism in medicine has led to the custom of the average practitioner sending his specimens of all kinds to a laboratory for report, we should not assume unthinkingly that this is the ideal arrangement in all circumstances, but consider certain possibilities. The war, for example, threatens to deplete the ranks of our profession, just as it has done in other countries. It may be that the vast quantity of work of a laboratory nature to be done with the armies will thin out the ranks of technicians in civil life and at the same time the great demand for military surgeons will result in doubled work for the practitioners who are left. Many of these, especially if they do not live in large cities, will be obliged to do their own laboratory work.

To be sure, the average practitioner may say, "If it has to be done, I can do it." Perhaps he has had a good course in laboratory work in school, supplemented by more or less uranalysis, Widals, Wassermanns, and so on, in a hospital. All of this, of course, is valuable and forms a good background for the acquiring of proficiency in technique. But there is a great difference between the skilled and rapid methods of the trained laboratory worker and the laborious examinations of the general practitioner, working in an improvised laboratory, with a textbook propped up in front of him, and a large general practice dinning its demands into his ears.

For the benefit of such, an article by Warren T. Vaughan, in the *Journal of Laboratory and Clinical Medicine* for March, 1917, is applicable. As he rightly says, stool examinations are too much neglected. Lack of acquaintance with the methods, confidence in ability to diagnose without this aid, and the disagreeable nature of the details, all combine to cause the doctor to omit this diagnostic detail. And yet, if pressed for an answer, the practising physician can hardly refuse to admit that such an examination may often be of great value, and the cases are rare indeed where it would not throw some light on the patient's condition as a whole. Certainly, all gastrointestinal cases, as well as cancer suspects, should have stool examinations. The examination for occult blood, for example, although probably not familiar off-hand to the average practitioner, may be very useful in detecting early carcinoma, ulcer, or intestinal parasites. Barker states that as much as 5 per cent. of occult blood may be present without being recognized by the naked eye.

The first thing we think of is the guaiac test, but Vaughan calls attention to the advantages of the benzidin test which is generally considered too delicate for clinical use. He uses Wagner's "dry test," which consists in adding a few drops of mixture of a knife-point of powdered benzidin (an amount the size of a match head), 2 c.c. of glacial acetic acid, and 20 drops of a 3 per cent. solution of hydrogen peroxide to a little solid feces on a clean glass slide; a greenish-blue fading color is positive. The material for a slight variation of this test may now be obtained in very convenient form for the practising physician.

After exhaustive experience with this test, Dr. Vaughan concludes that it is the most reliable, as well as the most simple, rapid, and clean. It is not, he thinks, too delicate for clinical use. A negative result is more reliable evidence of the absence of blood than a negative guaiac test. Meat fibers, pus, and the usual drugs and food do not vitiate this test, and rare meat does so only if it has been taken in considerable quantity.

LEGISLATION IN VENEREAL PROPHYLAXIS.

THE State Commissioner of Health of New York asks the cooperation of the editors of the various periodicals and papers in spreading the knowledge of the law recently passed by the legislature requiring the contracting parties to a marriage to submit evidence of freedom from venereal disease for a period of five years next preceding the time of contract, or, if infected during that period, evidence of laboratory tests establishing cure. While New York is not the first State to pass legislation in this regard, it is the first of the States to realize that the enactments must be conservative, at least, in the beginning if the cooperation of the public is to be obtained. It must be realized that the more radical the act the more difficult of enforcement and the less that can be taken under the protective fold of such an enactment. The Wisconsin law made it obligatory upon every person contemplating marriage to submit to appropriate physical and laboratory examinations and even went so far as to fix the fee for such examinations. It is to be hoped that with the more conservative New York law more will be accomplished. Yet it is hardly to be expected that the mere presentation of certificates setting forth freedom from disease will be a guarantee against the consequences of such infections. Most instances of gonococcus infection in women who help fill the gynecological wards of the hospitals are not caused by acute infections in their partners but rather by chronic dormant and undetectable infections reactivated in the always fertile virgin soil of the female. The ophthalmias of the newborn are, similarly, caused by this reactivated infection in

the mother. Moreover, with intent to deceive the examiner the Wassermann reaction may be masked in various ways

The entire value of a law dealing with venereal prophylaxis lies not so much in the prohibition enforced as in bringing to the attention of everyone the significance of venereal infection to the parties contemplating marriage, the effect on their offspring, and the more indirect, but none the less important effect upon the nation as a whole. With this knowledge continually being brought home, measures for venereal prophylaxis will be more universally observed, and treatment more generally and consistently carried out. When once the gravity of these infections is impressed upon young adults, the solution of the problem of venereal infections will more nearly have been achieved.

BILHARZIOSIS.

In the *Journal d'urologie médicale et chirurgicale*, for August, appear no less than four articles on this subject. Diamantis of Cairo writes on modes of infection. Does the schistosomum enter the body by the mouth, the perineal orifices, or the percutaneous route? He supposes the second of these hypotheses. The parasite appears to inhabit the pelvic veins, which in turn receive blood from the cutaneous veins of the perineum. It is present in the veins of the bladder and rectum. In what manner is its entrance into these vessels effected? Doubtless by ablution, for the Mohammedan is obliged by his religion to wash himself a number of times daily. Any water will answer the purpose and it often happens that a number of men use the same water. The women, who are not compelled to bathe, seldom show the disease (sex ratio 1:20). Not over 5 per cent. of them bathe, and these never in common. This sex selection is not in force in young children nor in older women who have lost much of their early modesty, the latter being at its height in adolescent girls. Why is the bladder so often attacked while the rectum escapes? Perhaps because of the minute toilet of the penis and entrance of the worm into the region of the dorsal vein of the penis. This is the chief route of infection, although exceptionally penetration can occur anywhere on the surface.

The same author also contributes a paper on a new method of treatment of bilharziosis. This is none other than the use of emetine which, through its hemostatic, amebecide, and—in mouth infection—emetic properties, is admirably suited for combating this evil. The alkaloid should be injected into a vein in all cases.

Morel and Maldonado report four cases of endemic bilharziosis occurring in Paris. All were of the vesical type with cystoscopic and microscopic diagnosis. There is no successful treatment for localized, noninfectious, uncomplicated cases. According to these authors the emetine treatment is not only new but without any effect.

Diamantis and Lotsy also report briefly a case of early ureterovesical bilharziosis with radiographic diagnosis. The first diagnosis was ureteral calculus, and vain attempts were made to free it. Certain peculiar shadows in a radiograph caused suspicion of bilharziosis, confirmed by cystoscopy.

HOME-MADE LABORATORIES.

In spite of a vague theory held by the laity that a physician is a being apart and immune from all financial worries, the high cost of living is felt as keenly by him as by any other citizen. The thinning out of the ranks of the profession by the war, and the consequent withdrawal of numerous laboratory men into army hospitals will make it imperative for many a practitioner to dust off his books on uranalysis and blood examination and improvise a laboratory in his office. Then when he comes to the point of purchasing supplies for his laboratory he will find that they too have joined the aviation corps. There are many recent graduates who have been trained thoroughly in laboratory methods and would be glad to do all their own work as well as to help out some of their colleagues were it not that the beginning period of practice is too expensive anyway without indulging in high-priced laboratory equipment, and furthermore the best of these young men have been or will be called to the war.

How to acquire a satisfactory working laboratory with the minimum expenditure is told by M. J. Breuer, in an article published in the *Journal of Laboratory and Clinical Medicine* for March, 1917. The microscope is an unavoidable expense, and there are various small pieces of glassware which are indispensable and for which no satisfactory substitutes can be found. Instead of buying a costly centrifuge, however, Dr. Breuer suggests the purchase of a second-hand electric motor, suitable to attach to the usual electric lighting plugs, *i.e.* a 110-volt current; he himself found an electric fan motor very serviceable. He also goes on to describe how a satisfactory incubator can be made at home and a thermostat adapted from a "window flasher." A water-bath and shaking machine, constructed from inexpensive materials are also described in this ingenious article which should be read in the original.

Another clever idea is recorded in the April issue of the same journal. Dr. Simeon B. Kleiner, using the structural steel toy, which is found in so many homes just after Christmas, has constructed an apparatus for holding slides, while they are being stained at a cost of ten cents. As the writer suggests, other laboratory equipment may be easily devised by an inventive person and the great advantage is that any design found unsatisfactory can readily be taken apart and new ones constructed. We would suggest that inventive physicians purchase these toys complete and exchange the results of their experiments.

The above ideas are only a beginning. As we be-

gin to feel more and more the pinch of war, doubtless we shall revive the old American ingenuity which has lain dormant so long when our needs were supplied without effort, and then we may expect a host of other suggestions, equally clever.

OCULAR REACTIONS IN THE DIAGNOSIS OF DEATH.

The ether and dionine tests of death (absence of vascular reaction when dropped into the conjunctival sac) have been practised for some time because of their ready availability and simplicity. In this connection Terson (*Le Progrès Médical*, September 1) enumerates briefly all the alleged phenomena of death visible in the eye. Mere passive evidences are of no value, but induced reactions in the pupil and conjunctival membranes respectively are constantly in use. Passing by the agonal miosis followed by fixation as untrustworthy, he alludes to the action of atropine and eserine, which in certain cases might show by the activity of the iris that life is still present.

Of much more value is conjunctival irritation which may be practised in a great variety of ways on the cadaver. In the vast majority of cases there will be no vascular reaction two hours after apparent death even if the body is still warm. Ether instilled into the eye of a subject still alive would be unnecessarily severe, as in fact would ignipuncture, caustics, curettage, etc. On the other hand, the author uses dionine every day in the clinic, and while it induces an intense reaction, it is entirely inoffensive. Applied to the eye of a warm cadaver two hours after death, failure to provoke reaction should be legal proof of death. Either the powdered drug or the gycerole may be used for this purpose.

Acromegaly as Viewed by Marie's Predecessors.

Marie, who described and named this affection in 1886, never claimed that he was the first to behold it. In fact he found it described as early as 1772 and again in 1812 by distinguished clinicians of the day. He mentions no less than four Italians who had seen the disease before 1886 and this statement has influenced Ferrannini in *La Riforma Medica* for Sept. 1 to claim for his country the priority of rank. The four authors were all notable clinicians, especially Lombroso and Taruffi, the great authority on monstrosities. In 1864 Verga, one of the four, described acromegaly under the term prosopectasia, he evidently regarding it as limited to the face; but four years later Lombroso who termed a case a form of macrosomia or gigantism was clearly on the right track. In 1877 Taruffi demonstrated an acromegalic skull as a peculiar monstrosity, the actual report having been made by Brigidi, who saw in the "strange deformity" a manifestation of a chronic disease. The author would award the lion's share of the credit of discovery of the new disease to Verga and Brigidi jointly. There is not the slightest attempt to deprive Marie of full credit for making known to the profession this affection and for elaborating the clinical picture. One may add that an Italian, Massalongo, first recognized, in 1891, that acromegaly was connected with hypophysis disease; while even earlier (1886) Remiti had announced the discovery of the craniopharyngeal canal.

Pellagra and Polyneuritis.

Since the dissemination of the vitamine theory of the causation of deficiency diseases, cases have come to light here and there which appear to indicate the likelihood of the occasional coincidence of pellagra and beriberi or scorbutus in the same subject. Such associations are, of course, open to other explanations, especially as the secondary affection is more or less atypical. For example, polyneuritis in a pellagrin could be due to syphilis. In the *Brazil-Medico* for July 7, Dr. C. de Rezende reports an interesting case of polyneuritis secondary to probable pellagra. The doubt attending the diagnosis is based largely on the great infrequency of pellagra in the author's neighborhood. His patient was one of a number of subjects who could well have been pellagrins, judging from his description, yet he is unable to find any authentic records of the occurrence of this disease anywhere in Brazil. It is of interest, however, to note that an affection exceedingly like pellagra was described in Brazil in the seventeenth century, and it is probable that its non-existence in that country is apparent rather than actual. It is certain, however, that the disease does not occur in Brazil as a folk plague. The occurrence of an almost sporadic case of pellagra with secondary polyneuritis at once suggests that both conditions could depend upon the same insufficient regimen; or in other words, that the polyneuritic component might represent an atypical beriberi. But this is straining the evidence, because a sensory neuritis of a mild grade is very common in pellagra; and the author points out especially that the patient had no suggestion of beriberi, a disease with which he seems quite familiar. There was an absence of edema, circulatory disturbances, and other manifestations which attach to true beriberi. The polyneuritis in this case was mixed, sensory disturbances being more marked in the upper extremities and motor manifestations in the limbs, with resulting muscular atrophy.

Liviereto's Sign in Myocardial Insufficiency.

The so-called abdomino-cardiac reflex was first described in 1916 by Liviereto, and he has recently summed up the phenomenon in an Italian journal, abstracted in *La Presse Médicale* for August 16. Certain subjects had been found to complain of thoracic oppression, chiefly in the sternal area, after the act of eating. With oppression was often associated slight pain. Muscular effort, even light, was sufficient to cause the disappearance of the subjective symptoms. Such patients gave evidence of digestive or vascular disorders, although the heart was seemingly intact. Upon patients of this type mechanical irritation of the abdominal nerves causes an amplification of the area of the heart on percussion, which in turn subsides after moderate gymnastic exercise. Liviereto believes that this

dilatation of the right ventricle is due to vasoconstriction in the pulmonary arterial supply. Such dilatation cannot occur with a normal myocardium. The subjective sensations already mentioned indicate the presence of transitory dilatation. While the reviewer is silent on the point, it is evident that a certain amount of exercise can stimulate the weakened heart to the extent of overcoming the peripheral resistance. Our knowledge of this phenomenon is in its infancy, and it is to be hoped that research and observation along this line will increase our resources for cardiac diagnosis.

Effects of the War on German Synthetic Remedies.

Various synthetic drugs of German origin now official in the U. S. P. under their legitimate chemical designations are being sold under new proprietary names in France and Italy. It is stated that these substitutes are prepared after the original German formulæ. This is also the method pursued in the case of salvarsan and neosalvarsan substitutes. We also note a slight percentage of return to crude drugs, for example, in the case of valerian. Colloidal metallic and metalloid solutions are widely advertised and new ones are being introduced. The new burn remedies are also recommended for eczema and varicose ulcers. Preparations purporting to contain vitamines are made in Switzerland and in that country a substitute ichthyol is made. With a few possible exceptions in which Germany has had a virtual monopoly of raw material, it appears that their drug market monopoly, like the dye market, will be virtually forfeited after the war.

News of the Week.

The Draft and Physical Defects.—Statistics gathered as a result of the physical examination of drafted men, according to a statement issued by Dr. J. A. Nydegger of the United States Public Health Service, have shown an alarming number of instances of poor eyesight, under-weight, bad teeth, flat feet, and other defects. The figures bring out the fact that there are from seven to twenty per cent. more young men with defects or in need of medical attention in the rural than in urban communities. This is believed to be due to the fact that the health of school children is almost entirely neglected in country districts. A similar state of affairs was found to exist in England at the time of the Boer war, which they immediately set about correcting. We are said to be behind other countries in the physical training and care of the health of our school children.

A New Sing Sing Prison.—The old cell block at Sing Sing prison, which has long borne the name of the "death house," although not for prisoners condemned to death by the law, because of its insanitary condition, is to be demolished in accordance with a decision arrived at by the Commission on New Prisons. The work of demolishing the old prison will begin on May 1, 1918. Pending the erection of new quarters about eight hundred prisoners will be transferred to other institutions.

New York's Water Supply.—The celebration of the completion of the great Catskill aqueduct occurred October 12 and was marked by a number of public meetings and demonstrations by various organizations. The aqueduct is 120 miles long and is capable of delivering 500,000,000 gallons of water a day. Its construction has taken ten years. It has been completed within contract time, without a labor strike, and at a cost within the original estimate, $140,000,000. The celebration was taken advantage of to show the great influence of water supply on the public health. A pamphlet has been prepared by the Department of Health at the request of the Mayor's Catskill Aqueduct Committee for distribution to all the public school teachers throughout the city, with the suggestion that it be used as a text in the preparation of compositions on water supply. The pamphlet presents the main facts relating to the health aspects of the water supply.

Long Island College Hospital Medical School Inducts New President.—The inauguration of Dr. James Chidester Egbert into the office of President of the Long Island College Hospital Medical School were held in Polhemus Hall, Brooklyn, N. Y., on October 9. The induction address was made by Percy S. Dudley, President of the Board of Regents. After the address of acceptance by the President of the College, addresses of salutation and greeting were made by Dr. William Francis Campbell in behalf of the Council, Faculty and Alumni of the College and by Dr. Nicholas Murray Butler, Dr. Frank B. Blodgett and Dr. Samuel W. Lambert.

Rockefeller Foundation Aids Medical Education.—In cooperation with the General Education Board, the Rockefeller Foundation has turned its attention to the development of medical education in several of the centers of the country. In this field the Foundation and the Board of General Education have each contributed $1,000,000 for the development of medical education in connection with the University of Chicago. The Foundation is also cooperating with Johns Hopkins University in establishing a school of hygiene and public health. It has made an appropriation of $267,000 for this purpose. This new department opens this month, with Dr. William H. Welch as Director. Instruction and research facilities will be provided in hygiene, sanitation, and preventive medicine for physicians, biologists, medical students, chemists and engineers.

Rockefeller Foundation Reports on Hookworm, Malaria, and Yellow Fever.—The work of the Subsidiary National Health Board supported by the Rockefeller Foundation has been directed chiefly to the eradication of hookworm and in cooperation with the Government was extended to eight Southern States and fifteen foreign countries. The new fields of operation were Salvador, Brazil, Ceylon, and Siam, and early in 1917 work was started in the Fiji Islands, Papua, and Queensland, Australia. The Yellow Fever Commission, which consisted of Major General Gorgas, Dr. Juan Guiteras, Dr. Henry R. Carter, Major T. C. Lyster, Major Eugene R. Whitmore, and W. D. Wrightson, sailed from New York on June 14, 1916, and finished its work in South America in

December. The report of this Commission shows that so far as it could find the only endemic center of yellow fever in South America at present is Guayaquil, Ecuador. Certain South American countries call for close observation, and General Gorgas was appointed to direct the practical work along these lines. The war, however, has made it necessary to postpone most of the operation. An interesting experiment, covering a territory of 225 miles, is under way in Mississippi, which aims to demonstrate the practicability of the control of malaria through detecting the carriers and freeing them of malarial parasites.

New School for Nurses.—The Bellevue Hospital Training School for Nurses has decided to open a new department for the training of non-resident pupils as a result of the shortage of nurses occasioned by the war. There will be no tuition charge and textbooks and uniforms will be supplied to the applicants. The training will cover forty-eight hours a week. Applicants must have a high school or college education. This move has the endorsement of the official bodies related to war work.

Extermination of Mosquitos in Jamaica Bay.—The ditching of the Jamaica Bay marshes, which was begun last year, has been completed. Altogether five and one-quarter million feet of ditches were dug, at a cost of $88,625. Although the work had not progressed sufficiently to prevent all mosquito breeding this year, the results actually obtained augur well for the eradication of these pests in the near future.

Protest Against Building at Lake Mohansic.—The Joint Legislative Committee of New York State has been holding a series of hearings at the rooms of the Merchants' Association to decide what shall be done with the property acquired by the State for a hospital for the insane and a training school for boys at Yorktown on Lake Mohansic. Protests against having any public buildings whatever on this site were filed by Commissioner Williams of the Board of Water Supply, and representatives of the Department of Health, the New York Academy of Medicine, the Safety First Society, the Central Merchants' Association and a number of civic bodies. The committee has decided to visit the site and to hold another hearing on October 23rd.

Dr. M. Victor Safford, who has been attached to the Public Health Service of the United States Government and has been connected with the Immigration Service of the Port of Boston, has been engaged as deputy health commissioner of Boston.

Major B. W. Brown of the Public Health Service of the United States, now located at Camp Greene, has been elected assistant health officer of the city of Charlotte, N. C., at the request of the Government.

Examination for Assistant Resident Physician.—The Civil Service Commission of the State of New York announces a competitive examination for the position of first assistant resident physician for Iola Sanatorium for the Treatment of Tuberculosis, Monroe County. The salary is $1200 a year and maintenance. The position is open only to men who are citizens of the United States, graduates of an incorporated medical college, and licensed physicians of New York State. Applications must be at the office of the Commission at Albany by October 24, 1917.

Examination for Assistant Pathologist.—The Municipal Civil Service Commission of New York City is endeavoring to secure a number of competent physicians for the position of Assistant Pathologist. The position carries a salary of from $1,440 to $2,100 per annum. Candidates must be at least 21 years of age. Applications will be received at room 1400, Municipal Building, Manhattan, until Oct. 24 at 4 P.M.

Alvarenga Prize.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about $250, will be made on July 14, 1918, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published. They must be typewritten, and if written in a language other than English should be accompanied by an English translation, and must be received by the Secretary of the College on or before May 1, 1918. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College; other essays will be returned upon application within three months after the award.

The Alvarenga Prize for 1917 has been awarded to Dr. Wilburt C. Davison, Baltimore, for his essay entitled "The Superiority of Inoculations with Mixed Triple Vaccine (B. typhosus, B. paratyphosus A. and B. paratyphosus B) over Successive Inoculations with the Single Vaccines, as Shown by Agglutinin Curves in Men and Rabbits."

Cornell University Medical College opened its twentieth session on October 1, 1917. The student assembly was addressed by Dr. William M. Polk, the Dean, who discussed the relation of the medical college to the present military situation and outlined the opportunities for patriotic service by students of medicine. The attention of the student assembly was called to the active participation in the work of the United States of America by the college, the members of the faculty, and the medical graduates by active service in the field and by providing facilities for the instruction of officers of the Medical Reserve Corps. The entering students were exhorted to continue their course that, in accord with the announced plan of the authorities, they may be prepared to fill the vacancies in the medical ranks which, with the continuance of the war, are certain to arise.

The enrollment is as follows: First year, registered in New York, 38 registered at Ithaca, 30; total, 68; second year, 54; third year, 29; fourth year, 27; graduates in medicine, 4; total 182. All students registered for the degree of M.D. (with the exception of those in the first year who are taking the seven-year course leading to the de-

grees of A.B. and M.D.) are graduates in arts or science. As a result practically all members of the first year class fall within the limits of the military draft. Several students, having been drafted into the National Army or fearing the draft in the immediate future, failed to register.

American Association of Obstetricians and Gynecologists.—At the thirtieth annual meeting of this association, held at Newark, N. J., September 17-19, 1917, the following officers were elected: *President*, Dr. Albert Goldspohn, Chicago; *First Vice-President*, Dr. Wm. Seaman Bainbridge, New York; *Second Vice-President*, Dr. Arthur T. Jones, Providence, R. I.; *Treasurer*, Dr. H. E. Hayd, Buffalo, N. Y.; *Secretary*, Dr. E. G. Zinke, Cincinanti, Ohio.

Addition to Seaview Hospital.—The cornerstone of the first of a group of cottages for the outdoor treatment of tuberculosis at the Seaview Hospital, New Dorp, Staten Island, was laid recently by Commissioner Kingsbury.

Plan Hospital Merger.—At a conference recently called by Felix M. Warburg, and attended by representatives of a number of the city hospitals, plans were considered for uniting the three large Jewish hospitals of the Bronx, the Lebanon, the Bronx and the Bronx Maternity. The plan considered calls for a new central hospital to cost at least $500,000, and providing accommodation for 300 patients. The plan also contemplates the establishment of dispensaries in different parts of the Bronx. A committee has been appointed of the representatives of the hospitals interested in this movement to make a survey and map out a plan for the merger.

Red Cross Aids China.—The American Red Cross has taken steps to render aid to the 400,000 persons made homeless by the flood at Tien-Tsin, China. The Red Cross has appointed Dr. Roger Green of the Rockefeller China Medical Board as the Red Cross representative in China. It is estimated that $200,000 will enable the Red Cross to render effective assistance in coping with this disaster.

Obituary Notes.—Dr. MELVIN SHELDON, a practicing physician of Brooklyn, N. Y., died at his summer home in Churchtown, N. Y., of pneumonia, on October 8, aged 51 years. He was a graduate of the Albany Medical College, in 1893, and assistant surgeon at the Good Samaritan Hospital.

Dr. HAROLD HAVELOCK KYNETT died at Philadelphia on October 1, at the age of 55 years. He was graduated from the Medical Department of the University of Pennsylvania in the class of 1886. He was for a number of years editor of the *Medical and Surgical Reporter*.

Dr. JAMES S. GILBERT, a practicing physician of Bordentown, N. J., died on October 11, aged 58 years. He was a graduate of the College of Physicians and Surgeons of Baltimore, in 1886, and has been Mayor of Bordentown for a number of years.

Dr. THOMAS JEFFERSON POWELL, a graduate of the University School of Medicine, Baltimore, in 1866, died suddenly at his home in Sylacauga, Ala., on September 30.

Dr. JOHN M. CROCKER, a graduate of Harvard University Medical School, in 1866, and for thirty years a practitioner of Cambridge, Mass., died of heart disease, on October 6, aged 72 years.

Dr. SILAS P. HOLBROOK, the oldest practicing physician of East Douglas, Mass., and the vicinity, a graduate of the University of Pennsylvania Medical School, in 1862, died suddenly on October 2, at the age of 80 years. He had made a professional call within an hour of the time of his death.

Dr. SARAH F. NORRIS, a retired physician, died in Hyde Park, Mass., on October 2. She practiced as medical missionary in Bombay, India, under the auspices of the Congregational Board of Foreign Missions.

Dr. FRANK H. GARDNER, a graduate of the Medical School of Maine, in 1878, died at his home in Morrill's Corner, Me., after a long illness, on October, 8, aged 63 years.

Dr. J. WESLEY STORK, a graduate of the Kentucky School of Medicine, in 1895, died of apoplexy at his home in Darmstadt, Ind., on October 1, aged 63 years.

Dr. JAMES H. ELLIOTT, a graduate of the University of Louisville, Ky., in 1909, died at his home in West Plains, Mo., on September 25, aged 46 years.

Dr. JOHN HENRY ALLISON, a graduate of Vanderbilt University, Nashville, in 1888, died at his home in Altoona, Ala., after long illness, on September 7, aged 55 years.

Dr. JOSEPH WEEKS, a retired physician of Topeka, Kan., died at the home of his son in that city, on September 26, aged 88 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

THE WASSERMANN REACTION

LONDON, September 29, 1917.

THE London County Council has circulated a memorandum on the Wassermann reaction which was originally drafted by the pathologist of one of our hospitals for its venereal department. It has since been submitted to other pathologists who have made important suggestions which the council has embodied in a leaflet it is now circulating on the subject. This starts with the statement that the enormous number of tests which have been made during the ten years since the reaction was introduced have left no doubt as to the meaning to be attached to definitely positive or negative results in the great majority of cases, but in regard to certain points it cannot be said that universal agreement has been reached. The conclusions suggested in these special cases represent only the general trend of opinion. It is to be remembered that the Wassermann reaction is a quantitative one—*i.e.* it depends on a certain phenomenon occurring in a certain degree; hence there will always be border-line reactions, which, while showing a distinct departure from the normal, are not sufficiently marked to serve as a basis for a definite diagnosis, except under special circumstances. When such reactions occur they must be carefully considered in relation to all the known facts of the case in question. A well-marked positive reaction, obtained with the full technique, or with a modification involving only unessential

details, justifies a definite diagnosis of syphilitic infection, provided that we can exclude leprosy, yaws, and perhaps sleeping sickness, and these seldom call for consideration in this country. A positive Wassermann reaction sometimes is obtained in malarial cases, where there is a complete absence of symptoms of syphilis, and no suggestion—in history or otherwise—of a previous taint, and this point must be considered in some cases.

The reaction is first met with between the second and sixth week after the appearance of the primary sore. Up to the latter date an indefinite result is obtained in a certain proportion of cases, and during the first three weeks, much more certain information may be obtained by examining the chancre for the presence of the *Spirochæta pallida*. If this examination gives a negative result, and the case is clinically suspicious, a Wassermann reaction should be carried out, and if negative or indefinite, repeated in about a week. A single negative result obtained during this period is of no value in excluding syphilis.

From the sixth week onward, and throughout the whole period of secondary manifestations, practically every case gives a well-marked positive result, provided no treatment has been begun. Therefore, if a patient presents lesions, which if syphilitic, would be in the secondary stage, and yet responds negatively to the test, great care is to be taken before diagnosing syphilis, and it would be well in such a case to submit it to an expert. Later stages, with some exceptions (as aneurysm and general paralysis) do not show quite so high a proportion of positive results, but the great majority of cases, *e.g.* those showing ulceration of throat and tongue, etc., give a definitely positive reaction. Thus, although a negative result has not the practically conclusive import which it possesses in the secondary stage, yet it should weigh strongly against a diagnosis of syphilis, especially if it can be ascertained that the patient has never undergone any antisyphilitic treatment.

OUR LETTER FROM PARIS.

(From Our Regular Correspondent.)

RED CROSS ORGANIZING—THE REORGANIZED AMERICAN HOSPITAL—HANDLING OF THE WOUNDED—ANESTHESIA FOR MINOR OPERATIONS.

PARIS, September 10, 1917.

THE dissatisfaction and mild opposition encountered by the American Red Cross upon its arrival in Paris under the direction of Major G. M. P. Murphy, Commissioner for Europe, is disappearing as the real aim and scope of the work proposed are understood and its evident benefits appreciated. By the coming of the United States into the war, a changed condition was created for all American Relief Societies and activities, and the coming of the United States army has made that change effective.

The work done during the first three years of the war by those Americans, both in France and America, who gave their money, time, and strength to relieve the suffering among the Allies, should be publicly acknowledged as a great example of self-sacrifice and generosity, and to the people who carried on this work the thanks of all American citizens are due. No new organization coming into the field now has any right to take action that will in any way diminish the credit which is due to the existing societies and organizations or which will in any way lessen the effectiveness of their work; rather it should be the aim of all newcomers into this field to strengthen in every way possible the existing organizations and to increase their power for doing good.

It must be recognized, however, that certain difficulties have arisen which it will require new machinery to meet, and only by the pooling of interests can this result be accomplished. The difficulty of effectively distributing relief increases month by month as the war goes on. The great problem which confronts all American effort in France is the problem of transportation—both ocean and inland. Even before the entrance of the United States into the war, the tonnage available was not sufficient to meet the situation adequately, and the strain put upon that transportation has been enormously increased by the coming of the United States Army to France. This, in fact, is the great central factor which compels new measures, and the controlling element in these measures is the United States Army. The army will apportion the available tonnage and railroad transportation as it deems wise, and in view of the fact that it is obviously impossible for the army administration to undertake to deal with a great number of individual relief organizations, it has chosen, and the people of the United States have been requested to consider the American Red Cross as the central organization through which relief work should be carried on by Americans in this war. The army also recognizes the essential value of the Y. M. C. A. and will confine its dealings with the relief and social problems largely to these two organizations. The Red Cross, in fact, is in a sense associated with and under the control of the army and may properly be termed a governmental organization; therefore, it has seemed wise that the Red Cross should not attempt to use the limited transportation facilities at its command for the distribution to points which are determined in America of a very large number of individual contributions, but that it should receive contributions from all these individuals and societies in America that are willing to trust these contributions to its care, and that it should distribute them in such places as seem best to it and its associated societies in France, and to such places as the distribution facilities at its command make possible.

The Red Cross announces that it in no way wishes to limit or interfere with the space and facilities which others are able to procure; that it only wishes to use those facilities which it is able to obtain in a way which its officers believe will best enable the society to carry out the duties with which it has been entrusted and which will best fit in with the needs of our army, and will best carry out the desire which all have in their hearts to do the greatest good in the best way. In order to do these things, they believe that the best way is: (1) That the Red Cross here, aided by the experienced relief societies, should classify, standardize, and requisition in the order of their importance the relief supplies which are needed here and should determine what may either be purchased on this side or dis-

pensed with altogether in order to save transportation space and at the same time fill the most pressing wants. (2) That the Red Cross at home, aided by the experienced societies and relief organizations in America, should provide in a systematic way for furnishing the relief supplies so indicated as needed here and which may not be purchased here, and for their shipment in the order of their urgency.

The women's hospital committee of the American Red Cross Military Hospital, which has been organized by Mrs. Alfred E. Bradley, wife of Colonel Bradley of General Pershing's staff, held its first meeting at the hospital in Neuilly yesterday afternoon. The hospital committee is practically the reorganization of the former woman's auxiliary committee of the American Ambulance, its duties being along the same lines, with the exception of the raising of funds, and its members being practically the same. The full list of members of the former woman's committee have been invited to continue their work under the new military administration of the Ambulance, and Mrs. Bradley announced yesterday that two new members, Mrs. Sandford H. Wadhams and Mrs. W. K. Vanderbilt, had been added to the list.

They have already commenced their work in cooperation with Colonel Peed, who is the military administrator of the hospital, to improve the ambulance by arranging special wards for the officers. Three wards on the second floor are being entirely renovated and beautifully installed for officers' wards. Flower boxes have been placed at the windows, which alone give the rooms a cheerful aspect, and the woodwork and beds have been repainted and the rooms made to look cosy and homelike and less like hospital wards. An officers' lounging-room is also being installed, where the officers who are able to be about may have a place to receive their guests and a room for reading and writing.

Many other improvements have been made recently under the military administration, which not only add to the comfort of the patients, but which have proved a great saving in work for the staff. A new feeding system has been inaugurated. The patients who are able to be out of bed are permitted to go to the dining-rooms, while those who are confined to their beds are fed from carts which carry a basin of coals under sliding drawers containing the food, thus keeping it piping hot. These carts are wheeled from ward to ward and are proving of excellent service as time-savers. Two auxiliaries have served seventeen wards in seventeen minutes.

It took fully a year to organize the proper handling of the wounded, after the commencement of the war, and during that time nearly all the wounded arriving in Paris and other interior points, were in generally bad condition. It is with great satisfaction that we see today the errors and false ideas of the early months dissipated and corrected. The wounded arriving since the Verdun offensive are all in the best possible condition. They have all been excellently operated upon, or their wounds thoroughly cleansed, renovated, and perfectly bandaged, and arrive in Paris from the point of evacuation in a single day's journey.

This new state of affairs is extremely fortunate for the Paris hospitals, for the reason that, as the war continues, they have steadily lost their personnel, until now it is becoming a grave question how to conduct the service properly and the question is being agitated of calling back from the front some of the younger men who have performed three years' service there, to take charge of some of the hospital services that are at present without heads. At the present time the Department of Public Assistance is embarrassed to find heads for vacant services in the Municipal, Boucicaut, Bichat, and Lariboisière Hospitals. This question is equally engaging the attention of other large cities, all of which are centers for the care of the wounded, and where there is a serious lack of sufficient medical men to do the work.

In Italy they have solved this question with a fair degree of satisfaction, by returning surgeons to Rome, Florence and Milan during the quiet periods between attacks, when they take up their service in their home hospital and return to the front when called by the imminence of another offensive.

Dr. Legueu, at Cochin Hospital, showed me a pretty trick in local anesthesia for minor operations, as opening an abscess, passing a sound, cutting an adhesion, or any simple thing occupying not more than five minutes. It consists in soaking a pledget of cotton for each nostril with pure chloride of ethyl and causing the patient to close the mouth and breathe deeply through the nose; almost instantly all sensation is dulled. I saw him slit up and free a difficult phimosis under its influence.

146, Avenue des Champs Elysées.

Progress of Medical Science.

Boston Medical and Surgical Journal.

October 4, 1917.

1. The Treatment of Gastric Hyperacidity and Hypersecretion. William F. Boos.
2. The Cerebrospinal Fluid in Anterior Poliomyelitis. Report on 108 Cases. Winfred Overholser.
3. Dr. Samuel G. Howe and the Beginning of Work for the Feeble-Minded in Massachusetts. Frankwood E. Williams.
4. Feeble-Mindedness as an Element in Poverty. Robert W. Kelso.
5. What It Means to Have Non-committed Feeble-Minded in the Community. C. C. Carstens.
6. A Plea for the Instruction and After-School Care of the Feeble-Minded Deaf. Caroline A. Yale.
7. The Defective Girl Who Is Immoral. Mabelle B. Blake.

4. Feeble-Mindedness as an Element in Poverty.—Robert W. Kelso defines the word poverty as the more or less chronic insufficiency of the means of keeping a reasonably sanitary abode and enough food and clothing to maintain the body in good working condition—plus the additional means of like maintenance for those properly dependent. Back of the superficial causes, which are given, whether it be in the immediate generation or in the next or the next, there will be discovered a fatal lack of judgment, a defect of will, a mental dulness that has brought this train of troubles to its progeny. He further states that no consideration other than this close relationship between feeble-mindedness and poverty could with equal force bring out the true significance of that dreadful fact about feeble-mindedness,—namely, that it is hereditary in at least 80 per cent. of the cases. The practical definition of a feeble-minded person is one who, though capable of providing his living with his hands, is unable, by reason of mental defect, to make his living in competition with his more intelligent fellows. When we realize that the feeble-minded citizen is by definition a pauper, and when we further consider that the condition breeds as true as the spots on a dog, we can vaguely picture to ourselves the tremendous social saving in preventing their propagation, and the incal-

culable social waste attending our neglect to catch this social opportunity at the flood tide.

New York Medical Journal.

October 6, 1917.

1. Aspiration or Vacuum Suction Apparatus. Robert Cunningham Myles.
2. Etiology and Treatment of Frequency of Urination in Women. William E. Stevens.
3. Vital Statistics. William H. Guilfoy and Edwin W Kopf.
4. The Modern Children's Clinic of the Out Patient Department. Charles Herman.
5. Typhoid Appendicitis. Eugene W. Skelton.
6. Intubation in Diphtheria. Alfred J. M. Treacy.
7. Serum Disease, Anaphylaxis, and Allergie. F. E. Stewart.
8. Urticaria. Oswald Joerg.

2. Etiology and Treatment of Frequency of Urination in Women.—William E. Stevens gives somewhat over fifty causes for frequency of urination in women. He states that as frequency of urination is a symptom rather than a disease, successful treatment is necessarily dependent upon the discovery and removal of the primary etiological factor as well as the secondary pathological conditions. It would be manifestly absurd, for instance, to attempt the cure of an ulcerative tuberculous cystitis while the primary focus in the kidney remained untouched. Brief mention will be made of the treatment of a few of the more common conditions responsible for the above symptom. *Trigonitis and urethritis associated with pyelonephritis.*—The keynote in the treatment of pyelonephritis, as in infections elsewhere in the body, is drainage. This is accomplished by means of the ureter catheter, which at times should be permitted to remain in position for a period of from several hours to two days. The solution used for pelvic lavage and the strength of the same is of minor importance if the pelvis is thoroughly emptied before its introduction. Bimanual pressure upon the kidneys assists in accomplishing this result. Another factor of importance in the treatment of pyelonephritis is the determination of the range of acid production or hydrogen ion concentration exhibited by the various groups of colon bacilli, to infection with which pyelonephritis is usually due. We may thus ascertain in which direction the reaction of the urine must be adjusted and whether alkali producing drugs, as potassium citrate, or those rendering the urine acid, as sodium benzoate and acid sodium phosphate, are indicated in order to bring about conditions unfavorable to the growth of the organism. The paracolon bacillus, while less common, is of greater virulence than the colon bacillus and is frequently found in alkaline urine. Trigonitis, as a rule, disappears quickly under the use of bladder irrigations and topical applications of silver nitrate, while good results are also obtained in the treatment of urethritis with 2 to 10 per cent. solutions of the same drug. Previous massage of the urethra, often over a sound, is helpful. *Prolapse of the posterior urethral wall* is best treated by operative measures, a portion of the superior vaginal wall, beneath the urethra, being resected and the fascia brought together, following the technique used in operating for cystocele. Prolapse of the uterus, if present, should also be corrected. Gradual distention of the bladder with normal salt or boric acid solutions and the occasional passage of sounds have often resulted in improvement in those cases where no apparent cause for frequency has been detected.

Journal of the American Medical Association.

October 6, 1917.

1. Cooperation between Pharmacology and Therapeutics. Albion Walter Hewlett.
2. The Protection of the Health of the Worker in War. W. Irving Clark.
3. The Early Recognition of Multiple Sclerosis, with Report of Thirteen Cases. Leo M. Crafts.
4. Notes on the Standardization and Administration of Antimeningococcic Serum. Harold L. Amoss.
5. Retaining the Floor of the Orbit in Resection of the Superior Maxilla. Weller Van Hook.
6. Fractures. H. R. Allen.
7. The Therapeutic Value of Oral Rhythmic Insufflation of Oxygen, with Description of a Simple Apparatus for Its Execution. S. J. Meltzer.
8. The Place of Infant Welfare in Public Health Instruction. J. H. Mason Knox.
9. Simplified Technique in Laminectomy, with Description of Combined Laminectomy and Spine Fixation by Bone Transplant. F. J. Gaenslen.
10. Operative Treatment of Tuberculosis of the Knee Joint in Adults. Robert B. Osgood and Edward C. Bull.

10. Operative Treatment of Tuberculosis of the Knee Joint in Adults.—Robert S. Osgood and Edward C. Bull state that tuberculosis of the knee joint in adults differs in two important points from the same disease in children: (1) In children there are centers of growth in direct anatomic relation to the joint. Disturbance of these centers by the disease or by operative interference may seriously affect the ultimate length of the limb. This condition requires consideration and treatment. (2) In children there seems to be a more marked resistance to the disease than in adults, and cures with only slight disturbances of function often occur when persistent, and continuous local fixation is combined with general treatment by heliotherapy and an antituberculous regimen. In adults the disease, when once established, may be said, according to their experience, never to fully recover without operative interference of some form. It is their belief that an operation should be contemplated as soon as the diagnosis has been made. They further state that it is often wise to defer the operation in a case in which there has been no fixation and in which the knee is in a more or less acute and irritable state. Such a patient should be put at once at complete rest and freedom from weight-bearing for perhaps a month, and when the acuteness of the disease has subsided, the appropriate operative procedure may be more safely executed, with less postoperative reaction. Only two types of operation have for many years been considered in the clinic: the one conservative of function and representing little or no shock, attempting to cure the disease by keeping synovial surfaces apart and bathing them in an antiseptic oil; the other destructive of function, a major operation, attempting to cure the disease by destroying the joint and eliminating the synovial membrane and the red bone marrow. When they believe that the tuberculous disease exists only in the synovia, they have been advising their adult patients to submit to an exploratory arthrotomy through a 3-inch lateral incision, and if no bony disease can be found at operation and the macroscopic findings are consistent with tuberculosis, they have been injecting a bland olive oil containing 4 per cent. of iodoform after the method of Brackett. Suffice it to say that from 1 to 5 ounces of the 4 per cent. iodoform oil are injected after the joint has been opened, the fluid evacuated, and the adhesions and pannus, if it exists, carefully separated. The deeper layers of the capsule and the synovia are closed by a continuous stitch from each end, a small opening being left in the middle for the nozzle of the glass syringe. A special double loop lock stitch is inserted and pulled tight about the nozzle, and the oil injected with considerable tension and the lock loop pulled home. Oil has been recovered from the joint eight weeks after the operation in an apparently unchanged condition. Complete fixation is never employed, though the patient bears weight in a split cast only after several months. They conclude as the result of their treatment for this condition in the Massachusetts General Hospital since 1907 that: (1) Tuberculosis of the knee in adults is not fully cured without operative treatment. (2) Primary synovial tuberculosis of the knee in adults exists and is frequently improved or cured by inflation of the joint with iodoform oil. (3) We have seen no permanently satisfactory function restored in cases with bone involvement. (4) Excision of the knee is the method of choice in cases with bone involvement. (5) The position of choice is from 15 to 20 degrees' flexion for ambulatory vocations, and from 35 to 40 degrees' flexion for sedentary occupations. (6) Bone plates, where the bone is firm, and the kangaroo tendon "bundle tie," for conditions in which there is much atrophy, are valuable means of internal fixation. (7) Function is important for final bony union after excision.

The Lancet.

September 15, 1917.

1. Fourth Analysis of Cases of Tetanus Treated in Home Military Hospitals During Part of October, November, and Part of December, 1916. David Bruce.

2. War Nephritis. C. E. Sundell and A. T. Nankivell.
3. A Report on the Treatment of *Entamœba Histolytica* "Carriers" with Emetine Bismuth Iodide, giving a Comparison between the Keratin coated Tabloids and Salol coated Pills. D. G. Lillie and S. Shepheard.
4. The Treatment of Functional Contracture by Fatigue. E. F. Reeve.
5. Active Treatment in Established Eclampsia. Gilbert I. Strachan.
6. Two Cases of Gunshot Fracture of the Mandible with Loss of Substance. Richard J. Green.
7. The Effect of *x*-Rays Upon Diseases of Bacterial Origin. Christopher Kempster.
8. The Biological Aspects of Warfare. Harry Campbell.

7. The Effect of X-Rays upon Diseases of Bacterial Origin.—Christopher Kempster states that during recent years there has been an increasing application of the *x*-rays as a means of treatment of diseases of bacterial origin, both superficial and deep-seated, with results which have in many cases been surprisingly successful; cases which under other methods of treatment either became worse or had not improved at all making a rapid recovery. This has led to an inquiry as to whether the *x*-rays possessed any specific germicidal action. A diversity of opinion has arisen on this point. Upon the principle that there is no result without a cause, there must be some good reason why evidence so contradictory can be produced. The one set of investigators have based their claims upon findings made as the result of experiments and observations of the action of *x*-rays upon microorganisms in living animal tissues—a distinction of the utmost importance and one which will reconcile these opposite opinions and prove them both to be true. He shows that the action of *x*-rays upon bacteria in inert media is not germicidal, and also that the absence of bacteria in living animal tissues after irradiation is not due to the lethal action of the *x*-rays but to the stimulation of the living animal tissues, leading to increased phagocytosis and so to the disappearance of the microorganisms, and that the phagocytosis is materially aided by the action of the *x*-rays upon the bacteria. Experiments were thoroughly conducted for proof, and Kempster presents his conclusions as follows: It might well be said that if the increased phagocytosis is due to increased stimulation of the tissues, what proof is there that the *x*-rays play any part different from that of any other stimulant applied to the region? The answer is that if tuberculous glands, such as are commonly met with in the cervical region, be subjected to the influence of the *x*-rays, they will in course of time atrophy and become sterile of tubercle bacilli, whereas glands of a similar nature exposed to stimulation of other kinds, such as fomentations, poultices, iodine, etc., do not atrophy and become sterile, but rather increase in size and bacillary virulence. We thus see that the phagocytosis, encouraged by the applied stimulation, is not alone sufficient to prevent infection; it follows, therefore, that the *x*-rays must play an important and specific part in the prevention of the infection by and in the destruction of the bacilli. We found that when the tubercle bacilli were exposed to the rays they did not form colonies, and we also found that developed colonies exposed to the rays did not grow, that the bacilli were not destroyed in either instance, but that their increase and multiplication had been inhibited. This, then, is the reason why inoculated guinea-pigs when subjected to the influence of the *x*-rays do not develop tuberculous lesions. The phagocytes are equal to the task of destroying the germs inoculated into the animal if the germs are deprived of their power of rapid reproduction, but if their reproductivity is not inhibited the phagocytes are unequal to the task of dealing with the ever-increasing invading forces. We may therefore conclude that the effect of *x*-rays upon diseases of bacterial origin is that they have not any germicidal powers, but that they have a decided inhibitory effect upon the reproduction and increase of the germs, and that they produce stimulation of the living tissues leading to an increased phagocytosis, which is capable of destroying an unreproductive colony of microorganisms.

Le Progrès Médical.

August 25, 1917.

Voltaic Vertigo in Affections of the Internal Ear.—Bourgeois discusess the so-called Babinski test in which the two poles of a galvanic circuit are applied respectively over each ear. In the normal subject when the current is made the head is inclined toward the trunk on the side of the positive pole. This is the so-called voltaic vertigo test as described in standard works. Babinski in making this test has the subject walk with closed eyes, this modification necessitating long conduction wires. With a mild current the subject tends to deviate slightly to one side in his walk. If the labyrinth is normal patient inclines the head when an intensity is reached of 6 milliamperes. He feels slight vertigo and an irresistible impulse toward the side of the positive pole. A stronger current produces nystagmus, but by this time the patient is unable to tolerate it. If there is hyperexcitability of the labyrinth a weaker current—1 or 2 milliamperes—is sufficient to induce Babinski's sign. Even then the effects of the current may be severe, vertigo being pronounced. In hypoexcitability conditions are reversed for as high as 15 milliamperes may be required to induce the least degree of vertigo. But in severe involvement of the labyrinth and irrespective of the direction of the current patient tends to fall towards the affected ear; and if both ears are involved, toward the worst ear. The author has made free use of these tests and is able to corroborate the laws as enunciated by Babinski. The latter published his discoveries before Barany had introduced induced nystagmus into diagnosis. It has been disputed that the Babinski test controls only the labyrinth. It is true that in addition to labyrinthic symptoms the patient experiences a salt taste and hears a sonorous sensation, but these phenomena are localized. There is no evidence of central excitation. The passage of the current through the petrous bone causes only peripheral phenomena. It is held often that the Barany test is sufficient, but the Babinski reveals the degree of excitability of the semicircular canals; by its use we can in a few minutes ascertain the functional state of the vestibule. The author would begin the examination with the Babinski, just as he would also determine the state of hearing by the Lombard test. He has used the former with great success in a series of 12 cases. Four patients had normal vestibular apparatus as determined by the amperage required to produce head inclination. One who withstood 18 milliamperes had total unilateral labyrinthine deafness, due to a projectile wound. Four with shell shock showed hyperexcitability of the labyrinth. In three there was no inclination toward the positive pole, but the tendency to fall toward the affected side. The same phenomenon was seen in a patient with Ménière's disease.

La Presse Médicale.

August 23, 1917.

Treatment of Typhoid Osteoperiostitis by Vaccinotherapy and Surgical Intervention.—Weil and Chevrier have treated 12 patients in this manner, in 10 of whom the lesions were located in the ribs. During the present war from 80 to 90 per cent. of these bone complications of typhoid have been seated in these structures. There must be some good reason for this unusual incidence, but it cannot be traced to any external factor and the authors can only suggest excessive function of the ribs incidental to the age of the soldiers and exertions of warfare. The bone lesions represented sequelæ and every patient treated had undergone a severe, protracted type of fever. The majority had not been vaccinated and every case was true typhoid. A blood find is not enough to decide as to the pathogenic organism, which must be found present in the lesion itself. This need not of course be determined in advance of operation for it is assumed that some cases will already be in the fistulous stage while others will demand prompt intervention. Agglutination was positive in 11 of the 12 patients, 7 of them at 1-500. The management begins with vaccinotherapy in all cases, which have not suppurated with the expectation that operation may not become necessary. There were but two such cases and both recovered without other treatment. The same measure is used in suppurative cases, whether closed or fistulous, but without much anticipation of a permanent cure by this means alone. Such a fortunate outcome can, however, occur. Apparent recovery was

obtained in five cases, but sooner or later signs of local infection reappeared both in the closed and fistulous cases, so that some form of intervention, usually radical, became necessary. Despite this liability to recur, the authors would always begin treatment with vaccination because of the possibility of a cure without operation and of cure with slight intervention. In the most favorable case the focus of suppuration was almost suppressed. The scar opened and a single drop only of pus appeared. Operation was not required. It therefore appears that in 3 patients at least vaccinotherapy could be regarded as curative. In regard to the others vaccination certainly prevented the development of sudden destructive suppuration.

Jacquet's Disease.—Sabouraud discusses the association of baldness with dental anomalies originally agitated by the late Dr. L. Jacquet under the designation of reflex alopecia. The author at the time opposed this view. The nails, hair, and teeth have affinities of origin so that developmental or involutional deficiencies should be found to occur side by side in the three systems. This association might be in part latent. Hereditary syphilis suggests itself as affording an opportunity to show the presence or absence of a common dystrophic factor. The author discusses the dental stigmata of this affection. Dental teratology need not of course be synonymous with heredosyphilitic teeth. On the contrary, while there are numerous recognized types of imperfect or monstrous dentition which appear incidentally here and there in the children of syphilitics many of them are not specific. The author has numerous models of the teeth of bald subjects in which the four basic forms of dental dystrophy are present. He finds enough evidence to uphold the dictum that these dystrophies accompany both severe and mild forms of alopecia, and that in addition to scalp baldness the other hairs of the body and the nails may participate. Baldness is in part latent because after loss of hair the latter may grow in again. The subject should be investigated systematically, including the employment of serological tests, Sabouraud says, in order to determine whether or no Jacquet's syndrome is of syphilitic origin.

Brazil-Medico.

August 4, 1917.

The Tuberculosis Problem in Rio de Janeiro—Barbosa in the course of a serial article on this subject mentions that at least 90 per cent. of the tuberculosis in the Brazilian metropolis is of transmissible types, man to man. The vehicle of transmission is the sputum, and cultures of bacilli are not obtainable save from animal tissues and discharges. Whether a house can become "infected" in the figurative sense is more than doubtful. Such a house could hardly exist in the absence of a subject with active tuberculosis. Bacilli cannot multiply or even survive long in dried sputum and dust. Every case of tuberculosis should be discovered and notified, naturally without the employment of force. The Inspector for Tuberculosis should then decide as to whether or not the case is an open or contagious one in the latter event whether it is best suited for home or hospital control. In the home case the patient chooses his own physician while the Health Department looks after the hygienic and sanitary end. The closed case must also be controlled, if there is a possibility that it could become an open one. These patients require simply hygienic control. In Rio there are needed 75 inspectors and even a thousand subordinates, to control the very large contingent of tuberculous subjects in a satisfactory manner. At present hospital facilities for isolation and treatment are insufficient. While new pavillions are being constructed the use of camps in the woods is suggested.

The Enterokinetic Action of Pituitrin.—Pimentel refers to a pioneer report on this subject by Haussay and Beruti in 1915. This use of the remedy has been tested in Cuba and the principal question is in reference to a possible superiority over orthodox purgatives. That pituitrin should be able to stimulate intestinal peristalsis is a foregone conclusion, but earlier studies limited themselves to statements that such an action while present was only transitory. The author relates a number of cases which tend to show that a hypodermic injection of 1 c.c. will often empty the bowels in 5 or 10 minutes. One patient passed 3300 grams of fecal matter in 5 minutes. In other cases, however, in which the remedy was employed, the result was slow or negative and there was nothing apparently gained by the use of the pituitary extract in this way.

Hygiea.

July 16, 1917.

Series of 221 Myoma Laparotomies.—Lindqvist after a brief history of the development of the radical abdominal myomectomy reports a tabulation of 221 operations with reference both to immediate and end results. In 65 cases total hysterectomy was done while in 121 cases supravaginal myomectomy was the intervention. The other patients were submitted to conservative operations. The author lost but two patients, each from pulmonary embolism (no mortality after conservative methods). Among post-operative complications were 16 examples of thrombosis, while next in order numerically were 14 cases of vesical disturbance, the ureters escaping injury. End results were as follows: of the panhysterectomy cases 94.2 per cent. ended satisfactorily. The corresponding per cent. for the supravaginal operation was 81.1. Despite this apparent superiority the author has become a partisan of the more conservative of the two interventions and will employ it in selected cases. The amount of disturbance caused by the artificial climacteric was large, for more or less of it was present in 45 per cent. of cases. If one ovary had been left behind, Lindqvist believes, these disturbances could have been very markedly reduced in amount.

Journal de Médecine de Bordeaux.

August, 1917.

Traumatic Periosteoma.—Rocher reports nine cases of this sequela of traumatism, the latter usually due to the tangential impact of a projectile. The pathology is simple, for the inflamed periosteum makes new bone in the zone of contusion. In peace times the shin is the most likely seat of this lesion, youthfulness furnishing a predisposition; but in the author's war material the trochanters were involved in 5 of the 9 cases. In peace surgery infection is not common, but in warfare the reverse seems to be the case. At least, but 4 of the 9 cases were aseptic, and suppuration with or without fistulation is therefore the menace in a large number of cases. This course is due to several factors. The projectile may have been lodged in the wound area, and it may or may not have caused necrosis of a splinter of bone. The abscess cavity or fistula in such a case would then show a tendency to develop fungosities. The general configuration of the periosteoma shows marked variation. In case I it was spur shaped and hence much in the way, in addition to causing painful irradiations. It was easily ablated with the scissors. In the second case the periosteoma exhibited a tendency to "mushroom." In the more deeply seated lesions an *x*-ray was necessary to map out the contour and in such cases nerve filaments could readily be involved in the contusion area. A dissection operation then became necessary, with removal of osseous tissue by morcellation. In fistula cases bismuth paste was used in radiodiagnosis. To reproduce a case in some detail, patient No. V was struck over the right subtrochanteric region by a shell fragment. The entire wound region corresponded to the external surface of the upper third of the femur, and the foreign body remained in this area, from which it was extracted the following day. A free suppuration of the wound was followed by tetanus, which ended in recovery. The *x*-ray showed an osteoma as large as a hen's egg in the subtrochanteric region. The trajectory of the projectile persisted as a fistula, suppuration from which could not be arrested. For this reason and because the tumor was a mechanical nuisance the latter was removed by morcellation. The osteoma was found to be the seat of a fungating osteitis. A satisfactory recovery followed the operation.

Book Reviews.

THE MEDICAL CLINICS OF NORTH AMERICA. Vol. I, No. 1, July, 1917, Johns Hopkins Number. Price per year, $10.00. Published bi-monthly. Philadelphia and London: W. B. Saunders Company.

THIS publication is intended to supersede the Medical Clinics of Chicago, and is meant to be representative of what is best in this line in the entire country. Through such a medium, men who are not able to visit regularly the large teaching hospitals can keep in touch with what is new in diagnosis and treatment. This first number contains much of interest from the clinics of Doctors Janeway, Barker, Mosenthal, Futcher, Hamman and Brown of the Johns Hopkins Hospital. The teaching is based on patients brought into the clinical amphitheater for demonstration before the students. Seriatim the cases presented are as follows: Hodgkin's disease with extensive skin eruption; postural albuminuria; diabetes associated with disturbances of the external secretion of the pancreas in a syphilitic; meningitis of unknown etiology probably meningococcal; fibrillation of muscular tissue; essential hypertension; dietetic treatment of diabetes mellitus; acromegaly; combined scleroderma, Raynaud's disease and chronic arthritis; hypertension, its clinical aspects; dermoid cyst of mediastinum; Milroy's disease; some gastrointestinal notes; visceroptosis and chronic appendicitis; the medical after-care of surgical patients after abdominal operations.

The number is replete with practical points and is characteristic of the thoroughness in clinical teaching for which Johns Hopkins Hospital is noted.

THE MODERN MILK PROBLEM IN SANITATION, ECONOMICS, AND AGRICULTURE. By J. SCOTT MACNUTT, Lecturer on Public Health Service in the Massachusetts Health Service in the Massachusetts Institute of Technology; Author of "A Manual for Health Officers." Price, $2.00. New York: The Macmillan Company, 1917.

ANYBODY who has given thought to this subject will readily concede that there is a "milk problem" and that it is becoming more important every day, especially in New York. The reason for such a state of affairs is lucidly explained by the author in this small book, and after perusing the pages one unavoidably gets the impression that the "problem" takes the form of a vicious circle in which the farmer, the dealer, and the consumer are engaged in a fruitless controversy, each accusing the other of being in the wrong. The fact of the matter is, as the author points out, that the economic factors involved at the present time are so complex as to preclude any permanent settlement, unless all parties concerned are willing to meet one another half way. The author explains how this might be accomplished, and considers the subject from every angle. We can recommend this book as being a thoroughly sound exposition of a most perplexing problem.

COLLECTED PAPERS OF THE MAYO CLINIC, ROCHESTER, MINNESOTA. Edited by Mrs. M. H. MELLISH. Volume VIII, 1916. Octavo of 1,014 pages, with 411 illustrations. Price, cloth, $6.50 net; half morocco, $8.50 net. Philadelphia and London: W. B. Saunders Company, 1917.

THE further extension of endeavor in the field of scientific research made possible by the Mayo Foundation for Medical Education and Research in the Graduate School of the University of Minnesota has resulted in such a plethora of material contributed by those connected with the Mayo Clinic proper and the Mayo Foundation that it has been found necessary this year to still further limit the percentage of published papers that could be reprinted in full in this annual. Consequently, not only have certain papers been abstracted for this volume, but a few of the articles read or published in 1916 by the staff of the Mayo Clinic have been omitted entirely and a number of others have been held over and will be included later in more comprehensive studies on the same subjects.

There are forty-two contributors to the present volume. The arrangement of material is the same as has obtained previously except that since, during the past year, so much more work has been done on the blood, this subject is for the first time accorded a separate heading. The headings and number of articles in each division as are follows: Alimentary Canal, 29; Urogenital Organs, 14; Ductless Glands, 14; Blood, 7; Head, Trunk, and Extremities, 12; Technique, 6; General, 11. Many of these articles present the most advanced work that has been done in the respective fields; and the fruits of the correlation of labor of the clinician, operator, and pathologist perhaps reach their best exemplification in certain of the articles reprinted in this volume.

As we have repeatedly indicated in previous reviews, these volumes are of exceptional value to the progressive surgeon, and the current volume with its varied contents seems in many ways the most important that has yet appeared.

CORNELL UNIVERSITY MEDICAL BULLETIN. Vol. VI, No. 4, April, 1917. Studies from the Department of Surgery, Including Urology, Gynecology, Laryngology, and Ophthalmology. Published by Cornell University, New York City.

THIS consists of a collection of reprints of twenty-six articles written by various surgeons connected with the departments of surgery, urology, gynecology, and ophthalmology of Cornell University. There are fourteen articles from the department of surgery, six from urology, one from gynecology, three from laryngology, and two from ophthalmology. One of the articles from the department of ophthalmology and all three from that of laryngology were originally published in medical journals during the year 1914; all others in 1916 or 1917. Most of these articles are well worth keeping on file, and their collective publication by the authorities of Cornell University not only renders this easy but also serves to call attention to some of the excellent work that has been done during the past year by members of the teaching staff.

EXPERIMENTAL PHARMACOLOGY. By DENNIS E. JACKSON, Ph.D., M.D., Associate Professor of Pharmacology, Washington University Medical School, St. Louis. With 390 original illustrations, including 24 full-page color plates. St. Louis: C. V. Mosby Company, 1917.

AS the title denotes, this is purely a laboratory book. We know of but two earlier works in English of the same scope, to wit, Hermann's, published in 1883, and Greene's, the last edition of which appeared in 1909. Both of these are small efforts—in fact, Greene's contains but 76 pages. The present volume of 526 pages practically has the entire field to itself, and its only competitor for world honors is the third edition of the German work of Meyer and Gottlieb (1914), which is devoted to both clinical and experimental pharmacology, but which is not in any sense a laboratory guide and is relatively poor in illustrations. Hence Dr. Jackson's exhaustive work, standing alone, is practically beyond criticism at present. Time alone will proclaim its actual value. Dr. Halsey's translation into English of the original edition of Meyer and Gottlieb's book should make an excellent companion for Jackson's laboratory guide, for the two works exhaust the possibilities of experimental pharmacology.

POTTER'S COMPEND OF MATERIA MEDICA, THERAPEUTICS AND PRESCRIPTION WRITING. With especial reference to the Physiological Action of Drugs. Based on the ninth revision of the U. S. Pharmacopœia; including also many unofficial remedies. By A. D. BUSH, B.S., M.D., Professor of Physiology and Pharmacology, Medical Department, University of Southern California. Eighth edition, revised. Price, $1.25 net. Philadelphia: P. Blakiston's Son & Co.

THIS book, which is intended chiefly for medical students, contains the essentials of materia medica. The alterations that have been made in it are such as will bring it into conformity with the recently issued U. S. P. This latter publication lists preparations that will not be found in the compend, and the compend is swamped with numberless unofficial preparations which the student will do well to ignore. The book is marred by numerous misprints, and when dealing with the few Greek words in the early part of the volume, the printer seems to have taken full advantage of his opportunities for mischief.

HANDBOOK OF ANATOMY. Being a Complete Compend of Anatomy, Including the Anatomy of the Viscera, a Chapter on Dental Anatomy, Numerous Tables, and Incorporating the Newer Nomenclature Adopted by the German Anatomical Society, Generally Designated the Basle Nomenclature, or BNA. By JAMES K. YOUNG, M.D., F.A.C.S., Professor of Orthopedic Surgery, Philadelphia Polyclinic; Associate Professor of Orthopedic Surgery, University of Pennsylvania; Orthopedic Surgeon to the Philadelphia General Hospital; Fellow the College of Physicians of Philadelphia; Fellow of the Philadelphia Academy of Surgery; Fellow of the American Orthopedic Association; Member of the American Medical Association, etc., etc. Fifth Edition, revised and enlarged, with 154 engravings, some in colors. Price, $2.00. Philadelphia: F. A. Davis Company, 1917.

As the title implies, this book is a compend of anatomy and the author has succeeded admirably in condensing the great mass of anatomical facts into a comparatively small volume without sacrificing thoroughness for brevity. While the paper and print, as well as some of the illustrations, leave much to be desired, yet in a book of this type what one seeks is facts, generally in a hurry, and so can dispense with the embellishments of the printer's art. The incorporation of the Basle nomenclature is a commendable feature, as all of the larger standard anatomies have adopted this system. The chapters on Surgical and Dental Anatomy are of timely importance. Such a handbook is primarily intended for students and those preparing for State and other examinations, for which purpose it can be recommended.

THE SURGICAL CLINICS OF CHICAGO. Vol. I, No. 3. Octavo of 231 pages, with 70 illustrations. Published Bi-monthly. Price per year, $10.00 net. Philadelphia and London: W. B. Saunders Company, 1917.

THIS issue contains clinical lectures by twenty-one surgeons and many of the articles are of more than ordinary interest. Among these may be mentioned Bevan's discussion of esophageal diverticula, with the technique of the Sippy-Bevan operation for the cure of this condition, and also his remarks on diaphragmatic hernia with description and illustration of technique in one case; McArthur's cases of thrombo-angiitis obliterans, with description of his modification of Koga's technique; Eisendrath's discussion of gunshot wounds of the skull; Phemister's case of reconstruction of the hepatic duct; Case's comparison of the operative and radiotherapeutic treatment of uterine myomas, and the description and illustration of George G. Davis's operation for the cure of hallux valgus. We would suggest to the editor that readers of The Clinics will take it for granted that before an abdominal wound is closed all sponges and pads are accounted for; hence the frequent repetition of this detail seems to be quite unnecessary.

THE SENSE OF TASTE. By H. L. HOLLINGWORTH, Ph.D., Associate Professor of Psychology in Columbia University, and A. T. POFFENBERGER, JR., Ph.D., Instructor in Psychology in Columbia University. Price, $1.25 net; postage, 12c. New York: Moffat, Yard and Company, 1917.

THIS volume is one of a number which make up the "Our Senses Series." The sense of taste has been relatively neglected in its relations to æsthetics and art, although largely utilized in certain occupations. The mere fact that the index catalogue of the Surgeon-General's Office, Second Series, does not contain a single reference to our recent monograph on this subject, should itself be a sufficient reason for the existence of this work. The subject matter of the early chapters of the book is old and can be found in standard reference works. As we progress we note material from Titchener, the psychologist; Pawlow, the psychologist, and Cushing, the surgeon, who are comparatively recent writers. Ramsay, the physicist; Graham and other writers on the chemistry of colloids; Richet and Cannon, physiologists, have all made recent contributions to our knowledge of taste. Writers on comparative physiology have supplied much useful information on the nature of taste perception. The concluding chapter is devoted to the esthetics of taste. It is, therefore, apparent that the authors have drawn their material from all possible sources, old and recent, and from the branches of science which deal with biology, biochemistry and chemical physics; from psychology and anthropology; from clinical medicine and surgery, industries, every-day life. The data are so treated as to make a very interesting and instructive work for all reading people.

DANGERS IN NECKWEAR. By WALTER G. WALFORD, M.D., author of "Cerebral Congestion and Tight Neck Clothing," etc. Price, 4 shillings. London: H. K. Lewis & Co., Ltd., 1917.

THE author of this little work is evidently an enthusiast who sees in tight neckwear an occasional cause of many evils, which depend perhaps in part on predisposition or the action of other factors. The book may be worth reading once for its suggestiveness, and in general diagnosis the examiner should certainly make sure that his subject does not wear too tight collars, etc., which is sometimes done for esthetic reasons.

L'EXPLORATION RADIOLOGIQUE DES VOIES URINAIRES. Lithiases et Projectiles de Guerre. Par le Dr. ARCELIN, chef de service de radiologie à la l'Hôpital Saint-Joseph et à l'Hôpital Saint-Luc. Avec 123 figures et planches hors text. Prix 6 francs. Paris: Masson et Cie., 1917.

IN this compact little treatise, simple radiography of the kidney and pyelography are considered in advance of indiography for lithiasis. There are numerous illustrations of renal and ureteral calculus shadows in association with the shadow of the opaque sound. The statement is made that the stones are sometimes detected during pyelography, but this feature is not illustrated.

In radiography of the urinary apparatus in bullet wounds the ureteral and vesical sounds are often passed to aid by their shadows in locating the exact site of the projectile. The technic for location of the latter is apparently much more simple than in urinary radiography in civil practice—at least, its consideration requires far less space. There is a brief concluding chapter on radiography for foreign bodies in the urinary apparatus.

SOME PERSONAL RECOLLECTIONS OF DR. JANEWAY. By JAMES BAYARD CLARK. New York and London: G. P. Putnam's Sons, 1917.

THIS little tribute to Dr. Janeway was the result of an insistent impulse to memorialize a physician believed by many qualified observers to have been the "best diagnostician in the world." The author began his association with Dr. Janeway as his laboratory office assistant, and at a later period had his office in the Janeway residence; moreover, he had the rare privilege of taking part in his "table talk" (perhaps Stevenson would have characterized the talk as a "rich silence," for Dr. Janeway was not a loquacious man). Through the anecdotal plan Dr. Clark brings out the personality of his hero—his enormous energy, self control, devotion to duty, loyalty to his colleagues, indifference to material wealth, contempt for the pettinesses of life, dislike of publicity which seemed in any way "forced" (he even disliked writing medical papers). His Christianity was of the type that is lived day by day. We can only regret that Dr. Clark did not make his book more comprehensive. Let us hope that some day he will feel impelled to become Dr. Janeway's biographer.

RIVERS AS SOURCES OF WATER SUPPLY. By ALEX. CRUIKSHANK HOUSTON, M.D., D.Sc., F.R.S.Ed., Director of Water Examinations, Metropolitan Water Board. London: John Bale, Sons & Danielsson, Ltd., 1917.

THIS work is a reprint in part of several journal articles and appears to be a successor to a monograph "Studies in Water Supply" which was published 1913. The present volume contains comparatively recent matter in the form of a chapter on sterilization published for the first time. The author sums up by stating that he is not pledged to any one form of water purification. The war has taught us to place efficiency above questions of sentiment. As for sterilization, it has recently been shown that liquid chlorine, so much vaunted of late, is not superior to bleaching powder.

Society Reports.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Thirtieth Annual Meeting Held at Newark, N. J., September 17, 18 and 19, 1917.

THE PRESIDENT, DR. JOHN W. KEEFE OF PROVIDENCE, RHODE ISLAND, IN THE CHAIR.

(*Concluded from page 657.*)

The Left Fallopian Tube and Intestinal Stasis.—Dr. DOUGLAS H. STEWART of New York City said that no matter what the nature of the abdominal operation, a conceded genococcus infection might set up a salpingitis and an ileus even though an uneventful recovery might appear fairly certain. His essay not only had nothing to do with such a state of affars, but on the contrary was based upon the histories of two patients whose Fallopian tubes showed no change except such as might be expected to occur from an excess of nutrition; when a portion of such tubes adhered to the anterior wall of the rectum, formed a band there, obstructed the fecal flow and at the same time derived a new and an additional source of blood supply. Such an obstruction might be differentiated from Houston's valve because it was rigid and unyielding and because it was so plainly not within the lumen, but it was very evidently on the outside of the rectal wall. By it the bowel was converted from a more or less perfect cylinder into a cross-section that might be schematically represented by an arc and its chord. As a result of fatigue and muscular exhaustion that were due to the constant if partial resistance of the obstacle, that bowel ballooned both above and below the band. The author did not think that the condition was necessarily rare, for any surgeon coming across it during his exploration of an abdomen, would simply term it a band, would cut it and would relieve all the symptoms, without troubling himself to determine the nature and origin of that band, or even to dignify it with its proper anatomical name. Both of the cases reported were in patients who were well past the menopause, yet the new blood supply, that was derived in a sort of parasitic manner, prevented atrophy of that portion of the tube that had become adherent. Removal of the hypertrophied section relieved all adverse symptoms by freeing the gut and allowing it to resume its functions unhampered.

The Ductless Glands in Gynecology and Obstetrics.—DR. SAMUEL W. BANDLER of New York City stated that the action of most of the internal secretory glands of the body was now fairly well understood. Therapy that was most efficient in hyposecretion was not so efficient in cases of hypersecretion. Gland therapy was more difficult if more than one gland was upset in the cycle. If the whole cycle of glands was upset, therapy was doubtful. The value of gland extracts was much enhanced by the use of drugs which had been tried and found of value. Thyroid extract and ovarian extract so far had been proved most successful when administered by mouth and by hypodermic. Gland extracts were of value for diagnosis.

The Thyroid in Gynecology.—Dr. HERMAN E. HAYD of Buffalo reccommended thyroid extract in the treatment of the ill-determined hemorrhages of women, where the causes were obscure, until a diagnosis could be established and the best kind of subsequent treatment decided upon. In this connection he wished to report the following case:

Mrs. S., aged 43 years, three children, oldest 13, youngest 5. She had always bled freely at her periods, and at some times profusely; but for the past ten months, she was compelled to wear a napkin all the time because of the continuous dribbling and loss of blood, and at certain times she had to go to bed, as the hemorrhage was excessive. Her brother, a physician, sent her to Dr. Lothrop, who prescribed thyroid extract, and suggested the advisability of a curettage for diagnostic purposes, and then later more comprehensive surgery, if necessary. She did not take this good advice, and continued to bleed until March, when Dr. Hayd, who had taken care of her in her first two confinements, was called. He found her in a very nervous condition—very much swollen and puffy, extremely pale and anemic, dropsical, with loud hemic murmurs, and presenting the usual symptoms and picture of prolonged and exhausting hemorrhages. Upon vaginal examination, the os was found to be closed, and the uterus in good position, and apparently not much larger than normal. A tentative diagnosis of a possible myxedema was made, and thyroid extract in increasing doses was given. At once, the bleeding became less, strength and better feeling began to return, and after four weeks another vaginal examination was made, when the os was found open, and a myxomatous polyp, the size of a small plum, was protruding, which was easily removed without any anesthetic; the woman very quickly regained strength, and was now well, with good color, full of energy, and weighed 160 pounds. The thyroid in two-grain doses was continued, with five-grain Blaud's pills, modified, for some weeks. He did not believe it was a mere coincidence that this polyp was found expressed out of the uterus during, but independent of, the thyroid treatment; because the bleeding was at once influenced and notably decreased after a few days of thyroid medication.

This case he had reported at length, because of its pronounced and somewhat dramatic result, and yet he could detail a number of encouraging experiences in the treatment of prolonged menstrual bleeding with thyroid therapy, when a previous curettage did not bring about the expected relief. Perhaps some of these cases were due to a general fibrosis of the uterus, or to some disturbed circulation in the organ, and not to a thickened and softened endometrium where curettage was usually effective. In the amenorrheas of young girls, where the periods were irregular or scanty, and even absent, or where the menstrual function had not appeared at the usual pubic period, he had of late years relied upon thyroid feeding, in gradually increasing doses; of course, in conjunction with good hygiene, and proper living and exercise; and here he could detail the histories of many cases where menstruation was established after having been absent for months, or where marked irregularities existed, and normal function was brought about.

Interrelationship of Female Sex Glands and Pituitary.—Dr. JAMES E. KING of Buffalo said that the literature of the ductless glands was at present concerned largely with theory. Cushing's work had done much to add to our understanding of pituitary pathology. There were disturbances of secretion which were not dependent upon cellular pathology. These would show varied clinical manifestations which, after further study and observation, it would be possible to classify. In the study of the physiology of the ductless glands, the interrelationship of all must be kept in mind. The pituitary influenced metabolism in growth of bone and disposal of the carbohydrates. Its influence upon the sex organs had been repeatedly demonstrated, and it was an important factor in the phenomena of puberty and in the sex life of women. The secretion might also influence mental characteristics, as seen in the hyper- and hypostages of acromegaly. The clinical picture of the less evident forms of pituitary dystrophy would vary somewhat with the age when the perversion occurred. Occurring before puberty, menstruation either failed to appear, or was irregular and scanty, and there was evidence of disturbed carbohydrate metabolism. A diagnosis of infantile uterus was usually made. The perversion occurring after puberty was evidenced by menstrual disturbance and rapid increase in weight. A type deserving place as a clinical entity were those women who were married and suddenly gained greatly in weight, with menstrual disturbance or amenorrhea. They were obsessed by a belief in their pregnancy. There was high sugar tolerance. It was suggested that this syndrome be designated as the pseudocyesis of hypophysical dystrophy. The possibility of maternal love in the lower animals being the result of pituitary secretion was suggested. The therapeutics of glandular perversions at present were unsatisfactory. Success would be attained only after a better understanding of the physiology of the endocrine system.

President's Address.—Dr. JOHN W. KEEFE of Providence, R. I., said that it would not be difficult to show,

from the history of medicine, that the education of the mind had always accompanied the education of the hand; the hand being, to adapt a phrase of Burdon Sanderson's, "The scientific instrument of the surgeon." So true was this that when the mind languished the cleverness of the hand was proportionately diminished, and when the hand failed in its ministrations the mind ceased to grow, and so it was that the surgeon, if he would be a skillful craftsman, must of necessity be first a skillful thoughtsman. For in what consisted the surgeon's manual dexterity if it be not in the deft application to the diseased human body of the principles of anatomy, physiology, and pathology; converting his concepts into acts, he thus became, as it were, the mediator between the theories of the schools and the lives of his patients. Let us, therefore, banish from our minds, if indeed we ever entertained it, the superficial and quite erroneous view that mechanical facility alone was the chief attribute of a successful surgeon. How far, think you, would mere manual dexterity have carried a Murphy, a McBurney, a Bigelow or a Senn, did they not possess also the wide sweep of intellectual vision which opened to them hitherto unexplored fields for research and gave them that mental alertness which was the prerequisite of their notable achievements. The hand, the eye, the mind, working in mutual helpfulness, constituted the ideal surgeon as he was trying briefly to picture him. The limitations of our human facilities and abilities compelled us to a division of labor, and here lay the pitfall that beset our progress. Our constancy to one thing too frequently spelled neglect of the rest, and the very intensity of our vision narrowed the sweep of it. In this tragic world war, when man's inhumanity to man made countless thousands mourn, when human life was held at naught, and human brains were racked to devise new instruments of destruction, each more deadly and revolting than the other; was it not comforting, nay inspiring, to feel that there was in the world a thoughtful and earnest body of men who, imbued with high ideals, were ministering to the wants of friend and foe alike; who feared nothing so much as failure in service, and who constantly endured great personal sacrifices to increase their knowledge of science, to the end that its beneficent ministrations to the sick and wounded might return them again to health and happiness.

The Influence of Pregnancy on the Development, Progress and Recurrence of Cancer.—Dr. WILLIAM SEAMAN BAINBRIDGE of New York City cited two cases of malignancy in pregnant individuals which bore a distinct relation to the question of the possible influence of pregnancy upon the initiation, progress, and recurrence of cancer. In the first case, recurrent carcinoma of the breast, there was a previous history of amputation of the right breast fourteen months earlier. When first examined, the patient, a primipara, was nearly five months pregnant, and had a large mass in the right axilla and another above the clavicle, with metastases in the right lung. The patient and family refused to submit to the termination of pregnancy, and despite indicated treatment the disease extended rapidly and fatally in less than a year. The child was born at term and lived one month. In the second case, sarcoma of the eye, the patient, a mother of two children, was pregnant seven months when first seen. At this time she had a small growth which was promptly excised with an apparently safe margin of healthy tissue. There were three other successive operations for rapid recurrences and extension of the disease—all within a period of two months. Termination of the pregnancy had been refused and a healthy child was born at term. One month later the patient succumbed. In the first case the growth above the clavicle was probably not malignant until pregnancy took place; from the history of the second case it would seem as if the beginning of the development of the sarcoma was closely related to the beginning of the pregnancy, and that the almost terrific rapidity of development and recurrence after operation was commensurate with the progress of the pregnancy. From these and other personal observations, as well as from a digest of the literature, it was apparent that the weight of opinion from the clinical and experimental points of view substantiated the position that pregnancy exercised a stimulating, and hence a malign influence upon coexistent cancer, not only of the organs most closely concerned in the pregnancy, namely, the uterus and breast, but of any part of the body. Therefore, in all such cases, especially in those similar to the second, there seemed little ground for delaying or for failing to terminate the pregnancy as early as possible. It was interesting to note in this connection that relatively little attention seemed to have been devoted to the question of the influence of pregnancy on the development of cancer, other than cancer of the uterus and breast, particularly the former.

Treatment of Appendicular Abscess.—Dr. W. A. B. SELLMAN of Baltimore stated that the important features in the treatment of appendicular abscess were: (1) To bring the sac up and wall it off so that the purulent fluid might not infect the surrounding tissues; to secure drainage after being emptied at its most dependent portion; to prevent choking and obstruction of these drains. (2) Protect the healthy parts by using rubber tissue around drains and upon the skin around the abdominal wound. Change the fluff gauge whenever it had become saturated with the discharges. Do not withdraw drains until satisfied that they had accomplished all that could be secured by their use. (3) Stimulate granulation and destroy pyogenic tissues by irrigation. Keep the patient in the most favorable position to secure drainage. (4) If we found the appendix and intestines showing evidence of gangrene, and the patient was threatened with shock, refrain from removing the appendix, as many of these cases recovered, whereas if the operation was prolonged they died. In the majority of cases no post-operative symptoms developed. He had patients who had been operated upon five to eight years without their developing any indication for a secondary operation. Experienced surgeons had claimed that 10 per cent. required the secondary operation. His experience did not coincide with those statistics.

Pre-Eclamptic Cesarean Section.—Dr. JOHN WILSON POUCHER of Poughkeepsie, N. Y., stated that statistics of puerperal eclampsia showed unsatisfactory results. When a patient at or approaching term, in spite of all means of elimination, showed us by nervousness, sleeplessness, severe headaches, high blood pressure, edema, and excessive albuminuria, that convulsions were imminent, she should be delivered at once, and by the method which would cause the least delay and which would produce the least shock, and give both mother and child the best chance for recovery. Since 1914 he had done seven pre-eclamptic cesarean sections. Of these, all seven mothers and eight children survived, one mother having twins. Two were operated after labor had begun, five before the beginning of labor. Two suffered postpartum convulsions, two having two convulsions, the other one convulsion, which were easily controlled. It was constantly pointed out that the scar of a cesarean section was likely to weaken the uterine wall and subject the patient to the danger of a possible rupture of the uterus in any subsequent labor. This could not be denied, but which was the greater of the two evils? One was a very present and very grave danger, and the other was a remote and improbable one.

Toxemia and Eclampsia and Its Treatment.—Dr. ASA B. DAVIS of New York City said that all of his eclamptics were not delivered by cesarean section. He had performed 359 abdominal cesarean sections. In 25 instances, toxemia of pregnancy had been the indication. These 25 cesarean sections had been done on 23 different women. Eight women died. Twenty-nine children were delivered; twins in two cases. One set of twins was dead when the patient was admitted. The mother lived. Nine of the 29 children delivered failed to leave the hospital alive. It was a noticeable fact that few pregnant women in private practice under the care of skilled obstetricians developed eclampsia. The knowledge of this fact and his own experience prompted the statement made early in the paper, "The time to treat eclampsia is before it occurs."

The Conservative Treatment of Eclampsia. — Dr. ROSS MCPHERSON of New York City stated that a thoughtful survey of the mortality statistics of patients suffering from eclampsia, taken from the reports of numerous writers both here and abroad, would show that treated by radical methods the maternal mortality approached an average of from 25 to 30 per cent., these

figures being easily available, and that the fetal mortality averaged from 40 to 50 per cent., surely a frightful complication, the etiology of which no one knew, a fact most constantly impressed upon him by reading the numerous dissertations of various authors on their experimental work. His series now included 55 true convulsive toxemias. Of these 55, 7 mothers died, showing a gross maternal mortality of 12.7 per cent. Two of these mothers, however, died before treatment of any sort could be administered, one arriving post-partum at the hospital, and dying before anything could be done for her, the other dying of cerebral embolus while apparently in good condition, and after having had but one convulsion. In these two cases no form of treatment whatever would have been successful, so that in a comparative estimate of methods of treatment it was fair to exclude these two patients. Then this left a corrected mortality of five mothers out of 55 patients treated in the manner already described, namely, by conservative measures, or in other words, a mortality of approximately 9 per cent. Abdominal cesarean section, he believed, had absolutely no place in the treatment of convulsive toxemia of pregnancy except in the cases where the eclampsia was accompanied by a deformed pelvis or some severe disproportion between the mother and child. More conservative measures could be resorted to with a lower mortality.

The Indications for Interference in Pre-Eclamptic Toxemia.—Dr. WILLIAM G. DICE of Telodo, Ohio, said that eclampsia was the greatest danger confronting pregnant women. The character and quantity of the waste products from a study of urine were not definite indices of severity of the toxemia. The systolic blood pressure taken throughout pregnancy was ordinarily a better index. A steadily increasing rise from the average normal, 110 to 120, up to 150, was significant and there was a sudden increase in the evidence of toxemia when blood pressure reached that point. Elevated blood pressure often preceded albuminuria, and the two were not necessarily proportional. When the blood pressure reached 170, if other signs of toxemia were also present, time for expectant treatment was near an end. Few men appreciated the importance of eye symptoms as an index of toxemia. Toxins in the blood gave rise to a retinitis, the first symptom, objectively being edema, later infiltration, degeneration and hemorrhages or, perhaps, detachment of the retina, and both latter indicated grave toxemia. In the early stage of retinitis, the vision might not be affected, but the ophthalmoscope showed a haziness of the fundus, an inability to make out the fine details which was the first sign of cloudy swelling. The interference with vision depended upon the location of the lesion, whether in the macula or only in the areas surrounding it. The condition cleared up entirely if it did not go beyond the stage of cloudy swelling. In primiparæ this haziness of the retina was easily detected if the pupil was widely dilated, and this haziness was the first indication of retinitis, but if there had been previous eye trouble it could not be made out so early probably. Conservation of vision, as well as life, demanded prompt induction of labor.

The Alcohol Drain in Septic Cases Requiring Cesarean Section.—Dr. CHARLES L. ILL of Newark advised that the alcohol drain be applied in all cases of sepsis when a cesarean section had been done. He based his views on an experience of ten cases, all of which were severely septic previous to operation.

The Treatment of Ectopic Gestation with a Report of Twelve Cases.—Dr. ABRAHAM J. RONGY of New York City stated that repeated ectopic pregnancies were more frequent than was generally supposed. While we all must admit that conservation of the other tube was necessary in women who were operated on for ectopic pregnancy and who had had no children, he felt that to patients suffering from ectopic pregnancy and who had three or more children should be explained the danger of a repeated ectopic pregnancy, and with their consent the tube on the other side should either be ligated or resected.

Should the Uterus Be Removed When It Became Imperative to Interrupt Pregnancy?—Dr. EMERY MARVEL of Atlantic City, N. J., said that the interruption of pregnancy was accepted only when maternal life was seriously jeopardized. The exciting cause was active within the uterus and involved the uterine structure. To remove the conception and leave the uterus when serious toxemia existed left a major part of the burden that could be removed. If the uterus was permitted to remain it invited the recurrence of the condition and in a more aggravated form. If maternal life was threatened by coexisting maladies—such as tuberculosis, renal or cardiac inefficiency—hysterectomy protected against recurrence. The removal of the uterus eliminated the necessity for sexual abstinence. Hysterectomy secured greater freedom from the menace which immediately threatened; it protected against recurrence of the trouble, and provided for the continuance of the sexual life without fear and all that it involved. This could be accomplished with no increased risk over other surgical methods.

Retained Secundines; A Study of Etiological Factors.—Dr. JAMES E. DAVIS of Detroit said that the etiological causes of abortion and early miscarriage must be closely studied in arriving at an appreciation of incomplete abortion. Why should the natural processes usually inadequate in expelling the products of conception in its early period succeed so efficiently at its maturity? The disproportionate growth of ovum and secundines had an undoubted influence upon the uterine mechanical effort at expulsion. The influences of infection, embolism and other circulatory changes, the various traumata and pathological uterine tissue changes, especially those following previous abortions after producing an expelling force were exerted primarily upon the ovum. An understanding of the prevailing changes in the products of conception and their influence upon expulsive force would emphasize the indications for efficient treatment of this condition.

Notes on Methods for Overcoming Mechanical Obstruction to Pregnancy.—Dr. ROBERT T. MORRIS of New York City said when observing the work of various operators one was struck by their differences in attitude toward mechanical obstacles to pregnancy. Some surgeons entered into painstaking technical detail in a conservative way, while others made short work of some symptom-producing obstacle, without regard to conservation of organs. One operator would remove a fibroid tumor, or an entire uterus, in a case in which another operator would conserve enough of the uterus for repair purposes which would allow the patient to have, at least, one child before recurrence of degenerative change of the uterus. Several forms of salpingitis left mechanical obstruction to pregnancy because of adhesions, or of closed lumina between ovary and uterus, but in a certain proportion of selected cases the buried fimbriated end of an oviduct might be freed and grafted near the fundus of the uterus, thus making a short circuit past adhesions or a closed lumen. At present he had a patient about to be delivered of a child who had only one such oviduct allowing of plastic repair of this kind. Perhaps the most extensive plastic work which he had done was for a patient who had lost both ovaries and tubes some years previously; in that case he first grafted an ovary from another patient, and about a month later reopened the abdomen to determine if the graft appeared to be in good condition. This was the case and a new oviduct was constructed from a transplanted loop of ileum, one end of which encompassed the engrafted ovary, the other end being sutured to the walls of the open lumen of the uterus. There had been no practical result in this latter case, and it might be that the mucous secretion from the bowel transplant might interfere with impregnation. But the work might at least, be done experimentally for a patient who understood and accepted the work upon that basis.

Version, with a Report of 150 Cases Since September, 1916.—Dr. IRVING WHITE POTTER of Buffalo stated that version could be more often performed to shorten labor, to lessen the shock to the mother, to eliminate undue pressure to the head of the child, but it should never be undertaken until the os was fully dilated or dilatable. The majority of occipitoposterior positions were best treated by version. Version could readily be performed in primiparæ. The fetal mortality in version should not be as great as in prolonged instrumental delivery. Injuries to the child's head were lessened by a properly performed version. The face cases were better treated by version. Cases of prolapsed cord, where the cervix was dilated or dilatable and the cord still pulsating,

were best treated by version. Cases of placenta previa in multipara, with cervix dilated or dilatable, were best treated by version. Cases of moderately contracted pelvis with a small child were best managed by version.

A Further Study of the Use of Chloroform in Labor.—Dr. I. L. HILL of New York City said that in June of last year he reported to the American Medical Association the results of his animal experimentation and clinical experience, as well as an exhaustive study of medical literature, and came to the conclusion that there was no analogy between such experimental work as had been done on animals and the careful administration of therapeutic doses of chloroform in labor. He had been surprised at the tendency of obstetricians to discredit the use of the anesthetic that had been most useful in their practice, not on the evidence of what had occurred in obstetrics, but what had been found at times in deep surgical anesthesia, and what was reported from animal experimentation. It would be reactionary and contrary to the purpose of scientific advancement to ignore the evidence of the laboratory. It seemed only practical, however, to study the reasons for the apparent discrepancy between obstetrical experience and laboratory findings and also between the use of this narcotic in labor and in general anesthesia. For the analgesia of labor chloroform correctly used was perfect in results and absolutely safe. Other men had found great satisfaction in the use of nitrous oxide oxygen, and it seemed that as they became skilled in its use they obtained a satisfactory analgesia just as he did with chloroform. It could not be safer, however, and its exponents must not seek to establish it on the basis of experimental poisoning of animals with chloroform, nor on the use of chloroform in surgery for complete anesthesia. For neither had any bearing on the harmless chloroform analgesia of obstetrics.

Diagnosis and Management of Narrow Pelvis.—Dr. E. GUSTAV ZINKE of Cincinnati said that the doctrine of narrow pelvis was not sufficiently understood, and its therapy was practised by comparatively few. Four degrees of narrow pelvis were generally accepted. The treatment in the first and second degree of pelvic contraction was not so easily determined. Rules for treatment in the two highest grades of contraction were very simple. Points of diagnosis must guide us in our judgment of cases and assist us in determining the treatment to be adopted. The high forceps was justifiable only when the head was well flexed and fixed in the pelvic brim. In his paper he discussed prophylactic version, craniotomy, hebosteotomy, or symphyseotomy, also abdominal cesarean section.

A Case of Gangrene of Uterine Fibroids Following Parturition; Panhysterectomy.—Dr. RALPH WALDO of New York City stated that the specimen which he showed was removed from a colored woman, aged twenty-four. In performing panhysterectomy every possible care was taken to protect the neighboring structures and the abdominal wall with gauze sponges. The upper end of the vagina and the abdominal wall were closed. The morning following the operation the temperature was 99.6° F., but during the afternoon it rose to 103.2°, pulse 128, respiration 28. For the next four days the temperature was between 104.4° and 102°, the pulse was between 100 and 156, and the fat in the abdominal wound broke down, a wet bichloride dressing was applied. The women gradually improved until the eighteenth day after the operation when a left lobar pneumonia developed with temperature as high as 104.2°, pulse 158, and respiration 50. This condition lasted for three days, after which all of the symptoms gradually improved, and she was discharged from the hospital cured March 16, 1916. This was a rare complication of parturition; but previous to this it was his good fortune to see two similar cases, and from the experience with these cases, although it was small, he was convinced that early panhysterectomy before the peritoneum was involved gave the patient the best chance for her life.

Osteoma of the Descending Ramus of the Pubes and Ascending Ramus of the Ischium Obstructing the Pelvic Outlet; Pregnancy; Removal of the Osteoma.—Dr. JAMES N. WEST of New York City presented this case on account of the rarity of the occurrence of osteoma in this situation. In three weeks on obstetrics referred to by him in his paper he saw no mention of dystocia from this cause, and in his own examination of women, pregnant and nonpregnant, in his office and hospital work, this was the only one he had seen. In other parts of the body the occurrence of osteoma was not infrequent. The case was reported on account of the rarity of the condition—the extremely satisfactory result of operation, the only adverse circumstance connected with which was the weakening of the pelvic framework of the body. This, however, was in a large measure counteracted by the firm ligamentous structure which had taken the place of the bone and served perfectly for the attachment of the muscles formerly attached to the bone in that situation.

The following papers were likewise read: "The End Results of the Treatment of Inoperable Uterine Cancer by Heat," by Dr. James F. Percy, Galesburg, Ill.; "Left-Sided Appendicitis in Situs Inversus Totalis," by Dr. Julius H. Jacobson, Toledo, Ohio; "The Technique of Ureterovesical Anastomosis, with Moving-Picture Demonstration of Same," by Dr. Henry D. Furniss, New York City; "The Causes of Death in Child Birth: A Discussion of the Maternal Mortalities in 100,000 Confinements at the New York Lying-In Hospital," by Dr. J. A. Harrar, New York City; "A Statistical Study of Maternal Mortality and Early Infant Mortality," by Dr. Julius Levy, Newark, N. J.

AMERICAN PHILOSOPHICAL SOCIETY.

AT a stated meeting held in the hall of the society at Philadelphia on the evening of October 5, Dr. ALEXIS CARREL of the Rockefeller Institute for Medical Research, Major in the French Army, and Chief Surgeon to Temporary Hospital, No. 21, Compiègne, France, presented a communication entitled "Principles of the Treatment of Wounds" with lantern-slide demonstration. He reported the results of an intensive study of gunshot wounds acquired on the French front during the present war, made especially from the bacteriological, surgical, and mathematical points of view, and he described the methods of precision in treatment therefrom evolved. It was found that the course of such wounds and the outcome of treatment varied directly in proportion to the degree of infection, as determined by the number of bacteria in a given microscopic field of smears made from the wound, and charted systematically. The first and most important requirement is mechanical disinfection of the wound at the earliest moment possible by means of free exposure, thorough cleansing and the removal of foreign bodies and adequate and continuous drainage. In addition, various chemical disinfectants were employed in solution, in dry form and in the form of pastes, among these sodium hypochlorite, chloramin T, physiological salt solution. By the employment of the methods described results were obtained that were scarcely short of miraculous in the case of wounds of all sorts in many parts of the body and under otherwise most unfavorable conditions. As a result amputation was avoided in a considerable proportion of cases in which otherwise it would have been obligatory in order to save life.

Captain LECOMTE DU NOÜY of the same hospital presented a communication entitled "The Mathematical Study of the Cicatrization of Wounds." He pointed out that Dr. Carrel had previously described the course of cicatrization in wounds and that the time required could be predicted in accordance with the size and extent of the lesion. On the basis of this knowledge a mathematical formula was devised with the aid of which it could be determined in advance with a considerable degree of precision how long wounds cleared of infection and kept free therefrom would require for the process of healing. An extended series of observations showed how closely the actual accorded with the predicted results. It appeared that apart from infection or traumatism little either accelerated or retarded the course of the process.

Emotional and Commotional Syndromes.—Mairet and Piéron discriminate carefully between these conditions. In the former fright is the sole motivation, a somatic factor being absent. Despite the psychogenic origin the disease does not yield to suggestive therapeutics. These cases of pure emotional shock are rare.—*La Presse Médicale.*

Miscellany.

Swiss Inaugural Dissertations for 1917.—It is not without interest to review the output of the Swiss Universities in the way of medical graduation theses during the third year of the warfare which rages with undiminished violence about the little republic. Should this state of war not react in some manner on the topics selected by the graduates? The fact that no direct evidence of such a reaction is presented inclines us to the belief that such subjects are deliberately avoided. However, in the *Correspondenz-Blatt für Schweizer Aerzte* for August 18 is a list of nineteen graduation theses of the Basle University. Of this number no less than seven are devoted to obstetrical subjects, which incidence may connote an indirect bearing on the results of warfare in destroying manhood and in putting thereby an increased value on infant survival. The remaining eleven subjects are notably individualized.

The small number of graduates in the Universities of Berne and Zürich suggests that Swiss students are seeing service on some of the fighting fronts. But six Berne theses are enumerated, while at Zürich there are only nine. Of this material of fifteen, three are devoted to purely biological themes, the dominant practical subjects being pediatrics and syphilis, these comprising nearly all of the remaining material. This great predominance of obstetrical and pediatric subjects with syphilis may represent an unconscious reflex of post-bellum demands in Europe for concerted effort in the domain of repopulation.

A British Ministry of Health.—The following plan has been proposed to the British Government by the Council of the British Medical Association: A ministry of health should be created to take over from existing government departments such duties as are concerned with the health of the community, and to deal with those duties only. The administrative functions of the ministry should be carried out by a board presided over by a minister of Cabinet rank. The country to be divided into suitable administrative areas under local administrative health centers consisting of representatives (a) of the rating authorities; (b) of the education authorities; (c) of the persons contributing to a scheme of health insurance (including employers of labor); (d) the medical profession; (e) public hospitals; (f) dentists; (g) pharmacists, and (h) nurses. The principal medical officers of each center should be two, of equal status, one representing the clinical side (chief clinical officer) and the other the preventive side of medicine (medical officer of health). For each area, hospitals, clinics, or treatment centers should be recognized or established at which persons entitled to treatment under the public scheme should be able to obtain institutional, consultative or specialist services on the recommendation of their medical attendant.

The Depopulation of France.—The war with its destruction of the man power has exposed more clearly than ever the danger to the future of the country lying in the declining birth rate. A committee of the Academy of Medicine of Paris has suggested as a possible remedy the payment of a definite sum to every infant from birth to the time of the eruption of its twentieth tooth.

Therapeutic Hints.

Care of the Foot.—Harold D. Corbusier offers the following suggestions which have been brought forth with reference to the care of the army foot: "Weak foot" may be relieved by the French marching strap, which is placed under the shank of the shoe, crossed over the instep and then around the ankle and fastened. In most cases the wearing of a shoe constructed on the proper principles will avert the feeling of pain and depression of the long arch which accompanies the "weak foot," or will cure the condition when developed. Such a shoe should have a thick shank and the upper should be snugly fitted under the long arch.

Blistering of the feet may be relieved by the application of a 3½ per cent. solution of iodine, opening the blisters with a sterilized needle and then applying a small dressing of gauze or cotton with adhesive plaster. Socks should be of wool. Foot powders composed of stearate of magnesia or zinc should be applied freely. However, a greasy powder, non-irritating, is more effective in the prevention of blisters than a perfectly dry powder. Socks must be perfectly clean. A well-fitting shoe usually relieves all foot troubles, together with perfect cleanliness of the parts.—*American Medicine*, May, 1917.

Tar in the Employment of Skin Conditions.—Pusey recommends Bulkley's formula for tar as a remediable application in skin conditions of the subacute varieties:

℞ Pix liquida.....℥ij
Potassa caustica .....℥j
Aqua .....f℥j
—Principles and Practice of Dermatology.

Bad Breath from Mercurial Salivation.—

℞ Pulv. aluminis .....℥ss
Decocti quercus albæ.....℥viii
M. Sig.: Use as a mouth wash every hour.

Spongy Gums.—

℞ Tinct. myrrhæ.....℥iii
Infus. cinchonæ.....ad ℥iv
M. Sig.: Apply thoroughly with camel's-hair pencil to gums three times a day.

Vaccine Therapy for Whooping Cough.—C. J. Bloom gives the following dosage of pertussis vaccine as productive of curative results.

Bordet-Gengou bacillus	50,000,000
Staphylococcus pyogenes aureus	10,000,000
Micrococcus catarrhalis	20,000,000
Bacillus influenzæ	20,000,000
Streptococcus pyogenes	20,000,000

The first dose must not be less than 120 million; this is increased 60 million for each succeeding dose and the maximum quantity given every other day until one of the marked symptoms shows an appreciable improvement; continue every three or four days after signs of improvement.

Vaccine is the preferred treatment because no reaction occurs. The duration of symptoms averages usually only twenty-eight days with this form of treatment, and the loss of weight is very small —14 ounces; after the third injection the attacks of coughing are reduced in number and intensity; sleep is not disturbed after from five to twelve days, and no complications have appeared in the cases so treated after from eight to twelve months' duration.—*Practical Medical Series, Vol. V*, 1917.

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THE RELATION OF THE SPLEEN TO CERTAIN OBSCURE CLINICAL PHENOMENA.*

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THERE is a fascination about the study of the spleen in its relation to clinical medicine which is increased by the fact that those twin sisters of progress, pathology and experimental medicine, have contributed so little to our knowledge of the organ. The result has been that what we know and what we think we know about the spleen is largely the result of circumstantial evidence having its origin in comparative anatomy and physiology, and the results of clinical experiences capable of different interpretations. As the spleen has no external secretion and no known internal secretion, the results of its actions cannot be studied directly. We know that the removal of the normal spleen rendered necessary by traumatism, etc., introduces no serious bodily change. In practically all the diseases in which splenectomy is thought to be indicated, the spleen is enlarged, and this enlargement, on account of the concealed situation of the organ must be very considerable, perhaps twice the normal size before we can know that the enlargement exists. Palpation gives the only definite information as to the size of the spleen; if it cannot be felt, percussion is a poor and misleading substitute. Much may be expected from the roentgenogram in the future to make manifest the size and position of the spleen as it has so satisfactorily done with the kidney. We are as yet unable to study the earlier manifestations of associated diseases in relation to the size of the spleen; and its lesions are gross before we can be certain that it is concerned in the production of the symptoms from which the patient suffers. Another source of uncertainty arises from the fact that the spleen alone is seldom responsible for the production of the clinical phenomena. It is more often the agent than the cause of the illness. In the 168 cases in which we have removed the spleen, it was surprising how many diverse clinical conditions were represented and yet how little the pathologic diagnosis varied. No matter how widely the clinical phenomena differed, the spleens on both gross and miscroscopic examination showed changes varying chiefly in degree; that is a more or less marked fibrosis, a greater or a smaller amount of degeneration of the blood vessels and Malpighian bodies, or a hypotrophic or an atrophic spleen pulp.

*Wesley M. Carpenter Lecture, New York Academy of Medicine, New York City, Oct. 18, 1917.

Cell study of fresh splenic tissue by special methods is needed and gives promise of more definite pathological comparisons.

Accepting then the necessity for securing what knowledge we may from collateral evidence, an investigation of the facts, near-facts and fancies, taken as a whole may throw considerable light on the subject.

The spleen is derived from mesoblastic tissue, and is probably concerned largely with filtration of certain substances from the blood and the product of its activities is delivered to the liver through the splenic vein, suggesting at once what clinical experience has shown—its relation to the blood and to the liver. It may perhaps be most aptly compared to the kidney, also derived from mesoblastic structure, and also without true secretion, a filtering organ. Cushny well expresses the modern view that the kidney has no true secretion, but that it filters certain substances from the blood in proportion to the absolute amount in the plasma, so-called no-threshold bodies and other threshold bodies only when their percentage in the plasma exceeds certain values.

The normal spleen weighs 195 grams (Sappey). It has a very scanty nerve supply from the sympathetic system, but it does contain a considerable amount of non-striated muscle fiber. Keith has demonstrated that the non-striated muscle has the power of originating contractions independent of nerve supply and exhibits a most primitive form of control. This attribute is shown wherever non-striated muscle is to be found. The intestine, like the heart, has two beats, the first once or twice to the minute, which we call peristalsis; the second, 12 to 20 times to the minute, which acts as the heart of the portal circulation (Mall). The spleen has what might be called a beat which consists of an enlargement following food intake with a gradual resumption of its normal size after several hours, showing a definite connection with the digestive function, which is indicated again by the fact that its blood supply is from the celiac axis, the same source of supply as that of the derivatives of the foregut, the stomach, the liver and the pancreas. Elliott and Kanavel have shown that the intramuscular injection of epinephrin contracts the spleen one-third in size.

The blood entering the spleen is peculiar inasmuch as it comes in direct contact with the splenic pulp, the smaller blood vessels having lost their elastic coats. This renders the spleen fragile and leads readily to traumatic or spontaneous rupture resulting in intraperitoneal hemorrhage or hematoma within the splenic substance. The latter con-

dition results in cyst, the most common type of tumor of the spleen (Powers). This peculiarity of the blood vessels also renders the spleen extraordinarily susceptible to the influence of radium which acts with vigor on the single coated blood vessels, non-striated muscle and the nuclei of cells. It may be surmised that the spleen does not possess an internal secretion of importance not only because removal of the normal organ does not disturb the body metabolism but also because of its extremely limited sympathetic nerve supply. It is to be noted that the organs of primary internal secretion usually act through the sympathetic nervous system. The adrenals and the pituitary are so closely connected with the chromophil system that their union amounts almost to a single organ, half sympathetic and half secretory. Other organs like the thyroid (Plummer, Kendall), gonads, pancreas, etc., which have internal secretion acting to a large extent through the blood stream had at one time or still possess an external secretion as well as an internal. The spleen does not properly fall into either of these categories.

On hypothetical grounds it seems probable that the spleen develops certain enzymes which are important to its function, but it is equally evident that the function of the spleen is shared by other lymphoid and adenoid structures in the body, and that on the removal of the organ the function is continued by these collaborating structures (Warthin).

It has been suggested that the spleen is a retrogressing organ. The outstanding factor of a retrogressing organ is diminished blood supply (Eccles). The blood supply of the spleen is enormous and it may be readily seen that a large percentage of the blood of the body passes through the spleen every hour.

Relations of the Spleen to the Blood.

The blood may properly be termed a tissue, consisting of erythrocytes, leucocytes, and platelets, in which the plasma is a fluid medium taking the place of intracellular substance. The white blood is the most primitive, derived from the mesenchyme cell. The earliest heart was possibly a lymphatic heart, circulating white blood, which merged later with the venous heart, leaving among other evidence the lymphatic connection of the thoracic duct with the venous system. Animals which have only one kind of blood have white blood. The fetal blood is produced by the lymphoid and adenoid structures of the body, including the liver and spleen. From this standpoint, leukemia could be considered a cancer of the blood in which there is an uncalled-for production of functionless white cells, just as carcinoma is due to the unlimited production of embryonic epithelial cells and sarcoma of embryonic connective-tissue cells. The earliest blood discovered in the fetus is the white, and the red cells are probably derived from the white cells. The spleen loses its power to produce red blood at birth and the liver at about the fifth fetal month, but the spleen retains its power for a limited production of white cells throughout life and assumes the function of the destruction of worn-out red cells which is shown by a relative increase in the white cells and of hematin in the splenic veins over other veins in the body.

When the spleen is removed in certain enlargements, as in hemolytic icterus, it is found crowded with erythrocytes in various stages of disintegration and we know that the specific splenic cells have phagocytic properties. Robertson and Rous, in a study of the relation of the spleen to the blood, have come to the conclusion that fragmented erythrocytes are not only removed there but that fragmentation must take place in the spleen. Normal fragmentation depends on the natural life of the erythrocytes, which has been estimated at from ten to fourteen days. This estimation has been made largely on the assumption that biliary pigments are derived entirely from the destruction of erythrocytes. Whipple and Hooper, by a series of careful experiments, throw considerable doubt on the view that the biliary pigments have no other origin than from destroyed erythrocytes and it is quite probable that the life of the red cell is much longer than has been estimated. In some of the anemias, notably hemolytic icterus, Shauffard and Widal show that the erythrocytes circulating in the blood are unusually fragile and that this fragility leads to undue fragmentation and destruction in the spleen. They point out that the enlargement of the spleen may be a work-hypertrophy. Krumbhaar believes that the specific hormone of the spleen is activated by passage through the liver and by a series of interesting experiments he throws some light on the relation of the spleen to the blood and to the liver. He shows that there is a certain amount of anemia after splenectomy and that ligation of the splenic vein does not cause necrosis. This latter observation has a bearing on the changes in the spleen incident to thrombosis of the splenic vein. Singular difficulties confront the surgeon in experimental work in his attempts to solve these problems. Not the least of these difficulties is the fact that the experimentation on animals is on the normal spleen.

Relation of the Spleen to the Liver.

The liver is the great organ of defense. Its extreme importance is shown in the fact that it is one of the few organs which has the power of regeneration. We know that the liver destroys bacteria and protozoa and detoxicates poisons, both biological and chemical, which are brought to it from the portal circulation. The liver bears the most important relations to bodily metabolism, especially to the formation of sugars from carbohydrates and the development of amino acids from proteins. It receives through the portal vein all the nutritive material derived from food through the gastromesenteric system and also the nutritive values in the material which the spleen obtains from the blood.

The diseases of the liver are little understood and while a vast amount of work has been done, the nature of its metabolic activities is to some extent a matter of conjecture. Among its most important diseases are those which result from the intrahepatic development of connective tissue causing cirrhosis, a process which may be wide-spread or localized. The cirrhotic liver may be and is enlarged more often than we are led to think because of our more complete understanding of the alcoholic cirrhosis of the Laennec type, the so-called hob-nail or gin liver. Yet there is no fundamental difference between the atrophic cirrhosis and the hypertrophic cirrhosis of the beer drinker in which

fatty tissue smoothes out the connective tissue contractions and increases bulk. The cirrhosis secondary to splenic disease, if portal, is of the atrophic or hob-nail type, showing that the cause concerns protein, not fat metabolism. In biliary cirrhosis on the contrary, the liver is always enlarged. Three types of hepatic cirrhosis stand out prominently,—the toxic, represented by the alcoholic portal cirrhosis; the protozoal, of which syphilitic cirrhosis is representative, and the bacterial, of which biliary cirrhosis from common-duct infections is a type. In the portal cirrhosis the connective tissue is related to the portal venous system and ascites is an early manifestation while jaundice is a late one. In biliary cirrhosis the connective tissue is associated with the biliary canals, jaundice is an early manifestation and ascites a late one. Biliary cirrhosis is even less well understood than the portal type and there are various subdivisions such as the pigmentary (hemochromatosis) and the so-called Hanot's cirrhosis; the latter designation evidently includes cases of hemolytic icterus and serves only still further to confuse the issue.

Nature, in dealing with poisonous substances within the body in a general way, employs two methods: (1) detoxication and elimination, and (2) encapsulation. Portal cirrhosis may be looked on as failure to detoxicate and eliminate certain diffuse poisons and eventually there is an attempt at encapsulation of the noxious agents, resulting in the introduction of connective tissue about the portal radicals. The enlargement of the spleen, which so often accompanies portal cirrhosis, suggests that the primary source of these poisons may be in the spleen, and in some cases of portal cirrhosis in which we have removed the enlarged spleen, the results justify the presumption. In Banti's syndrome the portal cirrhosis is a late stage of splenic anemia and even in advanced disease the removal of the spleen often cures, the liver regenerating to a marked degree. In portal cirrhosis supposed to be primary, the spleen may be enlarged to a considerable extent without being manifest until a late stage. Sometimes it is a moot question whether the liver or the spleen was first affected,—all going to show how little we know about the whole subject.

The biliary cirrhoses, in many cases at least, have their origin in infections in the common duct, associated with gallstone disease. In such cases the spleen may or may not show great enlargement. In other cases in which no such infection exists in the common duct, the spleen may be found to be very large and suggests the possibility that it has carried to the liver toxic materials which have safely passed through the portal side but have exercised a large influence on the hepatic cells and the smaller bile ducts. This we know to be the fact in connection with hemolytic icterus, as the removal of the spleen promptly relieves the jaundice. The enlarged liver thus may not be a true biliary cirrhosis, as we had thought, but possibly in part at least an excess of function causing hepatic hypertrophy as well as cirrhosis in the attempt to care for the erythrocytic debris destroyed in the spleen and carried to the liver by the portal vein.

Relation of the Spleen to Bacteria and Protozoa.

Not infrequently living organisms are introduced into the human economy, and such introduction initiates bodily resistance. Vaughan has pointed out that a patient has typhoid during the prodromal period but that which we call typhoid is nature's defense manifestation. Preventive serums, such as vaccination for smallpox, typhoid, etc., act to educate the cells of the body to resistance. It is probably true that at times organs such as the tonsils which permit bacteria to enter the blood stream are acting as immunizing agents, allowing the early introduction of a few bacteria which act to cure rather than to cause the disease. Phagocytes may be considered educated defense cells ready to engulf bacteria on contact and perhaps depend on bacteria for their nourishment. In typhoid fever the spleen becomes enlarged as a result of its straining function. The accumulated bacteria which have been strained out of the blood are sent to the liver for destruction. A failure in elimination of the bacteria from the spleen to the liver may result in multiple or single abscesses containing pure culture of typhoid bacillus. We have operated in several such cases.

Enlargements of the spleen from chronic sepsis are not uncommon and may act as secondary distributing centers of infections. Focal infections in various parts of the body may act as the primary source of the bacterial invasion. Septic endocarditis is a notable example. In 8 cases we have removed a very large spleen showing the picture of sepsis—infarcts, etc. This type of chronic splenomegaly is most apt to be confused with splenic anemia.

While tuberculosis of the spleen is considered by some observers as never primary, this condition has occasionally constituted the only known focus in the body, and the removal of such a tuberculous spleen has permanently cured the patient. We have removed the enlarged spleen in 3 instances for tuberculosis supposed to be primary in the spleen. One patient died within the year from tuberculosis and we must conclude that there were other undiscovered foci. The remaining two patients have recovered and remain well.

Pathogenic protozoa, such as the plasmodium of malaria, the spirochete of syphilis, etc., produce chronic splenic enlargements from which it may be extremely difficult to dislodge the organisms. Jonnesco and others have removed the spleen for the ague cake of malaria, but with a high mortality. Newer and better methods of quinine therapy render so radical an operation unnecessary—at least very seldom indicated.

Spirochetal hibernation in the spleen is not unusual, and failure to eradicate the disease by salvarsan and prolonged mercurial treatment may result in a syphilitic spleen which permits not only luetic reinfection of the body but also causes a high grade of chronic anemia. In four cases of this type, removal of the spleen has promptly cured the anemia, and the lues has thereafter quickly responded to renewed treatment. In all of these spleens either spirochetes were found or gummata in spleen or liver were demonstrated, showing again the relation of the spleen to hepatic disease.

A very interesting question comes up in this connection. Must all the blood of the body pass haphazard through the spleen in order that these various materials, bacterial, protozoal, cellular and toxic, shall be strained out, or is there a definite

affinity in the spleen which furnishes an attraction for such elements? Rosenow's splendid experiments showing the specificity of bacteria and their definite attraction for certain organs, make it seem probable that some form of chemotaxis attracts to the spleen all of these various agents.

The foregoing brief résumé gives prominence to certain data which tend to establish that:

1. Enlargements of the spleen, not due to new growths, are associated with definite pathologic changes in the blood and the liver.

2. The enlargement of the spleen is often the result of agencies which are not primarily connected with the spleen, and in many cases the splenomegalia is a work-hypertrophy, a secondary, not a primary, cause of the disease with which it is connected.

For the purposes of this paper I have reviewed with some care the results of splenectomy for the relief of certain conditions with the idea of establishing the value of the operation. Dr. H. Z. Giffin, who has taken the utmost interest in this work, concerning which he has made a number of clinical contributions, has aided me in the review.

Pernicious Anemia.

We have removed the spleen fifty times for pernicious anemia. In each case the diagnosis was well established, and the spleen, with four exceptions, was above normal in weight. In some instances the spleen was greatly enlarged, weighing up to 2330 grams.

There has been no definite relation between the size of the spleen and the seriousness of the disease, nor was there any direct relationship between the result of the splenectomy and the size of the spleen removed. This of itself is a suspicious circumstance. The benefit derived from splenectomy, generally speaking, has followed the removal of a definitely enlarged spleen. The failure to establish such relationship in pernicious anemia, or to connect with the disease such gross and microscopic changes as are to be found in the removed spleens, would lead us to expect only limited benefit rather than cure of pernicious anemia through splenectomy. There was temporary improvement in every case, but following splenectomy we had some cases in which the cord changes progressed in spite of a great improvement in the anemia. We have not had a patient who has been cured, but all in all, in about 75 per cent. of the cases the benefit might be said to be sufficient to justify the operation. In the total number of operations three patients in our early experience died from the operation; the hemoglobin was under 30 per cent., the red cells were under a million. These patients should have been transfused before operation. Since practising transfusion in advance of splenectomy, when the blood has been seriously deteriorated, we have had no deaths. There were no operative deaths in the last 32 cases. In many cases after initial improvement by transfusion and splenectomy, relapse has taken place, followed again by improvement after transfusion. We have carried some of these patients along for months in fair health by repeated transfusions; as many as thirty have been given to a single patient. Following each transfusion there would be marked benefit, with gradual depreciation, until transfusion again became necessary. It has been believed that the introduction of new blood stimulates the hematopoietic organs, and this is probably the true hypothesis in patients whose bone marrow is not too severely damaged. Yet it should be noted that immediately after the transfusion, in certain cases, the anemia is relieved, the hemoglobin brought up from 10 to 30 points, and the red cells advanced appreciably, only to be followed by a gradual decline. These are the predominately myelotoxic types. It is an interesting conjecture whether or not the patient may live on the work of transfused blood as well as be stimulated to the formation of new blood. A probable explanation is that the life of the red corpuscles is much longer than we have thought, and that the anemia returns in proportion as this fresh aid is used up. The significant blood changes in pernicious anemia that differentiate it from secondary anemias are the changes in the number and type of the red corpuscles and in the blast cells found in the blood. The blast cells are the mothers of the erythrocytes, and each blast cell thrown into the blood represents a permanent loss of blood-making power. Therefore, neither stimulation nor treatment can reproduce that which has been lost. The difficulty with the whole subject of pernicious anemia concerns the fact that we do not recognize the disease until such vital and permanent changes as are indicated in the actual loss of these blast cells have taken place. It is even possible that pernicious anemia, in its beginning, is not a definite entity, but that it is a terminal change of several conditions which we have not recognized until they have reached the final stage. Clinically, however, it is a very definite disease when both history and blood picture are developed. Pernicious anemia may be called a cancer of the red cells, recognized in the hopeless stage. When the early histories of patients with pernicious anemia are studied the symptomatology seems fairly clear; yet many patients are seen with anemias which are suspected to be pernicious but which never develop the true characteristics of the disease. If pernicious anemia is to be cured it must be done before permanent damage to the hematopoietic organs has taken place. It is possible that certain types may be cured; yet so firmly fixed is our belief concerning the incurability of the disease that should we have patients cured by splenectomy we would be inclined to lift them out of the category of pernicious anemia and to group them with either hemolytic icterus or splenic anemia.

To sum up, splenectomy has a field of usefulness in selected cases of pernicious anemia, especially in those showing a marked hemolysis by the Schneider duodenal test and evidence of slight bone marrow damage. The operation of removal of the spleen for pernicious anemia is not, as a rule, difficult. The spleen is only of moderate size, and not very adherent.

Leukemia.

If there has been any one condition believed to be non-surgical and incurable, it is splenomyelogenous leukemia. The theory has been that 95 per cent. at least of such patients operated on would die as a result of the operation, and that the 5 per cent.

who lived would not be benefited. Yet we have long known therapeutic agents (benzol, *x*-ray, etc.) which would reduce the size of the spleen and would also improve the condition of the blood; and as the size of the spleen became reduced such improvement might be expected. With the use of radium, which could be readily applied over the area of the spleen, a vast change came about in the therapeusis of splenomyelogenous leukemia. I do not know of any clinical experience that is more striking than the result which follows the application of radium over a huge leukemic spleen. Many times the spleen shrinks so greatly as to disappear below the left costal margin, the white blood corpuscles drop from hundreds of thousands to under 10,000. I have seen a leucopenia produced, the white cells dropping from 600,000 to 3,700 in five weeks. Accompanying this extraordinary reduction in the size of the spleen and reduction in the number of white cells an equally extraordinary improvement in the anemia takes place, and the patient is marvelously benefited. As the spleen gradually increases again in size the white cells increase, the red cells decrease, and the patient loses ground. It is well to eliminate all of our presumptions concerning this disease and pause for a moment in perspective. Reduce the size of the leukemic spleen, and synchronously the white cells go down, the red cells come up, and the patient improves. As the spleen enlarges, the whites come up, the reds come down, and the patient goes down. Have we in this, as in so many other instances, allowed tradition to hamper progress?

My first experience in splenectomy for myelogenous leukemia was with a patient who came to the clinic with a greatly enlarged spleen, a white count of between 200,000 and 300,000, and who gave a history of having had the disease for two years. There had been very great improvement under *x*-ray therapy; at one time the white cells were reduced by it to a point under 50,000, but, as regularly happens, the *x*-ray had finally lost its effect, and her condition when examined was worse than it had been at any former time. The patient herself was greatly impressed with the definite connection between the size of the spleen and her condition, and was anxious to have it removed. I removed the organ, and the patient made an excellent surgical recovery. Within ten days the white cell count had dropped to less than 50,000 and the patient is greatly improved now, more than one year following the splenectomy.

Based on this experience, we have in a number of instances reduced the size of the spleen with radium until the blood count approximated the normal, and then removed the spleen. We have found it inadvisable to force an extreme reduction of the leucocytes before splenectomy. If the general condition of the patient is good, a leucocyte count of 30,000 or less is satisfactory. All the patients, save two, have been markedly relieved. In the 19 cases there were no operative deaths. That these patients are cured I cannot believe, but the experience has been interesting and suggestive.

Here again we find ourselves in difficulties not dissimilar to those in connection with the etiology and clinical course of pernicious anemia. One patient in our earlier experience, I remember well, had been treated for leukemia during a period of five months in a large and well-known hospital, and in another for three months. We diagnosed the condition as splenic anemia. The spleen was removed, the patient promptly recovered, and has remained well now for more than five years. It is possible that we recognize leukemia as a disease only after it has reached the hopeless stage, a terminal condition of a much more common though unrecognized malady. It is questionable whether all the cases of splenomyelogenous leukemia advance to the point where they are recognized as leukemia. These are interesting problems which cannot now be answered. Leukemia may be called a cancer of the white blood, recognized in the hopeless stage. The leukemic spleen is not adherent, as a rule, and after reduction in size by radium is readily removed.

Hemolytic Icterus.

We have performed splenectomy 19 times for hemolytic icterus. The results have been astonishingly good. I do not know of an operation giving more gratifying results. The jaundice which the patient has had for perhaps years will be perceptibly less in forty-eight hours, and within four days will have quite disappeared. Sixty per cent. of these patients have complicating gallstones, apparently due to the greatly thickened bile, the result of pigments derived from the disintegrated erythrocytes. There are two types of hemolytic icterus, the familial or congenital type of Minkowski and the acquired type of Hayem and Widal. In the familial type several members of the same family may be affected, and possibly it may be found through several generations. As a rule, it is less serious than the acquired variety. Although never robust, many times those affected with familial hemolytic icterus will live out a normal life expectancy. The acquired type is much more serious, and ends, as a rule, in death from some intercurrent malady after years of chronic semi-invalidism.

The outstanding features of hemolytic icterus are the enlarged spleen, more or less enlarged liver, and chronic recurring jaundice, without gross obstruction in the bile ducts. Bile is always to be found in the stool. Inasmuch as a high percentage of these patients have complicating gallstones, they may have an increase of jaundice due to a secondary infection from gallstones, varying the syndrome and introducing diagnostic difficulties. These patients all show marked anemia, and usually crises more or less serious develop in which there is pain over the region of the liver and spleen, with malaise, some increase of temperature, and an increase of jaundice. Chauffard and Widal have pointed out the diagnostic phenomena of increased fragility of the erythrocyte, which is practically constant. Splenectomy, as a rule, is not difficult in these cases, for although the spleen may be quite large it is seldom adherent to a marked degree. There was but one operative death in our series. This patient was operated on during a crisis, and death probably would not have occurred had the operation been performed in the interval between crises.

Biliary Cirrhosis.

Hemolytic jaundice is often confused with certain types of non-infective biliary cirrhosis, and especially with the so-called Hanot's cirrhosis. We

have removed the spleen four times for biliary cirrhosis, which could not be properly classified as hemolytic jaundice. All the patients were above 30 years of age. Were it not for the age, the cases could be called Hanot's cirrhosis. The results in three were very satisfactory. The jaundice disappeared to a large extent, and the patients were able to return to work; but in all the liver remained large. The operation of splenectomy for biliary cirrhosis is somewhat troublesome and difficult, more so than in hemolytic icterus. In our cases the spleen was large and there were many adhesions. In two the liver was sufficiently large to interfere mechanically with the operation.

Splenic Anemia.

Osler was one of the first to describe splenic anemia, and his classical contributions, coming as they did at an early time, created a great and lasting interest in the condition. Splenic anemia is at least a clinical entity, but has been confused with many varieties of splenomegalias, syphilitic, septic, malarial, hemolytic, jaundice, pernicious anemia, etc. Little by little an irreducible minimum is being reached and a definite type established. The patients having large spleens develop a progressive anemia and cirrhosis of the liver as a terminal condition to which Banti's name has been given.

The course of splenic anemia is chronic. There may be intervals of years in which the patient enjoys a fair degree of health, but eventually it leads to a fatal issue, the debilitated patients succumbing to intercurrent disease.

Hemorrhages from the stomach are of frequent occurrence in splenic anemia and sometimes hemorrhage is the first symptom that may be noted. The hemorrhages are probably gastrotoxic in origin and while, as a rule, fatal hemorrhage does not result, frequent, recurring hemorrhages cause great debility. The gastric hemorrhage of splenic anemia is a symptom well worthy of attention. It is not different from that which occurs in connection with hepatic cirrhosis and it is altogether probable that many of the unexplained hemorrhages from the stomach in which no local lesion of the gastric mucosa is to be found, are a result of the toxic condition which precedes, accompanies, or is caused by splenic anemia and cirrhosis of the liver. Balfour, in a paper on the causes of gastric hemorrhage, calls special attention to the relationship of the spleen and liver to the bleeding. In gastric hemorrhage we must think of the spleen and the liver as causative factors just as in the differentiation of the causes of jaundice the spleen must be thought of as well as the liver. Warthin and others have found that many cases of splenic anemia show thrombosis of the splenic vein after death and they believe that the thrombosis is the cause of the splenic condition. In one of our patients who died the cause of death was found to be due to long-standing splenic and portal thrombosis. The final catastrophe was brought about by thrombosis of the superior mesenteric vein. It may be contended that splenomegaly associated with splenic, portal, or mesenteric thrombosis (one or all) would be better grouped with infectious splenomegaly (probably streptococcal) rather than with true splenic anemia.

The pseudoleukemia of infants described by von Jaksch is closely associated, if not identical with splenic anemia, but because of the hematopoietic variability of infancy is often accompanied by a high white cell count. Such cases are usually to be relieved by dietetic management, but the spleen has been removed with prompt and striking improvement. Balfour splenectomized a two and a half year old child presenting the complete picture of splenic anemia.

Splenic anemia is cured by splenectomy in a high percentage of cases and it should be performed before portal cirrhosis or thrombosis of the splenic vein occurs. The spleen is usually large and, as a rule, extremely adherent and the operation is more difficult and dangerous than in any of the various other diseases for which splenectomy is indicated. In 43 splenectomies for splenic anemia we have lost 4 patients.

Clinically, patients with enlargements of the spleen are to be seen in whom the enlargement is apparently not producing symptoms, but these cases should be looked on as incipient splenic anemia. Such causeless splenomegalias as I have had opportunity to observe have eventually led to marked secondary anemia, although perhaps for years showing little effect on the patient's health. I have seen no good and much harm come from chronic splenomegalia, and other things being equal, such spleens should be removed on general principles.

Portal Cirrhosis.

The portal cirrhosis of the liver which so frequently accompanies the later stages of splenic anemia have led us to remove the spleen in 5 cases of primary portal cirrhosis in which there was enlargement of the spleen. The results on the whole have been gratifying, although one patient died following the operation. The remaining four are in satisfactory condition. For those portal cirrhoses with enlarged spleen which occur especially in young adults without alcoholic history, splenectomy would appear to be indicated. As a matter of fact in cases of this description do we not classify as primary portal cirrhosis those in which the liver condition is discovered first? If the splenic enlargement is first observed we call it splenic anemia with portal cirrhosis.

The technique of splenectomy I will not dwell on. For those who are interested, I would refer to the article by Balfour, "The Technique of Splenectomy."

BIBLIOGRAPHY.

1. Balfour, D. C.: Splenectomy for repeated gastro-intestinal hemorrhages. *Ann. Surg.*, 1917, lxv, 89-94.
The Technique of Splenectomy. *Surg., Gynec. and Obst*, 1916, xxiii, 1-6.
2. Chauffard, A.: Pathogénie de l'ictère congénital de l'adulte. *Sem. méd.*, 1907, xxvii, 25-29.
Les ictères hémolytiques, *ibid.*, 1908, xxviii, 49-52.
Cholélithiase pigmentaire dans un cas d'ictère congénital hémolytique; analyse chémique des calculs. *Bull. et mém. Soc. méd. d. hôp. de Par.*, 1912, xxxiv, 80.
3. Cushny, A. R.: The secretion of urine. Lond., N. Y., Longmans, 1917, 241 p.
4. Eccles, R. G.: The tonsils and the struggle for existence. Medical Record, 1915, lxxxviii, 47-56.
5. Elliott, C. A. and Kanavel, A. B.: Splenectomy for hemolytic icterus. *Surg., Gynec. and Obst.*, 1915, xxi, 21-37.
6. Giffin, H. Z.: Splenectomy for splenic anemia in childhood and for the splenic anemia of infancy. *Ann. Surg.*, 1915, lxii, 679-687.

The treatment by splenectomy of splenomegaly with anemia associated with syphilis. *Am. Jour. Med. Sc.*, 1916, clii, 5-16.

A report on the treatment of pernicious anemia by transfusion and splenectomy. *Jour. Am. Med. Assn.*, 1917, lxviii, 429-432.

Hemolytic jaundice: A review of seventeen cases. *Surg., Gynec. and Obst.*, 1917, xxv, 152-161.

Observations on the treatment of myelocytic leukemia by radium. *Boston Med. and Surg. Jour.*, 1917 (in press).

7. Hanot, V.: Etude sur une forme de cirrhose hypertrophique du foie (cirrhose hypertrophique avec ictère chronique). Paris, 1875, 155 p.

8. Hayem, G.: Variété particulière d'ictère infectieux chronique splenomégalique. *Presse méd.*, 1898, i, 121-125.

Nouvelle contribution a l'ictère infectieux chronique splenomégalique. *Bull. et mém. Soc. méd. d. hôp. de Par.*, 1908, xxv, 122.

Quoted by Krumbhaar, E. B.: A classification and analysis of clinical types of splenomegaly accompanied by anemia. *Am. Jour. Med. Sc.*, 1915, cli, 227-245.

9. Jonnesco, T.: Splenectomie pour hypertrophie malarique. *Bull. et mém. Soc. de chir. de Bucarest*, 1901-1902, iv, 58.

10. Keith, A.: A new theory of the causation of enterostasis. *Lancet*, 1915, ii, 371-375.

11. Krumbhaar, E. B., Musser, J. H., Jr., and Peet, M. M.: Changes in the blood following diversion of the splenic blood from the liver, a control study of the effects of splenectomy. *Jour. Exper. Med.*, 1916, xxiii, 87-95.

12. Mall, F.: A study of intestinal contraction. Johns Hopkins Hosp. Repts., 1896, i, 37-75.

13. Minkowski; Uber einem hereditärischen, unter dem Bild eines chronischen Icterus mit Urobilinurie, Splenomegalie, und Nierensiderosis verlaufende Affection. *Verhandl. d. deut. Cong. f. inn. Med.*, 1900, xviii, 316.

14. Osler, W.: On splenic anemia. *Am. Jour. Med. Sc.*, 1900, cxix, 54-73.

15. Powers, C. A.: Non-parasitic cysts of the spleen. *Ann. Surg.*, 1906, xliii, 48-60.

16. Rosenow, E. C.: Elective localization of streptococci. *Jour. Am. Med. Assn.*, 1915, lxv, 1687-1691.

Elective localization of bacteria in diseases of the nervous system. *Jour. Am. Med. Assn.*, 1916, lxvii, 662-665.

17. Rous, Peyton, and Robertson, O. H.: The normal fate of erythrocytes. *Jour. Exper. Med.*, 1917, xxv, 651-663; 664-673.

18. Vaughan, V. C.: Infection and immunity. *Jour. Am. Med. Assn.*, 1915, p. 164.

19. Warthin, A. S.: The changes produced in the hemolymph glands of the sheep and goat by splenectomy. Contrib. Med. Research (Vaughan), Ann Arbor, 1903, 216-236.

20. Whipple, G. H., and Hopper, C. W.: Bile pigment metabolism. *Am. Jour. Physiol.*, 1916, xl, 332, 348; 349-359; 1917, xlii, 256-263; 264-279; 544-557.

21. Widal, F., Abrami, P., and Brule, M.: Differenciation de plusieurs types d'ictères hémolytiques. *Presse méd.*, 1907, xv, 641-644. Quoted by Elliott and Kanavel, *loc. cit.*

Grenade Thrower's Fracture.—While this term has not yet come into fixed usage it is evident from a report by Cottard that the act of throwing a grenade can cause fracture of the humerus by muscular contraction. Singular to relate the three cases reported did not occur in actual warfare among seasoned throwers, but were found among practising recruits at the rear. No victim showed any predisposition. One break was transverse and the other two helicoidal. These seem to have been due respectively to movements of flexion and movements of torsion. In the first type the accident occurred in a powerful subject, while in the second type, in which a "spiral" throw was attempted, the musculature was not well developed. The fractures were all subperiosteal with good prognosis for union.—*La Presse Médicale.*

THE FIELD OF NEUROLOGICAL SURGERY.*

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The field of neurological surgery has so broadened during the past fifteen years as the result of the pioneer work of Horsley, von Eiselsberg, and Krause, and in this country of Cushing, that a number of neurological conditions which were formerly considered hopeless are now amenable to improvement at least, and in some early cases even a cure may be expected. This advance has been due chiefly to earlier diagnosis, an improved surgical technique and surgical judgment, and to better team-work of the surgeon and the neurologist.

Earlier diagnosis of many intracranial conditions is now possible mainly as the result of the more general and intelligent use of the ophthalmoscope; it is now commonly recognized and appreciated that the condition of marked papilledema and "choked disks" is the end result of preexisting pressure signs observable in the fundus of the eye.[1] No longer is it necessary to wait until a measurable papilledema occurs before it can be definitely stated that an increase of the intracranial pressure is present; besides the early fundal signs ascertainable by an ophthalmoscopic examination, the most accurate and definite test of an increase of the intracranial pressure is the lumbar puncture using the spinal mercurial manometer; in this manner the ophthalmoscopic findings can be confirmed. Intracranial localization has been greatly facilitated by the most thorough neurological examinations, and yet in many cases the localizing signs are so obscured by the increased intracranial pressure that they can be easily overlooked and they may even be absent; the importance of examining these patients is obvious. No patient should be allowed to develop a secondary optic atrophy and its resulting blindness while an effort is being made to localize the condition—an unimportant consideration in many cases; an early cranial decompression will save the eyesight and frequently the lesion can be localized later. Roentgen-rays are of much assistance in the diagnosis of many cranial and spinal lesions; by this means, long-continued intracranial pressure signs may also be determined and frequently the site of the lesion indicated; a negative picture especially of the skull, however, means nothing and frequently the interpretation of apparently positive plates is most difficult and at times confusing. Naturally in cranial and spinal injuries, the value of the Roentgen-rays is very great, indeed, especially regarding accurate diagnosis, and yet the treatment of such conditions, particularly of brain injuries, depends upon the presence or not of an increased intracranial pressure, whether the skull itself is fractured or not; whereas in spinal injuries the chief concern is whether the spinal cord has been irreparably damaged or not—the spinal fracture being of little importance neurologically so far as the treatment is concerned, unless the vertebral dislocation is so great that the spinal cord has lost its continuity.

*Read at a meeting of the Clinical Society of the New York Polyclinic Hospital and Medical School, Oct. 1, 1917.

An improved surgical technique especially regarding the team-work of operator and assistants has been a large factor in lowering the mortality of neurological operations; not only is the rapid loss of blood avoided, the duration of the operation lessened and thereby the shock minimized, but the risk of infection is also proportionately diminished to a point practically nil. Naturally, intracranial operations should not be hurriedly done, but they can be quickly and at the same time smoothly and safely performed; there is surely no advantage to be obtained in prolonging the operation either on account of faulty technique or as a result of such a complicated technique that the final closure of the wound is delayed many minutes. It is rarely necessary for the team to consist of more than the operator, two assistants and a nurse; the anesthetist is a most important member and many disasters in cerebral surgery have been due to faulty anesthesia; Doctor Hunt's observations have resulted in his using a method that has proved most satisfactory during the past four years.

The third important factor in the progress of neurological surgery during the past decade has been due to a better understanding of the neurological condition at operation, both by the surgeon and the neurologist at his side. Formerly, the surgeon knew little if any neurology, and the neurologist knew little if any surgery; the result was poor teamwork and thus frequently the surgical judgment was not the best. Today the surgeon should have at least a practical knowledge of neurological principles—both anatomically and physiologically; naturally a training in neurological pathology is most essential. In this manner a number of mistakes in surgical judgment may be avoided; if the patient cannot be benefited, by no means make the condition worse by an operation.

One of the most important aids to an increased knowledge of neurological lesions, particularly of the brain and of the spinal cord, has been the observation of the living pathology at operation, and if death should occur, then the careful study of the tissue itself at autopsy. During the past three years, a permission for autopsy has been obtained before operation in each case of neurological surgery at the Polyclinic Hospital (both ward and private patients)—no operation being performed unless the permission is given in writing—so that if a death should occur, then we shall ascertain the cause of death, and also the accuracy of the diagnosis and the treatment for the benefit of future patients. Naturally, when an operation is advised, it is in the belief that the patient will not die, but if the patient should die, then it is absolutely essential for the benefit of other patients that we ascertain the cause of death in order that possible similar mistakes, at least, may be avoided. I know of no means so enlightening to the doctor regarding the accuracy of diagnosis, particularly of intracranial conditions, than the post-mortem examination; besides the benefit of such knowledge to one's future patients, there is a marked tendency for these examinations to make the doctor humble as to his real knowledge and to keep him in that mental attitude.

If neurological surgery consisted chiefly in the removal of brain tumors it would be indeed a most discouraging field of endeavor. As you know, almost 80 per cent. of tumors of the brain are malignant, and even though a surgically successful removal of the tumor is possible, yet the end results are the same—the pitiful condition of the patient is merely prolonged; the severe headaches however, and the impairment of vision are thus temporarily relieved and even prevented by an early operative removal of the tumor. No patient should be allowed to become impaired visually from the increased intracranial pressure due to the growth of an intracranial tumor merely because the tumor cannot be located. These patients all should have an early decompression to relieve this increased intracranial pressure so that the vision will be spared, and then if the tumor does locate itself later, a successful removal of the tumor may be possible and yet the patient is not blind; I wish to emphasize this point as it is most discouraging to operate upon these cases of brain tumor who have become blind.

Tumors of the spinal cord, on the contrary, are much more favorable in that there is less liability of their being malignant; they can be more accurately located and are much more accessible surgically. The operation of laminectomy has become much less formidable within the past few years so that an exploratory laminectomy of a suspected spinal cord tumor should always be advocated early in order to anticipate any permanent damage of a compression transverse myelitis. The frequency of dural tumors of the spinal cord is most hopeful.

The condition of brain abscess has always been a most grave one. It usually results from an otitis media with the subsequent involvement of the mastoid; the usual site is the contiguous temporosphenoidal lobe, and less frequently the adjacent cerebellar lobe. As lesions of the cerebellum can be much more accurately diagnosed than those of the temporosphenoidal lobe, therefore, if we can rule out a cerebellar abscess, then the site must be in the temporosphenoidal lobe—a comparatively silent area of the brain, especially the right lobe in right-handed patients. Formerly, the otologists in cases of suspected abscess of the temporosphenoidal lobe would puncture the dura in search of the abscess through the "dirty" infected field of the mastoid; as all operations for brain abscess are really exploratory procedures, it is distinctly unsurgical to open the clean subdural spaces and to puncture the cerebral cortex itself through an infected area; if the abscess is not located (and this frequently happens), then the patient runs the big risk of a resulting meningitis and thus the usual occurrence—the exitus of the patient. Besides, the cerebral cortex should not be punctured blindly with a knife or puncture needle unless the dura has been opened so that it can be clearly ascertained whether an underlying cortical vessel is present or not; many disasters from the resulting hemorrhage have frequently occurred from such procedures. It is much more rational surgically and a much better exposure is obtained to locate the abscess if the operative incision is made through the "clean" subtemporal area, just as in a subtemporal decompression—the vertical incision naturally being used; if the abscess is found, then it can be satisfactorily and safely drained through the lower angle of the incision at the base

of the skull; and if the abscess is not found, then at least a decompression has been performed so that the intracranial pressure is relieved until the abscess may locate itself clinically, and the great danger of a meningitis and infective meningo-encephalitis has been avoided. In my series of brain abscess cases there are a number of them which I am sure I should have missed surgically if I had not used the better exposure of the subtemporal route.

The condition of cerebral spastic paralysis occurring in children is a most interesting study. In 1843, Mr. Little, of London, in his first monograph upon this subject,[3] stated that these cases were due to a lack of development of the cerebral tissues and also to an earlier meningitis; he did mention however, that this condition apparently followed in some cases of difficult and prolonged labor with or without the use of instruments, and were undoubtedly, in his opinion, due to an intracranial hemorrhage; it is very interesting to note that in his second monograph[4] upon this subject nineteen years later, in 1862, he states that, in his opinion, three-fourths of these cases of cerebral spastic paralysis in children are due to hemorrhage. These observations have been confirmed recently by more modern methods of diagnosis; it was formerly believed that hemorrhage in these cases caused a primary destruction of brain tissues—therefore, no regeneration was possible and thus an operative procedure would be of no value in treating the condition. Within the last five years, I have had the opportunity of examining and treating personally almost 1,400 children having the condition of spastic paralysis.[5] By the more accurate methods of differentiating the ones due to hemorrhage from those hopeless cases due to a lack of development and to a former meningoencephalitis for which nothing really can be done, it is now possible to diagnose the ones due to hemorrhage from these two conditions by means of careful ophthalmoscopic examinations of the fundi of the eyes and by a measurement of the pressure of the cerebrospinal fluid at lumbar puncture by means of a spinal mercurial manometer; if the ophthalmoscope reveals the signs of a definite increase of the intracranial pressure and those observations are confirmed by the spinal mercurial manometer (the normal pressure of the cerebrospinal fluid being 5 to 9 mm.), then we have an increased intracranial pressure and if this pressure is relieved permanently by a subtemporal decompression and its modifications according to the condition of the underlying cortex as ascertained at operation, then a definite improvement results in these cases, both physically and mentally. In this ceries of almost 1,400 cases there was an increased intracranial pressure in about 20 per cent. of them, that is, in about one out of every five cases examined, and these are the ones and only the ones that can be benefited by any operative procedure; I have now operated upon 298 of these children with a mortality of 28 patients (that is, 9 + per cent.) and the results have been very encouraging; naturally, the younger the child, the better the prognosis—the first few days of life being the ideal time for the operation, although most of the children have been between four and six years of age; the oldest patient however, was 23 years of age and a slight improvement resulted. Naturally, a sufficient period of time has not yet elapsed for us to ascertain the ultimate condition of these patients following operation, but their improvement has been so uniform and continuous in the younger children and the pathology of the condition being a hemorrhage upon the cerebral cortex and not in the cortex itself (in only 16 cases was the hemorrhage in the cortex or beneath the cortex), so that both the physical and the mental impairments are merely the secondary results of the increased intracranial pressure due to this supracortical hemorrhage.

The condition of hydrocephalus has been a very interesting one in that it has now been ascertained that the type of internal hydrocephalus is comparatively infrequent and that the type of external hydrocephalus is the usual condition in these cases. They both result from an earlier meningitis (if we exclude those cases of internal hydrocephalus due to tumor formation at the base) and the condition is therefore, a diffuse one; if the ventricles are blocked by adhesions or exudate in the aqueduct of Sylvius or at the formamina of Majendie and Luschka, then an internal hydrocephalus occurs, but if no such blockage is present, yet we shall have produced an external hydrocephalus because the cerebrospinal fluid cannot escape from the cerebrospinal canal through the blocked stomata of exit in the cortical veins, sinuses and lymphatics. The methods used in the past and occasionally now advocated of connecting the ventricles with the subdural spaces by means of tubes through the corpus collosum are therefore of little or no value in the treatment of this condition; even though the lumen of the tube should remain patent (and it rarely does), and even if the condition is one of internal hydrocephalus (which is much more rare than that of external hydrocephalus), yet such an operative procedure will merely be changing the condition of internal hydrocephalus to one of external hydrocephalus and therefore little or no improvement can be expected. The method recently used for draining the ventricles in cases of internal hydrocephalus and of draining the subarachnoid and subdural spaces in cases of external hydrocephalus by means of linen strands is a much more rational procedure surgically than any of the methods used in the past and its results have been very satisfactory; in the last report of 41 cases the mortality has been only thirteen patients.[6]

The condition of brachial plexus injury causing the so-called brachial birth palsy is the result of trauma to the plexus due to an overstretching of its nerves by a forceful separation of the head from the shoulder at birth. Undoubtedly if the plexus has not been completely severed, then many patients recover from the temporary paralysis of the arm but in those children where the overstretching has been so severe and even to a point of a loss of continuity of the nerve fibers, then a permanent paralysis of more or less degree will result unless the scar tissue resulting from the hemorrhage in and about the plexus is removed and the ends of the torn nerves are anastamosed by an operation. If the arm is completely paralyzed at birth so that not even the upper arm or the fingers can be moved, then the ideal time for the operation is at one month

of age (no anesthesia being necessary); if, however, the fingers or the upper arm can be moved slightly at birth, then we should wait until three months of age, and if no marked improvement has occurred within this time, then the operation should be performed. In these children I usually have the mother bring the child to the hospital in the morning, operate upon it, and then have the child taken home in the afternoon. The operation is not a difficult one technically, and there has been no mortality in a series of 104 cases.[7] These patients should not be allowed to reach the age of six years and even older without an attempt being made to improve their condition by an operation; the best results have been obtained in children under one year of age.

In fractures of the spinal column, I feel that unless we can prove absolutely that there is a complete severance of the spinal cord or that the spinal cord has been irreparably contused, that we should give the patient the benefit of an exploratory laminectomy within a short time after the accident in order to remove any bony compression, hemorrhage or edema of the spinal cord, and thus increase the patient's chances of a greater ultimate recovery of function. So frequently in patients whom we consider to have suffered a complete severance of the spinal cord with complete loss of sensation and motion beneath the site of the injury, that after three months and even longer they begin to recover their sensation and also motion of the extremities formerly completely impaired; these patients are the ones upon whom an early laminectomy should have been performed and thus the ultimate improvement would have been much greater than can be obtained at this late date. The operation of laminectomy is no longer the formidable operation of the past and its use should be much more frequently advocated than at present; these patients are most pitiful ones —the end result, unless something can be done for them, being but a miserable existence of a few years.

The diagnosis and treatment of brain injuries has advanced most rapidly within the last few years. The clinical symptoms and signs are so varied and frequently so confusing in these patients that it is a most fascinating field; apparently in many cases the more extensive the fracture of the skull, the less seriously is the brain injured, and on the contrary, the most dangerous of brain injuries are frequently not even associated with a fracture of the skull. As is well known, the fracture in these cases (if we exclude depressed fractures of the vault which should always be elevated or removed) is possibly the most unimportant part to be considered in the treatment, whereas the presence of a marked increase of the intracranial pressure with or without a fracture of the skull should immediately cause the patient to be withdrawn from that large group of patients properly treated by the expectant palliative method, and the advisability of an early operative procedure to relieve the increased intracranial pressure should be considered.

During the three years 1913, 1914 and 1915,[8] I examined and treated personally 239 adult patients having acute brain injuries with or without a fracture of the skull; in only 79 of these 239 patients (that is, 34 per cent.) were there marked signs of an increased intracranial pressure, and therefore only these patients were operated upon to relieve this increased pressure, whereas the remaining 160 patients did not show definite signs of an increased intracranial pressure and were therefore treated by the expectant palliative methods of absolute quiet, ice helmet and catharsis; if in shock, then the routine treatment of shock. It is thus seen that only one-third of the patients having brain injuries with or without a fracture of the skull were operated upon, and approximately this same ratio has continued during the past year. It is this careful selection of patients not only in regard to the advisibility of an operation or not, and if indicated, then the type of cranial operation used, but of the greatest importance—the ideal time for performing the operation—these factors have made it possible to lower the mortality of fractures of the skull from the average of 50 per cent. of most hospitals to 30.7 per cent. at the Polyclinic Hospital, and if we exclude the moribund patients dying within three hours after admission to the hospital from shock, internal injuries and in many cases the fracture of the skull being but an accident in the patient's general condition, the mortality is lowered to only 19 per cent.

In the treatment of brain injuries with or without fractures of the skull, if the patient is allowed to develop definite paralysis, a lowered pulse-rate, Cheyne-Stokes respiration and pulse and that appalling group of extreme intracranial pressure signs, then I agree entirely with the opinion so commonly now held that these patients "get along" just as well without operation as with operation at this late stage—the mortality being 50 per cent. and over; but the patients with brain injuries should not be allowed to reach this dangerous stage of medullary compression due to the high intracranial pressure—it should be anticipated by the accurate diagnostic methods now known, and if a marked increase of intracranial pressure is ascertained, then an early relief of it should be advised, not only to save the life of the patient, but to lessen the posttraumatic conditions of changed personality either of the excitable or the depressed type, persistent headaches, early fatigue, occasionally epilepsy and that long train of posttraumatic conditions in brain injuries and due in the majority of cases to a prolonged increase of this intracranial pressure.

Besides the lowered pulse- and respiration-rate which are comparatively crude signs of intracranial pressure and if of the irregular Cheyne-Stokes type, then most late signs of extreme intracranial pressure with its resulting medullary compression, the two most valuable procedures for determining a definite increase of the intracranial pressure are the examinations of the fundi of the eyes with the ophthalmoscope and the measurement of the pressure of the cerebrospinal fluid at lumbar puncture by means of the spinal mercurial manometer.

Although it is rare for a measurable papilledema and "choked disks" to occur in these cases of traumatic intracranial lesions with or without a fracture of the skull, yet the earlier, and, therefore, milder degrees of an edema of the optic disks should be most carefully "watched for" with the

ophthalmoscope as being one of the accurate signs of the presence or not of a definite increase of the intracranial pressure; the ophthalmoscope and especially the direct method is a most valuable aid in the diagnosis of cranial lesions. Rarely do these fundal examinations reveal an increased intracranial pressure within six hours after the head injury; this is due to the presence of shock in these patients who later exhibit the marked signs of intracranial pressure; as head injuries are usually accompanied by shock of varying degrees, naturally in these cases the blood pressure is low so that even if a large intracranial vessel was torn, yet there could be only a comparatively small amount of hemorrhage because the resulting increased intracranial pressure would soon be greater than this lowered blood pressure of shock, and therefore the bleeding would cease; however, as the patient recovered from the conditions of extreme shock, then the blood pressure would rise, and now more bleeding could occur intracranially until the intracranial pressure would again equal the lowered blood pressure; finally, if the patient survived this condition of shock, then the blood pressure would be continuously greater than the intracranial pressure, so that this resulting increased intracranial pressure would produce its characteristic signs in the fundus of the eye—a dilatation of the retinal veins, and an edematous blurring of the nasal halves, and if still higher, then an edematous obscuration of the temporal halves of the optic disks; a measurable papilledema and "choked disks" occur in these cases only when the intracranial pressure is extreme, due to a large intracranial hemorrhage of slow formation, such as the extradural middle meningeal type—just as in brain tumors or when the ventricles are blocked producing an internal hydrocephalus; naturally, if the intracranial hemorrhage forms very rapidly and of large amount, the patient usually dies within a couple of hours, so that "choked disks" have very little time to be produced; again, the shock following head injuries usually lasts for about six hours in the patients who survive and therefore it is rare within these first six hours for the ophthalmoscope to reveal definite signs of an increased intracranial pressure; it may be also noted that the patients who do not survive the condition of shock—usually die within the first six hours. It is, therefore, of the greatest importance to recognize these early signs of increased intracranial pressure by repeated ophthalmoscopic examinations and to realize that these oedematous blurrings of the optic disks are more than being merely within physiological limits; it is true that in cases of myopia there is normally an obscuration of the disk outlines, but these patients can be excluded by the second and following test, which should always be performed.

The most accurate means now known for ascertaining the presence or absence of an increased intracranial pressure is the measurement of the cerebrospinal fluid at lumbar puncture by the spinal mercurial manometer. It is similar to a blood pressure apparatus, as safe as a lumbar puncture when properly performed, and by it the varying degrees of intracranial pressure can be carefully recorded. The normal pressure is 5-9 mm. of mercury, so that if a pressure higher than 15 mm. is obtained at lumbar puncture, then we know that the signs of intracranial pressure, as shown in the fundus of the eye, are confirmed. This method of estimating intracranial pressure is most important in the differentiation of the intracranial condition of spastic paralysis due to hemorrhage at birth from those other causes of the so-called Little's disease. In other intracranial conditions producing the extreme stages of papilledema and "choked disks," and even their end results of secondary optic atrophy as in neglected cases of brain tumor, naturally it is not necessary to confirm the ophthalmoscopic findings in order to make a diagnosis of an increased intracranial pressure. If, however, in these traumatic lesions of the brain, we must wait until a "choked disk" results from extreme intracranial pressure in order for us to state that the intracranial pressure is high, and if we must wait for the pulse-rate to descend to 60 and below and the respiration and pulse to assume the irregular Cheyne-Stokes character of medullary compression, then undoubtedly the mortality of these patients will be 50 per cent. and even higher. Patients should not be allowed to reach this dangerous stage of medullary compression—this stage should be anticipated—and it can be by repeated ophthalmoscopic examinations and the measurement of the pressure of the cerebrospinal fluid at lumbar puncture.

In selected cases of mild intracranial pressure due to trauma, very frequently the convalescence can be shortened, the headaches relieved and the general condition of the patient greatly improved by lumbar puncture, and if necessary, repeated lumbar punctures; not only will the edematous "wet" condition of the brain be drained in this way, but a prolongation of the increased pressure be avoided and therefore the definite danger of posttraumatic conditions, so common in these cases, be lessened. Naturally, this method is only applicable to mild selected cases and lumbar puncture should never be advocated as a means of drainage in patients having high intracranial pressure or in subtentorial lesions for fear of a consequent medullary compression in the foramen magnum.

We now come to the most important and the difficult question in the treatment of brain injuries with or without a fracture of the skull: "If an operation is advisable, when should it be performed?" This question can more easily be answered by stating the two periods when the operation should *not* be performed. Naturally, we must exclude the majority (about two-thirds) of fractures of the skull that do not have a definite increase of the intracranial pressure and therefore no operation is indicated. (The depressed fractures of the vault naturally should always be elevated or removed.)

The two periods in which an operation is distinctly contraindicated in cases of brain injury, are, first, the condition of severe shock in the very beginning, and secondary, the condition of medullary edema and collapse—the death knell of the patient. To advise a cranial operation upon a patient—no matter how badly the skull is fractured, nor how extensive the intracranial hemorrhage seems, and that patient is in the condition of severe shock with a pulse-rate of 120 and higher, then the operation at that period of shock takes away whatever chance

the patient may have of surviving the shock: the operation is but an added shock and merely hastens the exitus. No patient having a brain injury should be operated upon in this condition of shock; the mortality is most high and if a patient does recover from an operation in this period of extreme shock, then he recovers in spite of the operation. Cranial operations for brain injuries in this stage of shock were frequently performed in the past and most disastrously, and thus operations were almost discredited in the treatment of brain injuries. The natural reaction following these early operations in the period of severe shock was to wait until there could be no possible doubt that the patient was going to die, unless, as was thought, a cranial operation was performed; that is, the patient was permitted to reach the period of extreme medullary compression—a pulse-rate of 50 and below, irregular Cheyne-Stokes respiration and pulse and profound unconsciousness, before a cranial operation might be considered. This is a most dangerous stage for these patients to reach, and it is doubtful whether recovery can occur even with an operation at this period—the mortality being very high. But if the patient has struggled through this period of medullary compression, and finally reaches the stage of medullary oedema, when the pulse-rate begins to ascend quickly to 120 and higher, respirations become rapid and shallow—that is, the stage of medullary collapse, then we have the second period when no patient sould be operated upon—they all die—operation or no operation. I feel that if these two extremes can be avoided and the latter of these, medullary collapse, can certainly be anticipated in the operative treatment of brain injuries and their signs cannot be overlooked, that the rational treatment of brain injuries from an operative standpoint depends upon the presence or not of a definite increase of the intracranial pressure whether there is a fracture of the skull or not; in some of the most serious cases no fracture was present—either to be ascertained at operation in the operated cases, or at autopsy. The aid of the Roentgen rays is important in the treatment of these traumatic cases only in patients with doubtful depressed fractures of the vault, and in latent fractures of the skull, where the bump is so apparently trivial that the patient might not be so carefully examined and treated as the condition would warrant. On the contrary, no patient with high intracranial pressure should be obliged to wait "over night" or for a period of hours merely to secure a Roentgenogram of the skull; it is of no importance in the treatment of these acute intracranial lesions whether a fracture is present or not; if there is a high intracranial pressure as shown by the ophthalmoscopic examination and by the measurement of the pressure of the cerebrospinal fluid at lumbar puncture by the spinal mercurial manometer, then a cranial operation is indicated to relieve this increased intracranial pressure both by enlarging the intracranial cavity and by the drainage of possible hemorrhage and cerebrospinal fluid; it is not so much a question of removing the hemorrhage as it is of lessening the increased intracranial pressure—whether that pressure is due to hemorrhage or edema—the operative indication is the same; many cases of head injuries at autopsy have revealed no hemorrhage at all—merely a "wet" edematous swollen brain, but sufficient to cause medullary compression and the death of the patient.

If an operation is considered advisable to relieve the increased intracranial pressure, then the operation of choice is the subtemporal decompression and drainage; if there are no definite localizing signs of the intracranial lesion, then the decompression should always be performed on the right side in right-handed patients in order to lessen thereby any possible operative damage to the motor speech area of the left cerebral cortex; in these cases it is not so important to remove the hemorrhage as it is to offset its pressure effects. In cases of depressed fractures of the vault showing definite signs of a high intracranial pressure, it is better surgical judgment to precede the elevation of the depressed area of bone by a subtemporal decompression so that when the depressed bone is removed there will be little or no danger of the underlying cerebral cortex being damaged by its protrusion upward through the bony opening; as the subtemporal decompression exposes a comparatively silent area of the brain—a portion of the temporosphenoidal lobe—its protrusion and possible damage would not appear clinically, whereas a partial paralysis, impairment of sensation or of vision might occur, and frequently does result from operations performed over the more highly developed areas of the cerebral cortex. Besides, the subtemporal route provides not only an excellent exposure of the middle meningeal artery and that portion of the brain so frequently involved in fractures of the skull, but it affords drainage to the middle fossa of the skull—the chief intracranial cistern—at its lowest point at the base of the skull; again, the thinness of the squamous portion of the temporal bone makes the operation a less difficult one technically. The vertical incision (and not the obsolete curved incision) should be used not only to render the operative hemostasis more effective in that the trunk of the temporal artery is clamped at its lowest point at the very beginning of the operation and thus there is no bleeding from its branches, but this incision also permits the removal of the underlying squamous bone as far as is possible beneath the temporal muscle—and yet the attachment of the temporal muscle to the parietal crest is left intact so that a firm closure of its separated muscle fibres is assured; this is a most important point in cases of high intracranial pressure as in brain tumor, where a cerebral hernia or fungus might result from an imperfect closure of the temporal muscle. The insertion of silver and celluloid plates and other foreign bodies beneath the scalp is to be most strongly condemned.

If the intracranial pressure is so high that the cerebral cortex tends to protrude through the bony opening, it is frequently wiser in selected cases to perform a similar operation upon the opposite side of the head immediately after the first operation; I have been obliged to do this in only five per cent. of the patients; they are the ones having a swollen edematous brain—"water logged" as it were, where the drainage of blood and cerebrospinal fluid is slight and not sufficient to cause a marked decrease of the intracranial pressure; in some doubtful cases, it is better judgment to wait for one or two days and

even longer before the second operation is considered advisable. The rubber tissue drains are usually removed on the first or second day postoperative, and the hospital convalescence ordinarily requires at least two weeks. Naturally, these patients should not enter into their former active life for a period of three months and even longer; a too early return to the strain and stress of modern life predisposes them to many complaints—both subjective and objective; repeated examinations of the fundus of the eye and of the superficial and deep reflexes are here most important in estimating the physical normality of the patient.

The end results of patients having brain injuries with or without a fracture of the skull have been an interesting study. It has become quite a common belief that once a man has had a fracture of the skull and then recovers, he is never the same person again. In 1912, I examined the records of three of the large hospitals of New York City during the decade of 1900-1910; the mortality of fractures of the skull was 46 to 68 per cent.; the mortality of the patients operated upon was 87 per cent.—this high percentage due undoubtedly to the operation being postponed until the extreme stages of medullary compression and oedema, and also to the fact that the operation performed was the "turning down" of a bone flap—a much more formidable procedure than a decompression—and then the bone replaced so that even the benefits of a decompression were prevented; besides, in many cases, the dura was not opened, and as the dura is inelastic in adults, therefore no adequate relief of the pressure could possibly be obtained. Of the patients, however, who were finally discharged as "well" or "cured," I was able to trace only 34 per cent., but of these 34 per cent. of the total patients found 67 per cent. of them were still suffering from the effects of the injury—that is, two-thirds of them were not as well as before the injury; the chief complaints were persistent headache, a change of personality of the depressed or of the excitable type and thus emotionally unstable, early fatigue making any prolonged mental or physical effort impossible and thus the inability to work, lapses of memory, spells of dizziness and faintness, and even epileptiform seizures in a small percentage of them. In examining the hospital records of the patients having these posttraumatic conditions, it was most interesting to ascertain that these were the patients—and there were but few exceptions—who regained consciousness gradually after several days and remained in the hospital for a period of four weeks and longer, whose charts made frequent mention of the severe headache and a low pulse-rate of 60 and in some cases below 60—that is, the usual clinical signs of an increased intracranial pressure; an ophthalmoscopic examination had rarely been made. Many of these patients still showed the results of the increased intracranial pressure in their fundi and at lumbar puncture, and these were the ones upon whom a cranial decompression even at this late date of several years caused a marked improvement; the operative findings were always associated with a "wet" swollen edematous brain; many of the so-called posttraumatic neuroses are, in my opinion, frequently superimposed upon this definite organic basis as the result of the brain injury. The treatment, therefore, of brain injuries should not be limited merely to the recovery of the patient as far as life is concerned, but it should also be directed toward obtaining a normal individual—approximating as closely as possible the condition of the patient before the injury.

Besides these neurological conditions frequently benefited by operative procedures, there are still other ones in this field that can be only mentioned in the present paper. The excellent results obtained in those cases of persistent trifacial neuralgia which finally, after the failure of all medical efforts, have had the posterior root of the Gasserian ganglion severed, are possibly the most dramatic; the surgery of the peripheral nerves has also made a marked advance within the past few years and especially is this true of the operative treatment of facial paralysis; these operative procedures will be discussed in a later paper. Of the other neurological conditions amenable to surgical treatment, this work is still in the experimental stage.

REFERENCES.

1. *Archives of Ophthalmology*, Vol. XLVI, No. 4, 1917.
2. *The Laryngoscope*, St. Louis, March, 1914.
3. "Deformities of the Human Frame." *The Lancet*, Vol. I, p. 350, Dec. 16, 1843.
4. "On the Influence of Abnormal Parturition, Difficult Labors, etc., upon the Mental and Physical Condition of the Child," *Obstetrical Transactions*, Vol. III, p. 293, 1862.
5. *New York State Journal of Medicine*, October, 1916.
6. *American Journal of the Medical Sciences*, April, 1917.
7. *Journal of the American Medical Association*, March 18, 1915.
8. *Journal of the American Medical Association*, May 13, 1916.

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OBSERVATIONS AND TECHNIQUE OF LUMBAR PUNCTURE IN SEVEN HUNDRED CASES.

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THERE has been very little emphasis or importance given to the value of lumbar puncture as an aid in the diagnosis and the treatment of organic and functional conditions affecting the central nervous system.

Through the courtesy of Dr. William Sharpe, Professor of Neurological Surgery at the Polyclinic Hospital, I have during the past two years performed lumbar puncture upon nearly all of the patients admitted to his service, either for treatment or as an aid in diagnosis.

The technique used in adults is to have the patient lying on his side, thoroughly flexed, thighs and knees upon the abdomen, and head upon the chest; median line of head and spinal column being on a level. In children the same position is used except a nurse or an assistant holds the patient by passing one arm between the thighs, over the upper shoulder to the back of the neck, while the other hand flexes the head upon the chest; in this way the position can be

very easily kept. An imaginary straight line is drawn between the highest part of the crests of the ilia on both sides across the spinal column, through the interspace between the fourth and fifth lumbar vertebræ, the site of election for lumbar puncture. At this point in the cauda equina region the puncture is more easily performed and is less dangerous and painful to the patient. If the interspace between third and fourth, and especially between the second and third vertebræ is used, then there is danger of seriously injuring the spinal cord by either trauma or hemorrhage. If the space between the fifth lumbar and first sacral vertebræ is used, then there will usually be more pain, due to the sensory nerve roots being more easily injured, and consequently the sensation is referred to the lower extremities.

With the selected site rendered sterile (and the skin may be anesthetized), a needle is inserted through the skin where the lines bisect; after the skin is pierced and the landmarks are again ascertained, the needle is passed forward and upward at an angle of 5° to the center of the spinal column in adults, or directly forward at right angles to the center of the spinal column in children. When the cauda equina region is reached, which is easily ascertained by the sensation of piercing the dura and entering a cavity, or sometimes by tingling in the lower extremity, then the stylet of the needle is withdrawn and the cerebrospinal fluid is allowed to escape; if some blood should escape (the cerebrospinal fluid being normally colorless), then it will be due to the fact that the needle either was passed through the cavity or has encountered the veins on the side. Then the needle should be withdrawn and passed again to the center of the cavity, and when this is reached no blood should escape unless due to the previous trauma from poor technique. When the technique is properly carried out (and the skin anesthetized), there should be practically no pain—no more than is caused by a hypodermic injection. Such being the case, it is useless to subject the patient to the dangers of a general anesthetic, unless the patient is highly nervous and will not be kept quiet. In children who can be held, what little pain there is—and it only lasts a second or two—does not, I think, make it advisable to administer a general anesthetic. Neither do I think it advisable to use local anesthesia, except in so far as the skin is concerned; it is neither necessary nor without danger to anesthetize the deeper tissues. Pain will be produced only when the periosteum or dura is pierced. No anesthesia should be used on the dura or in the spinal cavity, for then complications are very liable to follow, particularly infection and useless trauma. Ordinarily there is practically no danger, excluding the possibility of infection, and very little or no pain except as outlined in the above procedure, the pain in the lower extremities being only transitory should it occur. The procedure as described above is more easily performed, especially in children, and more accurately than the method frequently used, when the needle is inserted to the side of the spinal column in the interspace between fourth and fifth lumbar vertebræ upward and inward toward the center of the spinal cavity. I have found this method better only in fleshy people whose intervertebral spaces are small and the spinous processes short and very hard to palpate. Should the cerebrospinal fluid fail to escape after the stylet is withdrawn, and one is certain that the needle is in the canal, then it is due either to a blockage of the lumen by a blood clot, or to the nerve roots obstructing the entrance, or there may be very little cerebrospinal fluid present, as may occur in purulent cerebrospinal meningitis. In such an instance one must be sure that the lumen is patent by turning over the needle and withdrawing slightly, or placing it a little deeper and then waiting a few seconds. There are cases in which the cerebrospinal fluid is diminished; especially is this true in children, due to lack of development of the central nervous system or to higher intramedullary cord tumors. The spinal manometer may not register over 1 or 2 mm. of mercury, or there may not be over 5 drops of cerebrospinal fluid to the minute escaping. It is very hard to conceive of an entire absence of cerebrospinal fluid unless due to mechanical causes. The spinal fluid is secreted by the choroid plexus, possibly a small amount by the meningeal endothelium, and has a definite function and circulation. I have more than once made a "dry tap," but in these cases I have then attempted a puncture at different intervals, and finally obtained the cerebrospinal fluid. I believe the so-called "dry tap" (no fluid) is due to faulty technique, unless the cerebrospinal fluid is very flocculent and will not flow as the result of an exudate or a tumor obstructing the spinal canal, and consequently there is no circulation of fluid in the cauda equinal region.

Lumbar puncture is the most valuable aid we have to-day in the diagnosis of the degree of intracranial pressure. By this method we can fairly accurately diagnose it by means of the mercurial spinal manometer much more closely than by estimating the flow of cerebrospinal fluid per minute. It is normally 5 to 8 mm. in adults or 20 to 40 drops per minute. In estimating the pressure this way, the patient must be perfectly quiet, no coughing, no struggling, no crying, median line of the head on a level with the spinal column, otherwise the least exertion of the patient will cause fluctuation in the reading. There are other methods by which intracranial pressure may be ascertained, though not as accurately, such as ophthalmoscopic examination of the fundus of the eye, *x*-ray examination of the cranium, dilatation of the veins of the scalp, base of nose and upper eyelids, diastasis of the cranial bones, exophthalmos, etc.

The value of this method is inestimable in diagnosis of intracranial hemorrhage either from trauma or apoplexy. In the former there will be pressure, and the fluid may or may not be bloody. When blood occurs in spinal fluid the same throughout it is positive of intradural hemorrhage. If the blood is extraneous, the spinal fluid color will change while being withdrawn. In apoplexy we are able to diagnose the kind of hemorrhage, either capsular, in which there is very little or no pressure and clear fluid, or cortical and ventricular, where the cerebrospinal fluid is under pressure and may be bloody. In the latter two we are able to render surgical aid and improve conditions heretofore regarded hopeless.

Spinal puncture is equally important in recognizing early syphilitic involvement of the central nervous system, by its laboratory examination for a Wassermann, cell count, globulin reaction, colloidal gold test, etc. The so-called hopeless cases to-day, viz., general paresis, tabes dorsalis, etc., can by this aid be diagnosed very early—even before much destruction of the tissues takes place and the disease may be checked before it is too late. Should we rely solely upon the serological examination of blood and clinical signs for the diagnosis of syphilis of the central nervous system, the disease would be well advanced; whereas we could diagnose and combat it much earlier by a careful laboratory examination of the cerebrospinal fluid, the changes in the fluid taking place much earlier than the clinical signs, which are a late manifestation.

In cases having acute intracranial pressure, much can be accomplished in a diagnostic or therapeutic way by frequently removing the fluid slowly until the pressure is normal; this is done for relief of intracranial pressure or for drainage, as in traumatic, septic, or infectious conditions of brain and cord. Frequent drainage of cerebrospinal fluid is therapeutically indicated in selected cases in acute wet edematous conditions of the brain resulting from intracranial hemorrhage, chorea, delirium tremens, uremic coma, convulsions in epilepsy, encephalomyelitis. Very often I have seen a marked improvement in the above conditions within a few hours; patients coming out of coma, stuporous conditions or delirium, and convulsions, spasticity and paralysis diminishing. I have seen petit mal attacks stop for three months where previous to the puncture they occurred daily. In every case in which the patient is unconscious or paralyzed and the definite cause is not known, a lumbar puncture should be performed as an aid in differential diagnosis. More cases of fractured skulls will be diagnosed which were heretofore overlooked, and surgical aid can be rendered before it is too late.

I wish to emphasize the importance of draining the cerebrospinal fluid in mild cases immediately following intradural hemorrhage when the patients are conscious, rational, and apparently in good condition. By merely draining the cerebrospinal fluid in these cases one will be able to tide the patient over the critical period and save him from surgical interference, which may be indicated later. It is very probable that a percentage of traumatic epileptics and neurotics to-day who have wet, edematous, swollen brains would have been cured or benefited had the mere relief of intracranial pressure been done by lumbar puncture during the stage of irritation and congestion immediately following the cranial injury.

There are few cases of brain tumor on record in which immediate death has followed a lumbar puncture by causing medullary compression and edema from a choked medulla in the foramen magnum. When this complication arises death may occur within a few hours. This complication is most liable to occur when the intracranial pressure is exceedingly high, or the patient is in profound shock, or there is a subtentorial tumor or hemorrhage, and the fluid is rapidly withdrawn and in large amount, which should never be done. In these cases the fluid should be withdrawn very slowly, not more than 10 drops to a minute or not at all. If at any time during the test the patient should develop headache, nausea or vomiting, vertigo, changes in respiration or circulation, etc., while the fluid is being withdrawn, then it should be stopped immediately and the patient placed in the extreme Trendelenburg position. Where there is very much pressure the fluid should be withdrawn slowly and the patient required to lie down 24 to 48 hours, otherwise headaches, nausea, vomiting, vertigo, and elevation of temperature may occur. This may occur because, from high intracranial pressure of long standing, the brain is edematous and has a diminished blood supply to the choroid plexus and brain tissue; by temporarily relieving the intracranial pressure, even to a small degree, the blood supply is increased, causing over-production of cerebrospinal fluid, and one soon finds the intracranial pressure higher than at first, hence the reaction follows; whereas, by keeping the patient in bed, head lowered, if necessary, the blood pressure to the cranium is diminished, and a smaller amount of cerebrospinal fluid is secreted. Should reactions occur very markedly within a few hours or days after the test is made, which showed very little evidence of intracranial pressure, and the patient has been quiet in bed, it might be suggestive of intracranial pressure though all other pressure signs were negative or practically so.

Therefore it would seem that the intensity and duration of these reactions are in direct proportion to the degree of intracranial pressure, *i.e.*, the higher the pressure the more marked the reaction.

We are able from the above statements to arrive at the following conclusions regarding the value and technique of lumbar punctures:

1. As an aid in diagnosis of the degree of intracranial pressure, or in the diagnosis of intracranial injury either extradural by pressure or intradural by pressure and bloody cerebrospinal fluid, no more than 5 c.c. should be removed for diagnostic purpose, which is amply sufficient.

2. As a therapeutic measure in drainage of cerebrospinal fluid to relieve pressure in selected acute cases and in infective conditions, the cerebrospinal fluid should always be removed very slowly while the patient is lying down, especially in cases of high intracranial pressure either above or below the tentorium.

3. Lumbar puncture is a safe procedure when properly performed.

4. It is therapeutically contraindicated in high intracranial pressure of long standing or patients in profound shock.

Dipsomania in a Soldier at the Front.—Chavigny relates the case of a soldier who exhibited a violent crisis of excitement and exaltation of mysterious nature. It was learned that whenever things went wrong and especially after indulgence—even mild—in alcohol, he had similar outbreaks. Witnesses stated that habitually he was sober and drank water only. He was of low intelligence and only with difficulty was it ascertained that when a certain impulse or obsession overcame him he would drink anything—wine if he could get it, if not soapsuds, gasoline, etc. The man was adjudged irresponsible as the drinking was the result, not the cause of his mental crises.—*La Presse Médicale.*

THE APPEARANCE OF THE FUNDUS OCULI IN CERTAIN INTRACRANIAL CONDITIONS.*

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CHANGES in the fundus of the eye as seen by the direct method of ophthalmoscopic examination, are so generally constant in certain intracranial conditions, that this observation becomes a most important one in the study of this type of cases. If the vaginal space which surrounds the optic nerve as far as the globe, is in normal communication with the intermeningeal space of which it is a continuation, then any increase in the tension of the cerebrospinal fluid exerts a corresponding pressure upon the optic nerve sheath and its contents and at times is sufficient to retard the normal outflow of the lymphatic and venous currents from the eye. As a result of this pressure, edematous changes are noted quite early in the fundus oculi. Should lumbar puncture be done when the changes are observed, there will usually be found an increase in the tension of the cerebrospinal fluid recorded by the spinal mercurial manometer.

If increased intracranial pressure is present, the edematous changes in the fundus of the eye, referred to above, occur in the following order and manner. The upper and lower margins of the optic disc, near the site where the blood-vessels penetrate, are slightly obscured; next, the nasal or vascular half of the disc and its margins become blurred; after this, the temporal half of the disc and its margins become hazy, and following this, the edema of the entire disc increases, until its height is measurable with the ophthalmoscope, and when this measurement reaches 3 diopters, it is called a choked disc. A papilledema is any measurable elevation of an edema confined to the disc; a choked disk is a papilledema of 3 diopters or more. An inflammation of the nerve head (optic neuritis) should not be mistaken for a papilledema; in optic neuritis the nerve head is only slightly swollen, the exudation obscuring its surface and margins, and it is not confined to the disc, but extends to the surrounding retina as well and is more correctly termed neuroretinitis. Many theories have been advanced to explain the cause of choked disc; no doubt a combination of factors is at work, but the mechanical one seems to be most plausible.

We have experimental evidence to show that increased intracranial tension alone is sufficient to produce a papilledema, if this tension is kept up for a certain time. Choked disc has been observed in 80 per cent of the cases with brain tumor, and estimated with the ophthalmoscope, they measure from 3 to 10 diopters in elevation. The changes that usually occur in a choked disc are as follows; at first it is red and juicy in appearance, then densely opaque lines pass down its sides; later it assumes a mound shape, and its entire surface is densely opaque with linear hemorrhages in it, the veins are swollen and tortuous, and covered here and there with infiltrate. After this, the regressive stages begin, the mass becomes pale, degenerate changes occur, and at the end of the process is an atrophic nerve head.

Thirty-five cases of brain tumor in Dr. Sharpe's service were observed, and thirty-two operated upon in the past two and a half years. From the standpoint of vision, a decompression is advised before the edema becomes densely opaque, because when this appears, gross destructive changes have taken place in the nerve and the time is passed when good vision may be assured. By an ophthalmoscopic examination of the fundus of the eye, many of the brain tumor cases are diagnosed as such for the first time only when sent to a hospital, suffering from what is said to be an obscure neurological condition associated with a persistent headache. It is of great importance, therefore, that every patient who complains of uncontrollable persistent headaches should have a careful ophthalmoscopic examination made of the fundus of the eye; and it would be well worth while even if only occasionally there will be found the edematous changes that reveal an increase in the intracranial tension. In such an event, we may be able to detect these changes in brain tumor cases, sufficiently early, not only to prevent the loss of vision by directing a cranial decompression operation to be done, but perhaps save the life of the patient.

Intracranial hemorrhage at birth is responsible for 70 per cent. of the spastic type of paralysis in children and 20 per cent. of the resulting idiocy and feeblemindedness now existing; the most damaging factor in these cases is the increase in the pressure of the cerebrospinal fluid as the result of the presence of the hemorrhage. One of the earliest indications of the existence of increased intracranial tension is determined by an ophthalmoscopic examination of the fundus of the eye. There is usually seen in the fundi of infants' eyes shortly after birth, when an intracranial hemorrhage is present, a general edema blurring all retinal and disc details, or a mild edematous blurring of the nasal half of the disc, or rarely a measurable edema occupying the entire surface of the disc (papilledema). This observation is important because it indicates an increase in the pressure of the cerebrospinal fluid and lumbar puncture findings usually verify it.

When intracranial hemorrhage occurs, there is usually a history of difficult or instrumental delivery at birth and the consequent injury to the infant's cranium and its contents. If the obstetrician who suspects a brain injury in an infant after difficult delivery with or without instruments, would direct a careful ophthalmoscopic examination to be made of the fundus of the infant's eyes as soon as possible after birth, there may be found an occasional child that shows edematous changes indicative of an increase in the intracranial pressure as the result of the presence of the hemorrhage, and if this increased tension is verified by a lumbar puncture, then in selected cases a modified cranial decompression operation to remove the hemorrhage is indicated, and when done gives excellent results. One human may be saved the fate of a spastic child and of an imbecile in the event of such an operation.

At present, however, most of the cases we see are advanced ones, with marked spasticity and of the mentally impaired type. The eye-grounds in these

*Read at a meeting of the Clinical Society of the New York Polyclinic Hospital and Medical School, Oct. 1, 1917.

cases reveal regressive edematous changes; the entire fundus is slightly hazy and presents the appearance of particles of finely ground black pepper, shaken lightly upon it; the color without the disc is changed from the normal orange red to red; the temporal portion of the disc is paler than normal and its margins are plainly visible; there is an increased redness in the nasal portion and a blurring of its margins; the upper and lower margins are blurred also; the veins are distended slightly out of proportion to the caliber of the arteries, and the light streaks in the blood-vessels are either missing or barely visible. While the foregoing is the usual picture, there are some eyes that exhibit milder signs while others are even more marked. A few there are that show post neuritis signs, such as pallor of the entire disc, indistinct margins, light streaks of exudate along the vessel walls, with leveling of the physiological pit; some that show an unequal distribution of retinal pigment, and others an entire loss of pigment.

Almost 1400 children having spastic paralysis with or without mental impairment, of ages varying from one day to twenty years, have been examined with the ophthalmoscope to ascertain the presence or absence of an increased intracranial pressure due to hemorrhage, and of this number 300 children have shown the distinct edematous changes above described—that is about one child in five examined. Naturally, having an increased intracranial pressure, these children are the only ones that can be benefited by any cranial operation.

In cases of recent fracture of the skull, and especially basal fractures, an increase in the intracranial tension is usually the most damaging factor. While it is interesting to know the nature and extent of the fracture revealed by roentgenograms, it is not so important from the standpoint of immediate treatment as the determination of an increased intracranial pressure. In three of the cases of the series studied, roentgenoscopy revealed a distinct fracture of the base of the skull, with no signs or symptoms developing, other than those following an ordinary concussion. Some of the cases of basal fractures in which an extensive hemorrhage occurred from the ear at the time of injury (virtually a "natural" decompression) displayed none of the signs or symptoms of an increased intracranial pressure. Observations were made in 212 cases, diagnosed as fracture of the skull in Prof. William Sharpe's service at the New York Polyclinic.

When recent cases were examined for the first time—that is within 24 hours after admission to the hospital, there is usually found a general edema blurring equally all the details in the fundus of the eye, and this blurring may be slight or sufficient to obscure greatly the usual landmarks. The venous twigs when visible are dilated out of proportion to the size of the accompanying arteries.

Frequent and careful observations are made while these patients are in bed. In cases uncomplicated by an increase in the intracranial tension, the retinal edema gradually subsides. Occasionally, in some of the routine examinations, after the first 24 hours following the accident, we note an increase in the general edema that previously existed, or to the edema that heretofore blurred equally all details, there is a decided added obscuration of the nasal half of the disc and its margins. These observations are most valuable, because they indicate quite early a rise in the intracranial pressure and the spinal mercurial manometer will confirm it at lumbar puncture in the majority of cases. Infrequently, there is an edema occupying the entire disc, the height of which is measurable with the ophthalmoscope (papilledema) even to the degree of "choked disc." In all these cases, the cerebrospinal fluid was found to be under higher tension than normal.

The degree of tension recorded at lumbar puncture in a given case and its pressure effect upon the cerebral cortex, are prime factors to be taken into account in deciding the kind of treatment necessary. Dr. Sharpe advises all cases of fracture of the skull to be placed at complete rest in bed absolute quiet, ice helmet to the head, and free catharsis maintained; if no signs or symptoms referable to an increase in the pressure of the cerebrospinal fluid develop, the above treatment is all that is given, but if the intracranial tension is increased up to nearly double the normal, then in selected cases repeated lumbar punctures are done, depending upon the nature of the symptoms. If, however, the tension of the cerebrospinal fluid is found to be double the normal or even more at lumbar puncture, whether or not the pulse rate is lowered, he advises a simple decompression operation to be done before a possible collapse of the medulla occurs.

At present a careful ophthalmoscopic examination of the fundus oculi is an important part of a complete neurological examination; it very frequently corroborates other findings and at times reveals changes that indicate neurological and other conditions that are impossible to determine in any other way. The diagnosis of many obscure neurological conditions is made possible only by the ophthalmoscopic findings.

Only selected operative cases of cerebral spastic paralysis, mentally impaired children, and fracture of the skull are reviewed in this paper, and it is only in these cases showing an increase in the intracranial pressure that an operation can offer any hope. The others naturally are not operated upon, as no improvement would result.

Because in the majority of cases it reveals changes quite early that indicate an increase in the intracranial tension, we attach great importance to a careful ophthalmoscopic examination of the fundus of the eye.

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PERNICIOUS ANEMIA.*

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It has been wisely said that pernicious anemia is a difficult subject. This is necessarily so because of two conditions: (1) the obscurity of the cause or causes of the disease, and (2) the disagreement among hematologists as to what permits of a diagnosis of pernicious anemia with the criteria at present available. It is better for the peace of mind of the student or physician to believe with Naegeli, that a diagnosis can be made on the blood findings

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alone—the embryonal type of erythropoiesis (megalocytes, megaloblasts, predominating if only a few nucleated red cells are present), the high color index, leucopenia with a relative lymphocytosis, the blood platelet diminution—this is a picture striking enough to make the diagnosis of Addison's type of anemia to any one who can remember these essential points. Dr. Mix puts it as laws and numbers and gives them as follows: The first law is that the color index is above unity; the second law is that there is an increase in the megalocytes, red cells larger than normal; the third law is that there is a reduction of the polymorphonuclears and a relative increase of the lymphocytes, a leucopenia with a relative lymphocytosis.

Besides these three laws, which are essential for the diagnosis, he gives two others. The fourth law may not be constant; it relates to the nucleated red cells—the normoblasts and the megaloblasts; and upon this, the fourth law, are based two types or rather grades of pernicious anemia, the ordinary and the aplastic types. In the ordinary type the blood-making organs make desperate efforts to replace the blood destruction and the cells of embryonal type are thrown into the circulation, sometimes in showers—the so-called blood crises, in which nucleated cells, the megaloblasts, always predominate over the normoblasts. This is the fourth law. But in the aplastic type these nucleated cells do not appear, and so the fourth law is nonoperative in this later type.

The fifth law is poikilocytosis—irregular and bizarre shapes of red cells.

Then Mix sums it up as follows: (1) Color index above unity; (2) Increase in megalocytes; (3) A leucopenia with relative lymphocytosis; (4) The relative preponderance of the large over the small nucleated red cells, in the ordinary type; (5) Poikilocytosis.

Now, for the man who does blood work it is very easy to make a diagnosis with these five rules to guide him, and a diagnosis is made and our patient is given an unfavorable prognosis. Unfortunately for our self-complacency, but fortunately for the lives of our patients, here come other hematologists who present case after case with the so-called blood picture of pernicious anemia, in which they have found the causes and treated them successfully, and their patients have recovered or else have enjoyed an indefinite period of good health. Grawitz and also Krehl claim that the so-called blood picture of pernicious anemia may be exhibited in syphilis, infection with *Bothriocephalus latus*, in the puerperium, and in a variety of other conditions, such as carcinoma of the stomach, gastric ulcer, hepatic affections, chronic losses of blood, diseases of bone-marrow, etc. They regard the blood picture of pernicious anemia as evidence only of an especially stormy regeneration of erythrocytes, which, because of the inadequacy of normal sources of new red cells, assume the type observed in the embryo.

So, even in this disease, which is essentially a disease for laboratory aid, it might be well to follow Murphy's dictum—that diagnoses should be made in cerebro and in the laboratory.

Cabot assembled 1200 cases—300 in his own practice—and, excluding all in which the causes were discoverable, finds the following clinical aids: Anemias of high grade, extreme weakness, peculiar lemon color of skin, sclera pearly white; 84 per cent. of the cases present lesions in the spinal cord and resemble spastic paraplegia, tabes, or peripheral neuritis. The symptoms of cord lesions may appear before a definite blood picture has developed. It occurs twice as frequently in females as in males, and most often between the ages of 30 and 60. It is a disease of frequent remissions. The subcutaneous fat is usually well preserved. Psychic changes are observed in some cases.

Postmortem findings are as follows: Fatty degeneration of heart, kidneys, and liver; increased deposits of iron in liver, spleen, and kidneys; the bone-marrow is red and shows active regeneration in the plastic type, but the reverse in the aplastic form.

It would take us too far afield to go into the discussion of the various classifications of anemias and we shall endeavor to limit ourselves to the discussion of diseases presenting the clinical and laboratory findings of pernicious anemia.

There are a number of conditions classed as aleucemic which present the symptomatology and blood picture of pernicious anemia, but there is an addition—numerous granular mononuclear leucocytes, which mark them as in the class of leucemias.

The anemia due to infection with *Bothryocephalus latus* is of especial interest, not only because it presents a hematological picture indistinguishable from that of pernicious anemia, but because it is unquestionably curable if the cause be removed before too great damage has been done. Repeated examination of the stools for the ova would exclude not only the bothryocephalus but other harmful parasites. And a point right here that needs emphasis—we rely very much on the findings of eosinophiles in all parasitic diseases of the intestines, but it must be borne in mind that as the anemia progresses the eosinophiles disappear and the blood assumes the embryonal type. The following fish tapeworm case, taken from Cabot's "Differential Diagnosis," Vol. II, illustrates this point:

Man, age 30, Finlander; red cells 1,000,000, Hb., 40 per cent., color index, 2; lymphocytes, 6,000; no achromia, many large sized red cells and poikilocytes; blood-plates decreased; 3 normoblasts and 4 megaloblasts seen while making a count of 200 lymphocytes. Has general physical weakness, but feels well while in bed; has good appetite; has no pain; has lost only a few pounds in weight. A diagnosis of pernicious anemia was made by the house officer, but was questioned by Dr. Cabot on the ground that not one case in a hundred of pernicious anemia is seen in a young man, and because of the prevalence of the fish tapeworm in Finlanders. Examination of the stool showed the ova of tapeworm, and under appropriate treatment the case went to complete recovery.

Again it should be remembered that there are certain blood poisons elaborated in the mechanical arts and the munition shops, that produce a picture of pernicious anemia.

There is a very striking condition, carcinoma of the bone-marrow, that produces a picture of the blood crises of pernicious anemia. Our differentiation would depend on two points: in carcinoma of the bone-marrow the flooding of the circulation with nucleated red cells is continuous and the normoblasts predominate over the megaloblasts, whereas in pernicious anemia these blood crises occur only

occasionally or not at all, and when they do occur the megaloblasts predominate. A clinical point would be that carcinoma of the bone-marrow is probably always secondary to carcinoma in one of four organs, the thyroid, the lymphnodes, the prostate, and the adrenals.

From the clinical side Cabot says that it is well to recall that cases of pernicious anemia may come to us in many strange disguises. They may appear without any complaint suggesting anemia and with merely a paralysis of the legs. Another type may appear with fever as a presenting symptom, so that a diagnosis of typhoid is often first made. Others begin with diarrhea and the anemia is wrongly attributed to the diarrhea, whereas the diarrhea ought to be attributed to the blood pathology. The majority of all cases, however, are distinguished by the fact that they present themselves complaining of one symptom only—weakness, a weakness unparalleled in any other disease, because it is not associated with pain, loss of weight, or functional disturbances, such as invariably accompany any other disease producing a similar degree of prostration.

This differentiation could go on indefinitely, depending upon the industry of the writer to search out case records and apply them as examples, but I will close with syphilis and mention that there may be an analogy between pernicious anemia and tabes dorsalis. Some years ago it was asserted that syphilis and tabes were frequently associated, then that 90 per cent. of the cases of tabes were due to syphilis, and now that tabes means syphilis. Authors are now claiming that 20 to 80 per cent. of cases of pernicious anemia present cord symptoms similar to those in the syphilitic and parasyphilitic spinal cord diseases, and that the treatment most successful in pernicious anemia and syphilis is the arsenical, and especially intravenous injections of neosalvarsan.

Treatment.—This may be summarized as in general, rest, sunshine, fresh air, easily assimilated and highly nutritious diet, blood transfusions or intramuscular injections. For the latter the citrated blood method is probably the most satisfactory and the easiest to use for the non-surgical practitioner. Then we must search for the cause and institute its appropriate treatment. Finally where a cause is not found or where syphilis is suspected, arsenic, as previously mentioned, should be used.

NEW SURGICAL TREATMENT OF ATROPHIC RHINITIS

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ATROPHIC rhinitis is a disease of the nasal cavities, resulting in destruction of the functionating properties of the mucous membrane. The causes are various in number, but when no special cause can be ascertained we call it idiopathic.

In these idiopathic cases, after all ordinary methods have been employed, such as tonics, vaccines, local applications, douching, change of climate, etc., and we have failed to obtain any improvement, what are we to do?

There is nothing so discouraging as to see the same face over and over again, and to hear the same complaints. Some rhinologists divorce themselves from these cases with dignity by referring them to one of their beloved friends or enemies. In desperation I endeavored to reconstruct the picture before me.

The surgeons can perform miracles in plastic beautification of the face, but the internal nose is no place to do any plastic work. The next best thing to do is to enlarge that which already exists.

A turbinectomy in a normal nose produces atrophic conditions, hence I began to enlarge the inferior turbinate. This I did in the following manner.

The nose is anesthetized in the usual way. The mucous membrane with its submucosa of the inferior turbinate is incised from the posterior tip to the anterior tip down to the bone. The membrane is now stripped downward and allowed to drop to the floor of the nose. The turbinate is then fractured toward the septum, by passing any flat long instrument, such as the ordinary blunt septal elevator, along the external surface of the bone.

The nasal cavity is then packed with strips of plain gauze saturated in albolene oil, being careful to pack both on the external and internal surface of the turbinate, as packing the nasal cavity internal to this bone would only push back the fractured fragments into place. The nose is then treated as after any surgical procedure.

In about seven weeks we have an entirely different looking turbinate. The triangular raw surface produced by the operation fills in with granulation tissue and the mucous membrane grows over this area. The growth of the membrane is aided by the hyperemia produced in the upper and lower segments of the turbinate by the incision.

This surgical technique is followed in the other nostril in about two or three weeks according to the convenience of the patient.

No astringents should be employed in the dressings. Silver nitrate in 5 per cent solution can be used for exuberant granulations.

This method may be employed in idiopathic atrophic rhinitis, or as a reconstructive method after destruction has already resulted from infection of the sinuses, especially the ethmoidal.

This operation is not a panacea for all atrophic cases and should not be resorted to until all evident causes for the atrophic condition have been removed.

I have followed this method in quite a few cases during the last two years with favorable results.

165 HANCOCK STREET.

Complete Pseudohermaphroditus Masculinus.—Moller relates that when a 49 year old single woman died of pneumonia and was autopsied the condition of the external genitals was as follows: cryptorchism and scrotal hypospadias with female type of hair on the mons, and markedly feminine configuration. Internal examination revealed uterus, vagina, and tubes, testicles and rudimentary epididymis and well developed ejaculatory ducts. A rudimentary prostate could be made out, but ovaries were absent. As for other evidences there was a beard, male breast and male voice. Pelvis and larynx were of male type. There were no changes in the adrenals.

Military Medicine.

THE EXAMINATION OF AN AVIATOR.

The medical examination of a candidate for the army flying corps is difficult because there is little precedent to go by. The flying man must be possessed of exceptional qualities both of mind and body, but the examiner must know as far as possible what these qualities are. A grave responsibility is placed upon the medical examiner, for if men are passed merely because they show no obvious symptoms of disease he may be guilty of their lives if they come to disaster, or if men are passed who cannot stand the strain he may imperil the fate of the country. As said before, however, very few medical examiners in the United States have had sufficient experience in the characteristics which constitute an efficient aviator, and until such experience has been gained they are perhaps right in erring on the side of severity in their examinations.

Capt. J. C. McWalter, attached to the British Royal Flying Corps, discusses in the *Medical Press* of Sept. 19, 1917, the essential attributes of the flying man. In a general way, he must be able to do well that which no animal has done before. He must be able to sustain, in the space of a few minutes, all the terrible alterations of altitude, temperature, pressure, moisture, and light which are experienced by one who suddenly soars 10,000 or 15,000 feet above the earth's surface. He must during every second of his flight have all his senses taut, and all he has ever learned of flying not merely locked up in his brain, but actually jumping forth at his finger tips. Not only must he be capable of the most intense and acute mental concentration on the problem of the task, but every muscle must be at the summit of responsive activity. Momentary forgetfulness, numbness, confusion, giddiness, lack of perfect coordination—any one of these simply spells death. To the gifts of the flying officer must be added most abundant resourcefulness and initiative if serious disaster is to be averted.

Of course, the man in possession of all these attributes, mainly mental, would make the ideal aviator, but the examiner cannot be expected to gauge all these and the most that can be expected of him is to know the physical disabilities that really disqualify, in other words to be able to distinguish between those that disqualify and those that do not. Also, he should be able to tell by examination and investigation if a candidate possesses the temperament and to some extent the mental attributes which go to make up the efficient flyer. Age is one of the most important points in the selection of a flyer. Youth is essential. "To stand the sudden and terrible strains involved in coming down from an elevation of 15,000 or 18,000 feet requires a beautifully youthful elasticity of nerve and muscle, of ligament, bone, and blood vessel."

According to McWalter, ear, nose, and throat troubles are those which most frequently deter men from qualifying as flyers. Tachycardia is very common after a flight, but not of serious importance. McWalter has found the acceleration of pulse after a short successful journey to be about 25 per cent. It may very quickly become normal again. The question of flying largely resolves itself into one of nerves, and the accurate examiner should be able to ascertain the type of man, or the type of abnormality or disease, which makes such a man so much the victim of his nerves that he may be gripped with fright, that he may not be able to coordinate his faculties to save himself from destruction. Temperament has much to do with this, and training can overcome such feelings in many instances, but McWalter holds that, as above noted, certain physical imperfections of the nose, throat, ears, Eustachian tube, and semicircular canals are most often the prime cause of the air fear that grips the man.

It is obvious that a medical man, in order to examine properly candidates for aviation, should have some practical experience in aviation—at least as a passenger in one or more flights. Undoubtedly, it is the most difficult form of examination which the army or navy surgeon is called upon to make, due, as we have said before, to the fact that one who has not himself experienced the trials of an airman can have but an imperfect idea of the qualities of body and mind which fit a man for this branch of the service.

The Scabies Problem on Active Service.—H. MacCormac and W. D. D. Small state that every man incapacitated from duty—it matters not by what means—is a gain to the enemy. From the point of view of the army, and of military efficiency, those diseases ought to rank highest in importance which cause most "casualties." Judged from this aspect, diseases of the skin occupy one of the premier positions, for under the conditions of trench warfare it is inevitable that they are to be met with in large numbers. The exact extent of the wastage for which they are responsible is known only to the authorities, but it is apparent to all that since many are contagious, successful efforts directed toward prevention and cure will amply repay by a very large gain of fighting men.

Of skin diseases found among soldiers—excluding pediculosis—scabies is by far the commonest. When uncomplicated, its effects incapacitate a man but little; but in consequence of the hard conditions of active service, secondary pyodermic conditions are frequent and severe, and these are a very real cause of prolonged sickness. In contrast to the three or four days required to complete a cure in an uncomplicated case these men have found that when pyodermic complications are established the period is greatly prolonged, the average stay in hospital over a large number of cases being 31.67 days. This figure does not include either treatment given elsewhere or the days spent in journeying to the base.

Scabies, as seen among soldiers, according to MacCormac and Small, differs in type from that usually met with in civil practice, and the difference must be appreciated in order to recognize the "carriers." The eruption is distributed in much the usual fashion, that is, on the wrists, hands, penis, lower abdomen, anterior axillary borders, elbows and buttocks. The characteristic interdigital burrows, however, are rarely seen. They were typically present in only 13 per cent. of their cases. Vesicles are much more common, though in many cases the hands are en-

tirely free from lesions of any sort. A correct diagnosis can only be made after inspection of the whole body. In the majority of cases the penis is involved, and the discovery of papules or crusts on either skin or mucous membrane is almost pathognomonic. This serves in doubtful cases to distinguish scabies from the acute pediculosis so frequently seen, and is, for this reason, an extremely useful diagnostic sign.

Secondary lesions may mask the primary disease. Most common is a variety in impetigo distributed in a characteristic manner on the lower buttocks, elbows and knees. The presence of pustules or crustings on one or all of these regions should at once suggest scabies, and lead to search for the more primary lesions elsewhere. Some degree of adenitis is the rule in all cases of scabies which have developed any form of coccal infection. The glands of the groin are those most frequently involved, and suppuration in this situation forms a not uncommon and troublesome complication. In the upper limb, severe lymphangitis with foci of suppuration seems to constitute the corresponding lesion. These septic foci usually occur in the upper third of the limb and on its inner aspect.

Dermatitis as a complication is most frequently the result of unsuitable, misapplied, or too long-continued treatment. Subjects of the seborrheic diathesis seem particularly liable to this complication.

Scabies must not only be distinguished from the pyodermic conditions, but also from pediculosis, pomphlyx, syphilis, and an unusual papular urticaria. This type of urticaria is not often seen in civil practice, and closely resembles scabies. Small red papules occur over the body generally, but particularly on the abdomen and anterior axillary folds. Wheals, or some degree of dermagraphia, may often be found or induced. Again, the wrists, hands, or penis are not involved, and the disease tends to disappear suddenly, while relapse is common.

With reference to the manner of infection with scabies, the evidence points to blankets as the chief means of disseminating the disease. Prevention, then, should include frequent disinfection of blankets by such a method as the Clayton sulphur vapor apparatus, or some other accepted form of sterilization. A few cases seem to have been contracted from horses. Great stress is laid by French writers upon the venereal origin of scabies, and this possible source should be kept in mind.

Of greatest importance is the early detection of every case of scabies. Each case undetected acts as a "carrier," and is the potential starting point of an epidemic. Frequent and thorough inspection of the individual soldier is the only means whereby early diagnosis can be assured. Infected men should be segregated and treated as speedily as possible, in order to prevent dissemination, and also to shorten the course of the disease, thus conserving man power. Curative measures should include exposure of the parasite and its ova, and their destruction by remedies, short of producing dermatitis. The subsequent disinfection of clothing and bedding must never be omitted.

Sulphur, it is generally acknowledged, is the most efficient remedy for treatment, and certainly, by reason of its curability and cheapness, it is that most suited for the extensive requirements of an army. It requires careful and intelligent application, and care must be taken that the patient receives neither too much nor too little treatment.

After a consideration of different methods of application of sulphur, such as the sulphur vapor method, MacCormac and Small consider that for simplicity and certainty no method is better suited for general use than that of simple inunction with sulphur ointment (B.P.), and admirable results will invariably follow *if the treatment is conscientiously carried out and with due regard to the necessary details*. The method of application is of paramount importance. They outline it as follows:

On first day, patient is given a hot bath and provided with plenty of soft soap and a large, moderately stiff nail brush. (a) Before entering the bath he is lathered all over with the soap, massaging it into the skin, paying particular attention to the special parts affected. This should be continued for at least ten minutes. (b) He then enters the bath, where he should be immersed to the neck. After steeping for fifteen minutes a thorough scrubbing with the nail brush follows. After the bath a final inspection is made, and any unruptured vesicles opened with a surgical needle. The object of this bath is to open up the haunts of the acarus and to expose it to the action of the parasiticide to follow. Shower or steam baths do not do this.

After removal of the soap, and drying, a liberal quantity of sulphur ointment (B.P.) is provided, with which the patient rubs himself vigorously all over, from the neck downward, special attention being paid to the vulnerable areas. When finished, he should be literally soaking in it. The inunction is to be repeated in this manner twice daily for three days, six applications in all. It is obvious that all clothing must be removed for the treatments.

Finally, on the fourth day, and not before, a second bath is given, and all of the patient's clothing and bedding sterilized to prevent reinfection. Everything, such as wrist straps, strings of identity discs, etc., should be included. The majority of cases where the treatment has been thoroughly carried out will be cured after three such days of treatment. Should any doubt exist, 2 per cent. betanaphthol in vaseline may be used daily for four more days. Only under exceptional circumstances should sulphur ointment be applied for more than three days, on account of danger of dermatitis following. At the completion of the treatment a certain amount of itching may be present; this is due to the remedy, and is not indicative of failure of cure; it will pass off, and should be disregarded. Some days will also probably elapse before all of the lesions have disappeared, although the man is no longer infective. A certain degree of pigmentation may persist indefinitely.

MacCormac and Small summarize their results as follows:

(1) Scabies in soldiers differs in type from the ordinary form seen in civil practice, particularly in the frequent absence of burrows or other lesions upon the hands, and in the great liability to pyodermic complications. (2) The primary disease is often masked by complications. In every case of impetigo, boils, dermatitis, or inguinal adenitis,

scabies must be carefully excluded before the diagnosis is considered complete. (3) Cases of scabies complicated by any of the above necessitate about ten times as long a period in hospital as simple cases; therefore, early diagnosis and treatment, before secondary diseases have become established, are of the greatest importance. (4) Regular medical inspection is essential for the detection of "carriers." Infected men should be segregated and treated at the earliest opportunity; horses may also require inspection. Blankets being the chief source of spread should be sterilized as often as possible. (5) Treatment by means of sulphur vapor is a method harmful often to the patient, and at all times dangerous to the community, in that it manufactures a class of scabies "carrier." In the interests of the army it should be discontinued. (6) The method of treatment most suitable to service conditions on account of efficiency, simplicity, and cheapness, is inunction with sulphur ointment, but this must be carried out in a methodical and thorough manner, and with careful attention to the necessary details. —*British Medical Journal*, Sept. 22, 1917.

The Work of the American Red Cross in France.—The American branch of the Red Cross Society has contributed generously and lavishly to the relief of European sufferers from the war. While immense sums have been given by the American public, the calls upon the Red Cross Society are so vast that further contributions will soon be required. It may be of interest briefly to recapitulate the general policies and the scope of the work on the Western Front.

According to a report to the American people published recently by the Red Cross War Council, the purposes of the general lines of activity in France are as follows: (1) To establish and maintain hospitals for soldiers in the American Army in France. (2) To establish and maintain canteens, rest houses, recreation huts, and other means of supplying American soldiers with such comforts and recreation as the army authorities may approve. (3) To establish and maintain in France canteens, rest houses, and other means of supplying comforts and recreation for the soldiers in the armies of our allies; (4) To distribute hospital equipment and supplies of all kinds to military hospitals for soldiers of the American or allied armies; (5) To engage in certain relief, such as (*a*) the care and education of destitute children; (*b*) the care of mutilated soldiers; (*c*) the care of sick and disabled soldiers; (*d*) relief work in the devastated areas of France and Belgium—furnishing to the inhabitants of these districts agricultural implements, household goods, clothing, and such temporary shelter as will enable them to return to their homes; (e) to providing relief for and guarding against the increase of tuberculosis; (6) to furnish relief for soldiers and civilians held as prisoners by the enemy, and to give assistance to such civilians as are returned to France from time to time from the parts of Belgium and of France held by the enemy. (7) To supply financial assistance to committees, societies or individuals allied with the American Red Cross and carrying on relief work in Europe.

Among the many activities at the Front with which the American Red Cross Society is concerning itself is that of medical research. There are extraordinary and abounding opportunities in France for the prosecution of such work. In the American units some of the ablest physicians and surgeons of the United States are serving and it is obvious that the supply of human material is practically unlimited. Investigations which may result in the discovery of means of treatment and modes of operation which would be of incalculable benefit to the human race are now in progress. However, in order to insure success or at any rate to carry on work under the most favorable conditions, special laboratory equipment and suitable buildings are needed. Facilities of this kind are, at present, greatly lacking nor can adequate assistance be obtained through ordinary government sources without delay, which places this source of supply out of the question. The Red Cross Society can afford the necessary financial aid at once, and by so doing will be helping the cause of humanity and science in the most practical way. In the prevention of tuberculosis in France, a country in which the disease is extremely prevalent, the Red Cross Society is doing its part. The American branch is cooperating with the Rockefeller Foundation in financing a commission for the prevention of tuberculosis, the Rockefeller Foundation paying administrative expenses. A Red Cross Infant Welfare unit has also been established in France. In fact, the Society gives assistance to all efforts tending to ameliorate the condition of soldiers and civilians in France who are suffering from the effects of ruthless warfare, and has immensely added to its reputation gained in previous wars.

Unit of Woman Doctors for France.—The Women's Hospital of New York has organized and completely equipped a unit of ten woman doctors for service in a base hospital in France. The unit had been organized under the direction of Dr. Rosalie Slaughter Morton and Dr. Elizabeth Johnson van Slyke, superintendent. The other members of the unit are: Dr. Dorothy Child and Dr. Florence Child, both Quakers, who were graduated in medicine from Johns Hopkins after attending Bryn Mawr; Dr. Ethel Lyon Hurd of Galveston, Tex.; Dr. Marion L. Stevens, a dentist; Dr. Nevins and Dr. Woodroffe of San Francisco; Dr. Esther Blair; Dr. de Lam Kinney of this city, a dentist; Dr. Esther Parker of Cornell. Miss Martha Townsend, graduate nurse, who has served for more than a year with the Fourth Contingent at Salonica and has the rank of Lieutenant in the Canadian Army, will accompany the unit. The unit will leave for France in the near future.

Medical Students to Have Military Training.—Students of the Medical College of Virginia have decided to organize for medical training. They are to wear uniforms and have a regular army officer to drill them. The second, third and fourth year students of this institution have been furloughed until actually needed.

Drafted Men Rated by Psychological Tests.—An announcement from Washington states that the psychological examination of recruits has a twofold object. Each man will be given a rating which will be used by the officers in command as a guide in selecting men for promotion and for special duties requiring more than the average

intelligence. The medical purpose which is considered the more important one is to find what men are so far below the average intelligence as to demand serious consideration for discharge or for assignment to manual labor under careful supervision. The aims of the examinations are to measure native intelligence and ability, not schooling, to disclose what a man can do with his head and his hands. These psychological examinations are being conducted at camps Devens, Dix, Lee, and Taylor.

Tuberculosis Among Drafted Men.—Dr. Louis I. Dublin, in speaking before the North Atlantic Tuberculosis Conference recently, made the statement that 2 per cent. of the men between the ages of 21 and 30 years called for draft examination have been found to be tuberculous. In the French Army 500,000 cases of active tuberculosis have been found, while the British soldiers have not suffered so greatly. This is attributed to the greater care exercised by the British in excluding cases of incipient tuberculoisis. In discussing this subject there was considerable criticism of the action of our draft boards in accepting men in incipient stages of tuberculosis.

Gift for British Red Cross.—"Our Day" collection in behalf of the British Red Cross is led by a collection of $1,000,000 from the American Red Cross. Of this amount $250,000 is for the relief and comfort of the sick and wounded in the hospitals and casualty clearing stations in the lines of communication where the British forces are fighting, $250,000 is for the maintenance of auxiliary hospitals and convalescent homes in England, and $500,000 is for institutions in Great Britain devoted to restorative work among disabled British soldiers.

Campaign Against Alcohol Among Soldiers and Sailors.—The United Committee on War Temperance Activities in the Army and Navy, which has been organized by eighteen leading national temperance organizations, has undertaken to educate the soldiers and sailors in the American Army and Navy regarding the evils of the drink habit. The work of the committee is to be done through the Knights of Columbus, the Y. M. C. A., and the Army and Navy Chaplains. A Soldiers' and Sailors' Manual is being prepared and also bright, snappy posters and literature. Stereomotorgraphs will be installed in each Y. M. C. A. "hut," and portable outfits will be furnished to smaller camps. The slides are all carefully prepared to drive home some fact regarding the effect of alcohol on the soldier, his army, and his country. Provision has also been made for a number of moving picture films which will be displayed at 500 or more military stations during the period of trainng.

Jesse H. Jones, a business man of Houston, Tex., has been appointed Director General of Military Relief of the American Red Cross to fill the place formerly held by John D. Ryan, whom President Wilson appointed to membership on the War Council. Mr. Jones will give his services to the Red Cross for the period of the war without compensation.

Dr. P. G. Hamlin of Richmond, Va., First Lieutenant, M.R.C., U.S.A., attached to the British forces in France, was wounded on October 5. The published report does not give the nature of the wound.

First Lieutenant A. Graham, an American in the Medical Reserve Corps attached to the British forces, has been severely wounded in the thighs by gunshot.

Cuban Red Cross Plans to Send Unit to France.—The Cuban Red Cross has begun the work of equipping a one hundred bed hospital unit, manned by Cuban physicians and nurses, for active service on the western front in France. A fund of $1,000,000 with which the enterprise is to be financed is being raised by Cuban women. A national Red Cross "tag day" to be observed in all parts of the Republic has been planned.

Astor Home for Convalescent Hospital.—The Army Medical Department has accepted Vincent Astor's offer of his country home, Ferncliffe, at Rhinecliff, to be used as a convalescent hospital for American soldiers wounded in the war. It is reported that several other owners of large estates have made similar offers, one of them being James Speyer, who has offered his country home at Scarsboro.

Infectious Diseases Eliminated from Navy.—Surgeon General Braisted in a recent report made to Secretary Daniels states that typhoid fever and other infectious diseases have practically been eliminated from the navy by modern preventive measures. Despite the enormous increase in the personnel of the navy since the beginning of the war fewer than ten cases of typhoid fever have been reported during this period. Practically the only diseases that give much concern are those of the respiratory type, principally mumps and measles. These are associated with a low mortality rate or none at all.

The Hun Attack on an American Hospital.—Further details of the attack on the American base hospital in France continue to come to light. It seems that Dr. George E. Brewer of New York was buried under debris from a shell, miraculously escaping serious injury. One of his nurses lost both eyes, and another one eye.

A Much Wounded Soldier.—A correspondent of the *Associated Press* reports that the most wounded soldier who has thus far been treated in a London Military Hospital is Lance Corporal A. T. Staines of the Canadian Mounted Rifles, who has been invalided home with 84 wounds, most of them from the explosion of a single rifle grenade.

Fire in Army Hospital.—The explosion of an oil stove started a fire in the receiving building of the base hospital at Camp Devens, Mass. The fire destroyed the one-story wooden building housing the receiving ward and the office of the hospital. The remaining thirteen buildings were unharmed. Two medical officers who were in the building were slightly burned.

The Demand for Artificial Limbs.—A representative of the American Association for Foreign Trade recently arrived in this country for the purpose of getting materials for the manufacture of artificial limbs. He reports that as a result of a conference of the missions of the Allies it has been decided to establish a factory for the manufacture of artificial limbs in Switzerland.

MEDICAL RECORD.

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CONDEMNATION OF BIOPSY.

IN January of this year the Cancer Commission of Harvard University rather unwisely offered to supply the medical profession of Massachusetts the services of its laboratory for the free diagnosis of suspected cancer tissue. This was in accordance with the movement so unaccountably started by the American Society for the Control of Cancer, some members of which have time and again exposed the dangers of such a practice. The society seems to have acted solely on the recommendation of a committee consisting of three distinguished pathologists, without surgical experience, who made a report in favor of this procedure. The suggestion of the committee was most unfortunate, for, as might have been anticipated, it was ignorantly acted upon by a number of bodies composed of laboratory workers, internists, or others, whose very little surgical knowledge proved to be a most dangerous thing. Among these was the New York City Health Commissioner, who issued an invitation to the medical profession to bring to the department laboratory for diagnosis slices of suspicious tumors of the breast and other parts. The suggestion seemed so horrible that the MEDICAL RECORD at once cried out against it and warned its readers of the fearful danger to which they would expose their patients if they acted upon the Health Commissioner's urging, and we returned to the matter again and again at the risk of tiring our readers, for the thought of the certain death to which so many trusting women would be hastened unless the Commissioner withdrew his invitation would not be stilled.

Commissioner Emerson has not yet withdrawn his invitation; indeed, he recently published a report stating that 104 specimens were submitted to the laboratory up to July 1. "The majority of the specimens received," the Commissioner says, "have been tumors taken in part or in toto from various parts of the body and a diagnosis of malignancy has been made in a good number of cases where the diagnosis has been uncertain, prior to microscopic examination." It is heartrending to think of the fate of those victims from whom the tumors, afterward diagnosed as malignant, were taken "in part," for their speedy and painful death is as certain as anything can be in medicine.

Although, therefore, the MEDICAL RECORD has not yet succeeded in persuading the Commissioner to put an end to this destructive work, we are rejoiced to learn that our warning has led to an investigation resulting in a suggested modification of the "Procedure Recommended in the Diagnosis of Early and Suspected Cancer of Different Organs" published by the American Society for the Control of Cancer. Even the original scheme did not justify the New York Health Commissioner in his unqualified recommendation of biopsy, but the modified one absolutely condemns his action. This modification is proposed by Dr. Robert B. Greenough of Boston, who was moved by our protests to send a circular letter, asking for an expression of opinion on the justifiability of biopsy in certain specific cases, to all members of the American Surgical Association, the Clinical Surgical Society, the American Gynecological Association, and the American Association for Cancer Research, and to the directors of the American Society for the Control of Cancer. Replies were received from 134 of those addressed and the proposed modification of the practice is based upon the opinions expressed by an overwhelming majority of the answers. This will be found on page 749 in this issue. Briefly summarized, excision, followed by cauterization, of a portion of a suspected growth of the skin, lip, tongue, palate, tonsil, buccal mucous membrane, breast, rectum, bladder, or cervix uteri is permissible "only when facilities for immediate frozen section diagnosis are available and the operation for cancer if it prove necessary, can be completed under one anesthesia." Obviously frozen section diagnosis is the work of a hospital laboratory only and is not included in Commissioner Emerson's tragical proposition. "When we speak of free diagnosis of suspected cancer tissue," Dr. Greenough says, "we are speaking of the service which may be rendered by one or more central laboratories, involving the removal of tissue, placing it in tissue preservatives, sending it to the laboratory, and waiting for a certain length of time, say seven days, for a positive report. Under these conditions we must make up our minds when and where, if at all, the removal of fragments of tissue suspected to be malignant can be justified and recommended. One of the most widely accepted principles in the surgery of malignant disease is that cutting into cancer tissue leads to a spread of the disease. The proofs of the truth of this assertion are so common in the experience of every practising surgeon that examples are scarcely needed, but I may say that in my own experience not one case of cancer of the breast has been saved in which a primary local operation has been done under the erroneous diagnosis of a benign tumor, even when followed at an interval of seven to ten days by the most complete operation, when the pathological examination of the original tumor disclosed malignancy. With regard to other situations it is probable that the danger is not so great, but it is difficult to draw the line, and

eighteen Fellows of this Association [the American Surgical Association] in their replies stand squarely by the general proposition that exploratory incision into cancer tissue is *never* justified."

Dr. Greenough deserves great credit for this work undertaken at the cost of much time and trouble, and we commend the perusal of his article, published in the *Annals of Surgery* for October, 1917, to the Health Commissioner of this city. If, after reading and digesting it, he still urges indiscriminate biopsy, we can only say that his action can no longer be regarded simply as a deplorable error, but will come dangerously near to something of which the law can take cognizance.

THE TREATMENT OF FUNCTIONAL CONTRACTURE BY FATIGUE.

THREE years of intensive warfare have brought results in the development of military medicine, which, with reference to treatment and cure, have heavily taxed the ingenuity and skill of both the surgeon and medical man. Occupying a position doubly important among these conditions have been the functional war neuroses, because of the complexity in their basis and makeup, as expressed jointly by the subjective and objective symptoms. Their treatment has not only called for a thorough investigation of the physical side of the afflicted individual, but, what is even more important, the objective symptoms have called forth the employment of every possible curative measure for even temporary relief. It is acknowledged that one of the greatest and most striking difficulties encountered among the objective symptoms is that of muscular contracture. Every orthopedic surgeon who has had experience in the war can tell of the heretofore hopeless outlook which was all he had to offer to the victim of a muscular contracture due to functional neurosis.

Now, according to an article published in *The Lancet* for September 15, this outlook has improved. E. F. Reeve offers a method of treatment, which he has originated and developed, and from which he has obtained remarkable curative results. This method has been worked out on the theory that the conditions of functional neurosis are dependent, not so much upon the absence of a normal function as upon its exceedingly disordered activity. The principle of the treatment consists entirely in producing a condition of fatigue in the muscles responsible for the contracture. This is obtained by continuous passive movements in a direction opposed to the normal action of the contracted muscles. It can be understood that in many cases force must be exerted in the early stages of the treatment in order to overcome the offered resistance; but this gradually lessens, until, according to Reeve, a limp, toneless, and tired condition of the muscle or muscles is produced and they can no longer cause the deformity for which they were once responsible. Evidently by the time the muscles have regained their tonicity a normal balance of strength is established in all the surrounding muscles. The psychical side of the patient is called into play by the enlistment of his cooperation and assistance as well as that of other patients in the hospital, once similarly afflicted, but cured. This is effected by quietly and carefully explaining to the patient both the nature of a spasm and the reason for tiring out the contracted muscles.

Several cases, illustrative of the method, all of which had previously undergone other forms of treatment, are presented by Reeve. One of the most interesting is that of a man aged 29, who was wounded by a rifle bullet on June 24, 1915. The bullet entered through the intraspinous fossa of the right scapula and passed out through the pectoralis major just internal to the head of the humerus. The patient stated that he had been operated upon two months later in an attempt to join the nerves, and the wound became septic, necessitating a further operation. From August 15, 1915, the arm was flexed to the side and every attempt to move it evoked strong muscular spasm. The elbow was extended. For a long time the fingers were tightly flexed and the wrist extended, but this condition cleared up in March, 1917, only to recur the following May. In June of the same year, free movement was obtained by electrical massage, but the spasm returned within half an hour after treatment. The patient came under the care of Dr. Reeve on June 12, 1917. The arm was tightly held to the side. It could be forcibly abducted, but sprang back on being released. There was, however, free movement of the wrist and fingers. Treatment was begun three days after admission. At first the elbow was forcibly flexed and this operation was repeated for some hours until at last all trace of spasm had disappeared. The following day the arm, which was still freely movable at the elbow, was forcibly abducted and this movement was repeated again and again until, after some four or five hours, the limb could be held voluntarily away from the body. This forcible abduction of the limb from the body was repeated day after day, till at the end of the week, the patient was able to lift his hand to the back of his head, all trace of spasm having disappeared.

The several advantages of this mode of treatment are summed up by Reeve as follows: (1) No apparatus of any kind is required and no specialized knowledge on the part of the physician is necessary. (2) It is accessible to all, since the personal influence of the physician does not operate to the same extent as in treatment by purely suggestive methods. That such personal influence must come into play to some degree cannot be denied, for although the patient's cure is brought about in the first instance by a purely physical means, psychical factors must operate once fatigue has worn off. It is probable, however, that the all-important factor which conduces to the permanency of the cure is the actual demonstration to the patient that the contracture no longer exists, it having been dispersed by a

method which he has no difficulty in understanding. (3) It is applicable to cases which have been treated previously without success by other methods, and its success is not prejudiced by these previous failures. It therefore appears to be preferable to suggestive measures. (4) The process by which the contracture is actually eliminated is a physiological one and is not subject to interference from psychical factors—*e.g.* the degree of the patient's faith that he will be cured. (5) Any fear of a relapse is distinctly reduced by the patient's knowledge both of the mechanism by which the disability was produced and of that by which he was cured. (6) Such a method does not undermine the patient's self-respect in the slightest degree; in fact, in most cases it may increase it by deepening his self-knowledge and convincing him that his disability is a natural phenomenon and not something occult. The shortness of time required, as compared to other modes of treatment for this condition, offers a decided advantage in time of war.

ETIOLOGICAL FACTORS OF ACNE VULGARIS.

ACNE VULGARIS is one of the most frequent of the skin affections, perhaps the most common of all. Its etiology, however, is by no means clear; that is to say, that dermatologists have not made any particularly close investigations into the subject. One reason for this lack of attention is that the affection is not dangerous. But while it causes no physical suffering, and never endangers life, it occasions a great deal of physical discomfort and mental distress, so much so in some instances that it renders existence a burden. In the *American Journal of the Medical Sciences* for October, 1917, Dr. Albert Strickler relates his views as to the etiology of acne vulgaris gained from his own clinical experiences and those of others.

He first points out that in a study of its etiology one is impressed with the importance of gastrointestinal symptoms. Lloyd W. Ketron and John H. King have, within the past year, studied by means of the fluoroscope, by test meals, and by analyses of gastric contents, the condition of the digestive tract of those suffering from acne vulgaris. Thirty persons formed the material of this investigation, and it was shown that out of this number 93 per cent. exhibited some gastric abnormality while 70 per cent. manifested intestinal abnormality. The most common gastric findings were hyperacidity 48.1 per cent., retention 36.6 per cent., atony 33.3 per cent., and ptosis 40 per cent. The most common intestinal findings were cecal stasis 46.6 per cent., ptosis of the colon 36.6 per cent., and right lower quadrant adhesions 23.3 per cent. The gastrointestinal conditions were present in a marked degree in 60 per cent. of the cases studied, and in a minor degree in the remaining 33 per cent. These authors conclude that the well established clinical observation as to the association of abnormalities of the gastrointestinal tract with acne vulgaris has, in many cases, a well founded pathological basis.

Strickler has made investigations by himself and in conjunction with John A. Kolmer and Jay F. Schamberg with regard to the etiology of acne vulgaris and with respect to the relation between gastrointestinal conditions and the affection. His conclusions and those of his fellow workers are as follows: (1) Acne is due, in the vast majority of instances, to the acne bacillus. (2) This organism is probably normally present on the skin of individuals not subject to acne, but in those individuals who develop the disease the acne bacillus is activated by other factors. (3) These activating factors are in a certain percentage of cases either the colon bacillus or its toxins, or both, as shown by the complement fixation test, and in a lesser degree the staphylococcus of both bacteria acting in conjunction. (4) The rôle of the colon organism in acne is further substantiated by the indol experiments, which seem to indicate some variation in the behavior of the colon acne organism from that of the normal controls. These indol experiments are, of course, only suggestive. (5) It must be recognized that there are cases of acne due either to internal administration of certain remedies or to certain local applications. (6) An increase in the size of the thyroid gland was noticed in a certain percentage of acne patients. The exact significance of this fact cannot be definitely stated, though it should be remembered that some writers are of the belief that an increase in the size of this gland is an indication of intestinal toxemia. (7) It is the belief of the authors that the use of cosmetics plays a rôle in the increase of this affection. (8) From their studies they do not see any relation between food anaphylaxis and acne vulgaris. (9) Among other factors puberty plays an important predisposing rôle. (10) Furthermore seborrhea, anemia, derangement of the stomach, nervousness, and pelvic disease are of more or less etiological importance but never play the rôle of an exciting factor.

SEASON AS A FACTOR IN THE SPREAD OF POLIOMYELITIS.

THE season, or rather its attendant atmospheric conditions, in itself is not a cause of poliomyelitis, but the state of the weather may be concerned indirectly in the dissemination of this dangerous disease. It is a somewhat curious fact that while the consensus of authoritative opinion with regard to the spread of poliomyelitis is that it is by means of nose and throat secretions from individual to individual, climatic conditions are opposed to the theory. Diseases which are spread in this manner occur for the most part in cold weather. Poliomyelitis, however, has always exhibited a marked preference for warm weather, and as Professor Winslow has pointed out, this fact taken by itself would seem to show that either an insect or some intestinal factor plays a prominent part in the etiology of the disease. The epidemic of 1916 was

a conspicuous instance of the influence of season in the spread of the malady, as with the onset of cool weather its prevalence abated and in a short time it disappeared. In order to ascertain how far the principle of summer prevalence of poliomyelitis has held, T. G. Hall, writing in the *American Journal of Public Health* for October, 1917, has set down the results of his studies of the records of 52 epidemics which have been reported during the past seventy-five years in different parts of the world. He has shown by means of charts that, as a rule, the outbreaks have begun in the warmer months. The peak has usually occurred in August or September, with practically all the cases between the first of June and the last of November. Moreover, epidemics have occurred more frequently by far during dry seasons. Hull has demonstrated that 76 per cent. of the epidemics began in months when there was a deficiency of rainfall and the dry weather persisted throughout. Twenty-four per cent. of the epidemics began in months in which there was an excess of rainfall, but in no instance did the wet weather continue through the entire period of the epidemic. Again, the relation between the number of cases and the amount of dry weather is quite pronounced. Thus it appears to be decidedly more than a coincidence that poliomyelitis and dry weather go together, and this fact also lends weight to Winslow's suggestion that insects are largely concerned in the spread of poliomyelitis.

News of the Week.

New Hospital for Brooklyn.—The cornerstone of the new hospital in Auburn Place, Brooklyn, which is to replace the Cumberland Street Hospital, was laid recently by Mayor Mitchel and Controller Prendergast. The building will be thoroughly modern in construction and equipment and will cost about $800,000.

Christmas Red Cross Seals.—The National Association for the Study and Prevention of Tuberculosis announces that the Christmas seals will soon appear and that it hopes to sell $3,000,000 worth this year. Since these seals were first sold in 1908 the association has gained $5,000,000 from this source.

Anthrax at Bellevue Hospital.—A death from anthrax occurred recently in Bellevue Hospital. It is reported that of six cases of this malady cared for at Bellevue Hospital five have died and one has recovered.

Army Medical Supply Depot Looted.—During the week of October 15, five men were arrested on the charge of having stolen drugs and other medical supplies from the Army Medical Supply Depot in Greenwich Street. The thefts alleged to have been revealed during this week amount to over $7,000. The accused men were held in $7,500 bail.

New York Hospitals in Urgent Need.—The United Hospital Fund of New York, formerly the Hospital Saturday and Sunday Association, reports that as a result of the conditions created by the war 46 hospitals show a total deficit of $1,000,000. Estimates compiled by the Fund show that in 1917 the expenses of these 46 hospitals will be at least 10 per cent. greater than in 1916. Hospital expenses, it is stated, have increased more than 25 per cent. since the beginning of the war. In 1916 the expenses of these 46 hospitals were $6,862,359 and their total income only $6,371,832, leaving a deficit of nearly $500,000. For the year just ended there was a further deficit of $700,000, which will bring the deficit of the current fiscal year to more than $1,000,000. The New York Hospital reported a deficit of $96,812 for the year ending September 30; the German Hospital, $52,724; the Volunteer, $40,377; the Polyclinic, $21,430; Lying-in, $19,416. Full returns of the deficits have not been received from several of the large hospitals, but are said to exceed any in their history.

The Hebrew Orphan Asylum reports that during the past year 1,248 children have been cared for in the institution and 225 boarded out at a total cost of $400,000. The report states that the boarding out department has been especially successful.

Ambulance Wrecked in Accident.—An ambulance of the Norwegian Hospital, Brooklyn, was wrecked as a result of a collision with a trolley car at Forty-sixth Street and Fifth Avenue, Brooklyn, on October 14. The ambulance surgeon, Dr. John M. Tamraz, and the driver sustained lacerations and minor injuries.

Industrial Commission to Adjust Medical Claims.—A recent decision of Justice Benedict in the Appellate Division of the Supreme Court had led the Industrial Commission to adopt a new procedure on claims for medical compensation to injured employees. Heretofore the commission has been limited to determining the reasonableness of a doctor's bill, and if the bill were not paid a suit had to be brought to recover the amount. Justice Benedict's decision is held to establish in effect that no action can be maintained in the courts for medical services, but that the matter must be determined by the commission. Hereafter all the claims for medical services to an employee under the Workmen's Compensation law must be made direct to the commission which will pass upon the claims, make awards covering medical services in amounts that may be deemed reasonable, and issue an order directing payment which, if not obeyed, may be filed in the County Clerk's office and become a judgment of the Supreme Court. The award will be made against the employer or insurance carrier only when the employee has requested the employer to furnish medical services or has accepted the physician offered by the employer. If he provides his own medical attention he will be obliged to bear the expense and the doctor may have a lien on the compensation to be paid.

The Doctor's Part in Food Conservation.—Charles O'Brien, author of "Food Preparedness of the United States," suggests that the physicians of this country can aid Herbert Hoover in his task by rationing the nation in much the same manner as though the entire population were under medical treatment. He says that the doctors are about the only persons the American people will listen to when it comes to matters of diet. The doctor knows the heavy penalty of over-feeding and its train of ills. He is therefore in a unique

position to be a leader in food conservation. If individually and as a whole through their medical associations, the physicians would realize their opportunity and take every possible occasion to advise their patients to reduce their food intake, the saving in the aggregate would be tremendous. The writer quotes Dr. M. Hindhede of Copenhagen as saying that the death rate among German men before the war was 18.2 a thousand per annum, and that this was attributable to the fact that in the preceding fifty years the German had become the world's champion meat eater. Dr. Hindhede believes that a lower percentage of protein and fewer calories than prescribed by the old standards are sufficient. As further evidence in support of his position he states that the death rate of Berlin had fallen to 12 per thousand last fall, that London under the mere restriction of high prices has achieved a like result, and that in Belgium under the efficient management of the Relief Commission the astonishingly low death rate of 8 per thousand was attained.

Harvey Society Lectures.—The first of the series of Harvey Society lectures for 1917-18 will be given at the New York Academy of Medicine on Saturday evening, October 27, 1917, at 8.30 P.M., by Prof. W. T. Porter of Harvard. Subject, "Shock; Observations at the Front."

Dr. Bulkley's Lectures on Diseases of the Skin.—The Governors of the New York Skin and Cancer Hospital announce that Dr. L. Duncan Bulkley, assisted by the attending staff, will give the nineteenth series of clinical lectures on "Diseases of the Skin" in the out-patient hall of the hospital on Wednesday afternoons, beginning November 7, 1917, at 4.15 o'clock. The lectures will be free to the medical profession, on the presentation of their professional cards.

Census Weekly Health Index.—As a health index the Bureau of the Census will publish each week mortality reports from the largest cities in the United States. There will be given for each city the total number of deaths reported, the death rate, the number of deaths under 1 year of age, and the proportion of infant deaths to total deaths. Where the data are obtainable for the previous five years, averages for the corresponding weeks will be given for each city.

Dr. George H. Kirby has been appointed director of the Psychiatric Institute on Ward's Island, New York City, by the State Hospital Commission. He has also been appointed Professor of Psychiatry at the Cornell University Medical College, to succeed Dr. August Hoch, who has resigned and will remove to California.

The State Medical Society of Wisconsin at its annual meeting, held in Milwaukee, on Oct. 4 and 5, elected the following officers: *President*, Dr. George Windesheim of Kenosha; *First Vice-President*, Dr. Oscar Lotz of Milwaukee; *Second Vice-President*, Dr. T. W. Nuzum of Janesville; *Third Vice-President*, Dr. Carl Dodge of Marshfield; *Secretary*, Dr. Rock Sleyster of Waupun; *Treasurer*, Dr. S. S. Hall of Ripon. *Delegate to the American Medical Association*, Dr. C. H. Lemon of Milwaukee; *Alternate*, Dr. Wilson Cunningham of Platteville.

The West Virginia State Medical Association at its fiftieth annual meeting in Fairmont, on Oct. 5, elected the following officers: *President*, Dr. H. R. Holrooyd of Athens; *First Vice-President*, Dr. Charles O'Grady of Charleston; *Second Vice-President*, Dr. W. J. Judy of Belleville; *Third Vice-President*, Dr. D. W. Waddell of Fairmont; *Secretary*, Dr. Howard J. Anderson of Marytown; *Treasurer*, Dr. H. C. Nicholson of Charleston. *Delegate to the American Medical Association*, Dr. F. LeMoyne Hupp of Wheeling. *Editor of the Journal*, Dr. J. R. Bloss of Huntington.

Obituary Notes.—Dr. ROBERT WATTS, who had been in active practice in New York City until within a year, died, on Oct. 15, at the age of 80 years. He was a graduate of the College of Physicians and Surgeons, New York, in 1861, Surgeon of the One-hundred and Thirty-third New York Regiment during the Civil War, consulting gynecologist to Roosevelt Hospital, and consulting physician to the City and St. Mary's Children's Hospitals.

Dr. E. M. STEWART, a graduate of the University of Louisville, Kentucky, died at the home of his parents in St. Joseph, Mo., at the age of 33 years. He was at one time assistant surgeon in the United States Public Health Service and later had charge of the Atchison, Topeka and Santa Fe Hospital at La Junta, Col.

Dr. JAMES A. B. SIKES, a graduate of the Atlanta Medical College, in 1876, died at his home in Bainbridge, Ga., September 30, aged 65 years.

Dr. HENRY JULIUS COHEN, a graduate of Cornell Medical College, in 1909, died in the Methodist Hospital, Brooklyn, N. Y., after an operation for appendicitis, on Oct. 18, aged 29 years.

Dr. MAY DARRACH, formerly of New York City, died of pneumonia at Atlantic City, on Oct. 18. She was a graduate of the Women's Medical College of the New York Infirmary for Women and Children, in 1904, and founder of the Darrach Home for Crippled Children in New York City and a home for crippled children in Newark, N. Y.

Dr. HARRIET SCUDDER MASON, a graduate of the Eclectic Medical College, New York, and formerly house physician of the Little Mothers' Aid Association, Manhattan, died at her home near Rochester, N. Y., recently.

Dr. EMMETT BURR DALEY, for many years a practicing physician of Bennington, Vt., died in the Samaritan Hospital at Troy, N. Y., on Oct. 10, aged 62 years. He was a graduate of New York University Medical School in 1879.

Dr. THOMAS R. RUSSELL, probably the oldest practising physician in the State of Wisconsin, died suddenly at his home in Oshkosh, on Oct. 5, at the age of 90 years. He was a graduate of the Vermont Medical College, in 1852, and Surgeon of the First Wisconsin Cavalry during the Civil War.

Dr. LEANDER J. CROOKER of Augusta, Me., a graduate of Dartmouth Medical College in 1869, died of cancer of the stomach on Oct. 9, aged 69 years.

Dr. WILLIAM MOORE WRIGHT, a graduate of the Washington University Medical Department, St. Louis, in 1869, died at his home in Huntingdon, Tenn., on Oct. 7, aged 79 years. He was a surgeon in the Confederate Army during the Civil War and later superintendent of prisons for Tennessee, a trustee of the Tennessee Hospital for the Insane, near Nashville, and a trustee of the West Tennessee Hospital for the Insane.

Correspondence.

A WORD ABOUT OSTEOPATHY AS I HAVE OBSERVED IT.

To the Editor of The Medical Record:

Sir:—During the past summer I have had occasion to see in consultation several patients to whom I advised a trial of osteopathy, after diagnosis and treatment from not a few of our best medical men had been tried and proved unsuccessful. My strong impression, upon thoughtful consideration of what I have seen and read, is that in connection with our different hospitals it is desirable that osteopathy should be recognized as a valuable adjunct in some cases to our other means of treatment, medical or surgical. In this special form of treatment, as in all others, the physician of all-around knowledge should be the final counselor and adviser. He it is who by his wisdom and wide experience should control, and not the enthusiast of too exclusive theories or practice. So it is, or should be, in regard to every one-sided view in medicine or surgery. Already I have known many theories and practices come and go, and where there was almost absolute faith a great scepticism, equally wrong and foolish, sprang up, and, alas, remained during several years, or until a sane and level-headed appreciation of facts served to counteract former errors.

No doubt osteopathy, properly practised and controlled, is able to help in many instances a suffering or disabled body. Of course, it should be understood that equally with every system of special practice in medicine or surgery it should not be indorsed unless the practitioner has shown by previous education and training that he has a right to advise or treat men or women whose bodies, or even minds, require helpful doing.

The great drawback to osteopathy is the fact that its practitioners, followers, or promoters, have been, and are, far too narrow and exclusive in their pet theories and practice. Drugs, properly used, are unquestionably valuable, as proved by the recorded facts of many decades. Diseases do not originate in the vertebral column, nor can they be cured solely by osteopathic treatment. This is true also when the trouble in the vertebral column is a consequence of some previous disease or toxin. Much besides is required, and other means are often essential to a cure, when used with knowledge and good judgment.

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New York.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

VARIOUS TYPES OF MENINGOCOCCUS—MEANS OF THEIR DIFFERENTIATION—THE BEST POLYVALENT SERUM—PSEUDOMENINGOCOCCI.

London, September 25, 1917.

It seems now to be generally admitted that the meningococcus discovered in 1897 by Weichselbaum is the infective agent in cerebrospinal fever. Various types of this microbe have been found and described in epidemics of this disease. Different strains of the organism recognized and differentiated by their reactions, some of them so different as to deserve the name of "subspecies." From a clinical point of view the matter is important, as the most promising line of treatment in cerebrospinal fever lies in the administration of the specific antiserum. But to secure that we are using the true specific organism is not always an easy matter—a fact evinced by the too frequent failure of our treatment. The reason of this is doubtless that we have often used samples of serum obtained from different strains of meningococcus—not from the exact type present in the patients under treatment. There have doubtless been many cases in which the serum employed has not been at all specific for the special infection against which it has been employed and consequently it has failed. Practical means for differentiating the types of meningococci have long been sought without success; but Lieutenant-Colonel Gordon has advanced the question, by defining as meningococcus any gram-negative diplococcus that causes primary meningitis, and from that point proceeding to investigate the relations between them by agglutination, using as material organisms isolated from the cerebrospinal fluid of cases of the disease. At first he worked with 3 such organisms and with 14 meningococcus-like organisms isolated from the nasopharynx of contacts, or of cases of suspected cerebrospinal fever. In a second paper (in conjunction with Mr. E. G. Murray) he dealt with 32 more examples of the meningococcus and 9 more Gram-negative cocci indistinguishable from it by cultural and fermentative tests, isolated from the nasopharynx of contacts, or of cases of suspected cerebrospinal fever. A third paper, written by Capt. W. J. Tulloch, summarizes the whole matter and is based on the examination of 107 strains of the meningococcus. By exhaustive tests of their agglutinating powers it has been found possible to refer all, except 6, of these separate strains to 4 main types. The serums he used were obtained by inoculation of rabbits, with the specific strains of meningococci isolated from spinal fluids. A standardized technique was employed and is described in detail.

The bearing of the discrimination is that if we have an epidemic of the disease produced by a group of organisms, each member of the group should have its specific antiserum; alternatively a polyvalent antiserum should be prepared for the broadest treatment of the epidemic.

Captain Tulloch suggests that polyvalent antimeningococcal serums should be richest in the antibodies produced by 2 types of cocci—those occurring most frequently. The ideal method of treating any case would be to give at first the polyvalent serum when lumbar puncture is performed, for diagnosis and as soon as the type of the infecting organism has been settled in the laboratory to continue the treatment by injecting the appropriate specific antiserum. This classification should enable as to draw a clear distinction between true meningococci and some organisms resembling them which are often met with in the nasopharynx, but are not pathogenic. From 6 to 7 per cent of carriers of meningococci were found in a total of over 10,600 contact cases examined in 1915—some observers finding as many as 20 per cent. Captain Tulloch shows as many as 50 per cent. of these carriers may be harboring only the pseudo-meningococcus and

so requiring neither treatment nor isolation. The treatment of cerebrospinal fever may be greatly improved by the discovery of truly specific antiserums and the best treatment now available seems to be the repeated hypodermic or intravenous or intrathecal injection of antimeningococcal serum in considerable doses. Lumbar puncture should be employed at the same time.

LETTER FROM CANADA.

CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS—CANADIAN PUBLIC HEALTH ASSOCIATION—THE VENEREAL DISEASE PROBLEM—NATIONAL HEALTH INSURANCE—IMMIGRATION PROBLEMS—ANNUAL CONFERENCE OF CHARITIES AND CORRECTION.

TORONTO, Oct. 18, 1917.

THE seventeenth annual convention of the Canadian Association for the Prevention of Tuberculosis took place at Ottawa on Wednesday, Sept. 26, 1917, following a two days' meeting of the Canadian Conference of Charities and Correction. The president, the Hon. J. W. Daniel, M.D., of St. John, New Brunswick, was in the chair.

An interesting report of the year's work was submitted by Dr. George D. Porter, the secretary of the Association, who showed how the war had deepened the general interest in tuberculosis. The situation in France today, where it is estimated that no less than 150,000 soldiers have been invalided by tuberculosis, has demonstrated to the world in general the great importance of preventive measures against this disease. Before the war, with the exception of a few private sanatoria, no steps had been taken in France to prevent the spread of tuberculosis or to make the people realize the danger of infection. In Britain, where preventive measures were already in force, the number of tuberculous soldiers was not so great, although even there by the end of the second year of war 2,770 suffering from this affection had been discharged from the army. In Berlin, it was reported, the death rate from tuberculosis had increased 56 per cent. over that of last year. In Italy preventive measures were being taken by the government, and in Switzerland a sanatorium with accommodation for 2,000 patients was to be established by the International Association. In Canada there were 1,194 tuberculous soldiers under treatment at an average cost of about $1,300 a year for each patient, and of these about 35 per cent. had not been overseas. There were also hundreds of Canadian soldiers who were being treated for the disease in England. The Association had been greatly assisted in its educational campaign by a government allowance which covered the cost of all literature distributed and by franking privileges which had been granted. In addition to pamphlets, reprints of articles on various phases of tuberculosis, copies of the reports of the Association, both in French and English, etc., poster exhibits had been prepared for use in schools, colleges and dispensaries. Since the war began the sanatorium accommodation in Canada, which in 1914 was about 2,000 beds, had been much increased, and the sanatoria already in existence had been enlarged under the direction of the Military Hospitals Commission. Up to the present the anti-tuberculosis movement in Canada had been entirely voluntary, but it was to be hoped that the Government, which had assumed responsibility for the tuberculous soldier, would also recognize its responsibility to the civilian patient and that out of war emergency measures permanent institutions would result. The report concluded with an acknowledgement of the assistance given to the Association by the Imperial Order of Daughters of the Empire and the Victorian Order of Nurses.

The reading of this report was followed by a number of papers on various aspects of the tuberculosis question, among which particular mention might be made of that by Dr. D. A. Stewart of the Ninette Sanatorium at Winnipeg. Under the title "Tuberculosis and Maternity," Dr. Stewart showed how breakdown and loss of resistance prepared a fertile field for disease. In the trenches the men who had become weakened by exposure and privation were the ones to succumb to tuberculosis, just as in civilian life the causes of breakdown were the causes of tuberculosis. Childbirth, when it entailed expenditure beyond the income of the parents, was health bankruptcy. In Canada each year no less than 2,400 tuberculous mothers gave birth to children, and in the province of Ontario 700 of the 63,000 children born in a year were the offspring of mothers suffering from tuberculosis. In the discussion which followed this paper Dr. Adam Wright of Toronto said that no woman suffering from this disease had the right to marry.

The afternoon session was of particular interest in that the papers dealt with the military aspect of tuberculosis. Capt. J. H. Elliott, C.A.M.C., of Toronto, spoke of the prevalence of the disease among members of the Canadian forces (about 3,000 cases have already been reported in England and Canada), and Dr. W. B. Kendall of Gravenhurst, Ontario, reported on the results of treatment. The subject of vocational training was taken up by Capt. R. Roddick Byers, C.A.M.C., of Ste. Agathe, Quebec, and Lieut.-Col. Thompson, M.P., medical superintendent of the Commission, gave an interesting account of what the Military Hospitals Commission is doing for the tuberculous soldier.

The presidential address was delivered at the evening session by the Hon. J. W. Daniel, M.D., of St. John, New Brunswick, who in speaking of the work accomplished by the association, reminded his hearers that in the province of Ontario the death rate from tuberculosis had been reduced from 149 to 91 per 100,000. The public address was given by Dr. W. A. Evans of Chicago, the president of the American Public Health Association, who, in simple and direct language, suggested ways and means of preventing the onset and spread of the disease.

Resolutions were passed in favor of the establishment of tuberculosis clinics, the extension of the antituberculosis movement toward the training and for the protection of the youth of the country, the examination of recruits by chest specialists, and the pasteurization of all milk and cream used in the manufacture of butter and cheese. The establishment of a Federal Bureau of Public Health was urged upon the Government.

Dr. J. A. Machado, of Ottawa, was elected to the presidential chair for the year 1917-18.

The sixth annual congress of the Canadian Public Health Association was held at Ottawa on September 27 and 28, under the presidency of Dr. J. D. Pagé, Chief Immigation Officer, Quebec. Among the subjects that came up for discussion in the course of an excellent program were two that are of particular importance at this time—the problem of venereal disease and National Health Insurance. Referring to the alarming prevalence of venereal disease throughout the country, Captain Gordon Bates, C.A.M.C., of Toronto, said that the true facts should be laid frankly before the public and a law passed similar to the Western Australian Act. Periodical inspection and quarantine had been adopted in the army and it was time that more efficient measures were enforced among the civilian population. Major Lauterman, C.A.M.C., of Montreal, emphasized the importance of educating the public to a realization of such disease as "the greatest menace of the civilized world." (A campaign against venereal disease has been inaugurated in Toronto and a few days ago two deputations waited upon the government with the request that such disease be classed as contagious and be made subject to the regulations governing diseases of that nature.)

The symposium on health insurance was of unusual interest, since it really constituted the beginning of an educational campaign in Canada, and moreover was the first lengthy discussion of the subject at a medical meeting in that country. Dr. Hastings, of Toronto, expressed himself in favor of an Insurance Act on the lines of the one introduced in England by the present premier and now working so successfully. It had been estimated, he said, that the average loss of time to the working man through sickness was nine days a year, which meant in Canada an annual economic loss of over $64,800,000. It was impossible for the large proportion of unskilled workers to obtain proper medical attention under existing conditions. Under an efficient health insurance system an employee disabled by accident or sickness would receive $7 a week for a period not exceeding twenty-six weeks in one year, adequate medical and surgical attention, proper medical attention of wife during confinement, and a death benefit of $100. Such a system pointed the way to a new democracy ensuring freedom and justice to all classes. It should be noted here that the attention of the profession was directed toward this question by the president of the Canadian Medical Association on the occasion of the annual meeting of that Association in Montreal in June.

In the presidential address Dr. Pagé dwelt at some length upon immigration problems as they concern the Canadian people. He laid emphasis on the fact that methods of inspection of immigrants to Canada were not nearly so effective as those employed in the United States, where responsibility for the class of immigrants is placed with the steamship companies. Dr. Pagé deplored the indifference of the people in respect to public health problems. He thought that, much as it was needed, a department of public health could be established only when public opinion awoke to the true facts of the situation and demanded such a department.

A number of other subjects bearing on different phases of public health work were discussed and, in the laboratory section, a provisional draft of the report of the Committee on Standard Methods of Water Analysis was presented by Mr. Joseph Race of Ottawa. Dr. W. H. Hattie, of Halifax, Nova Scotia, was elected president of the Association for the year 1917-18.

At the Annual Conference of Charities and Correction which took place at Ottawa on September 24 and 25, Dr. Clarence M. Hincks, secretary of the Ontario Association for the Care of the Feebleminded, made a strong plea for the segregation of the mentally deficient. Protest was made by the Mayor of Ottawa against the continuation of the sale of intoxicants at Hull, which, though in the province of Quebec, lies just across the river from Ottawa. It was moved by the Committee on Resolutions that all children born out of wedlock should be given the father's name and should be entitled to inheritances from the parents.

Progress of Medical Science.

Boston Medical and Surgical Journal.

October 11, 1917.

1. Neurological Indications For and Against Operations In Traumatic Injuries Affecting the Central Nervous System. John Jenks Thomas.
2. Indications for Operations on Traumatic Head Cases. Edward H. Nichols.
3. The Temperature as a Valuable Guide to Diagnosis, Prognosis and Surgical Treatment in Craniocerebral Traumatisms. J. W. Courtney.
4. Indications for Laminectomy in Fracture of the Spine, with Cord Symptoms. John B. Hartwell.
5. Fractures of the Base of the Skull at the Massachusetts General Hospital. W. J. Mixter.
6. A Brief Report of Cases of Fracture of the Skull and Spine, from the Fourth Surgical Service, Boston City Hospital. Frederic J. Cotton and William F. Cutting.

2. Indications for Operations on Traumatic Head Cases.—Edward H. Nichols states that the lesions produced by trauma of the head are numerous and include: (1 Edema of the brain due to vasomotor disturbances. (2) Slight laceration of the brain, practically always accompanied by edema. (3) Local extracerebral hemorrhage, either subdural or extradural, generally frontal or temporal, and often slight in amount, also accompanied by edema. (4) Local extracerebral hemorrhage of great amount, subdural or extradural, generally due to rupture of the middle meningeal artery, also most often temporal or parietal, again accompanied by edema, sometimes with, sometimes without fracture of the skull. (5) Diffuse extracerebral hemorrhage, usually at the base of the brain, generally due to rupture of one of the cerebral sinuses, usually associated with fracture of the base of the skull, and frequently accompanied by a resulting pressure upon or division of one or more of the cerebral nerves. (6) Severe intracerebral hemorrhage, due to rupture of cerebral vessels, practically always associated with extensive fracture of the skull. (7) Fractures of the skull which vary from a mere fissure, often detected only by *x*-ray, or by local swelling, or tenderness, to depressed fracture, sometimes only of the outer table, often involving the entire thickness of the skull, not infrequently compounded; and, finally, fractures of the base of the skull. These latter fractures are usually associated with rupture of one of the cerebral sinuses. These latter fractures are usually produced by compression. In these cases various injuries of the cerebral nerves may occur, most often the 6th (abducens) and 7th (facial). A fact to be emphasized is that the fracture usually is of secondary importance; the brain injury is the serious factor. The symptoms are as follows: (1) Edema of the brain, if uncomplicated, produces symptoms best described under the clinical term *concussion*. These symptoms vary from slight mental confusion to temporary, sometimes prolonged, unconsciousness, or symptoms of

cerebral irritation, delirium, and excitability. Such symptoms generally are produced by a blow on the head of moderate severity, a blow, a fall, football collisions, etc. As a result, it is claimed that vasomotor disturbance of the brain vessels is produced, serum escapes from unruptured vessels, and as the result there is an extra amount of fluid in the brain, and since the skull is unyielding, pressure on the brain occurs. The mental symptoms are variable, depending upon the degree of edema. There may be a very temporary mental confusion, the patient may talk rationally on simple subjects, but there nearly always is some difficulty in orienting himself,—he cannot tell where he is, the day of the week or month, etc. There practically always is some loss of memory of preceding events, *e. g.* the patient cannot remember what he had to eat at the preceding meal, or, in severe cases, cannot recall ordinary events that occurred during the twenty-four hours preceding the injury, and often cannot remember events for a shorter time succeeding the injury. A notable fact regarding the loss of memory is that the so-to-speak "lost time" gradually becomes less as the patient recovers, but a *complete* restoration of memory seldom occurs, even in mild cases. The "automatic" memory often is fairly good, even though actual memory is quite gone. Or the edema may produce cerebral irritation, manifested by excitability, or delirium, and the patient in this condition may become violent and assault bystanders, and occasionally such cases are dangerous. If the edema is severe, unconsciousness may result, partial or complete, but these cases always can be roused, at least partially, by supra-orbital pressure. Vomiting is frequent. The pupils are equal and react, often violently, and usually are dilated; the face is pale, the patient restless and irritable. The *temperature is low*, normal or subnormal, and the pulse rapid. The blood pressure is nearly always low. The spinal fluid is clear and contains no blood. The unconsciousness seldom lasts over twenty-four hours, although some confusion may last longer, and in many of these cases neurasthenic symptoms may last for a considerable time and many of these patients cannot study or do work requiring close mental application for many months. Nichols summarizes his treatments as follows: (1) Uncomplicated edema of the brain almost never requires operation. (2) Slight laceration of the brain with persisting edema sometimes requires operation to prevent cerebral degeneration. Subtemporal method is the best operation. (3) Slight extracerebral hemorrhage seldom requires operation; occasionally demands operation to avoid cyst formation; the operation of choice is always skin-bone-flap. (4) Extensive extracerebral hemorrhage, from rupture of the middle meningeal artery, with or without focal symptoms, *always* should be operated on, and always by skin-bone-flap method. (5) Basilar hemorrhage seldom can be cured by operation. When operation is done it should be done on selected cases, for relief of pressure, and usually by skin-bone-flap method. (6) Intracerebral hemorrhage cannot be cured by operation, although pressure may be relieved. (7) Fracture of the skull, by itself, is of little importance except when compounded, in which case it may be followed by meningitis unless it is promptly made aseptic. All depressed fractures involving the entire thickness of the skull should be elevated.

3. **The Temperature As a Valuable Guide to Diagnosis, Prognosis and Surgical Treatment in Craniocerebral Traumatisms.**—J. W. Courtney gives the menace of a skull fracture as twofold: By its site it may invite infection, and by its character it may create serious brain irritation or compression. The error most commonly committed by neurologist and surgeon alike is to allow their attention to become engrossed with phenomena which spring from disturbance in or destruction of functionally well-known areas in cortex or elsewhere, while they overlook the supremely important fact that lesions identical in kind with those responsible for these phenomena may be wrought at the same time by the same force in widely scattered *silent* regions of the encephalon. This is a point upon which neither too great nor too frequent emphasis can be laid. Personal experience leads him to declare dogmatically that, of all the diagnostic and prognostic manifestations of intracranial traumatisms, the temperature throughout stands supreme in the scale of importance. Pulse and respiration are not negligible quantities, but a depression of cardiac force is no more significant here than in other forms of injury or disease. Speaking generally, with regard to the pulse in the injuries in question, it is entirely justifiable to say that a practically normal or a full and relatively slow pulse is encountered as often in recovering cases as in those which turn out badly. As to respiration, it is usually a most unreliable measure of the degree of danger that menaces, except in initial shock or in the closing phase of a fatal case. On the other hand, for precious indications, both of a diagnostic and prognostic order, one may confidently look to the temperature. Let us study first its behavior in intracranial hemorrhage. The immediate effect of this, as of other forms of traumatic intracranial lesions, is to produce shock, with its concomitant subnormal temperature. Unless, however, the bleeding is very extensive and complicated by coexisting alcoholic intoxication, the temperature soon regains the normal and is seldom elevated more than a single degree throughout the entire course of the case, provided no extensive degree of contusion and no degree whatsoever of laceration be present. In uncomplicated contusion the range of the temperature is equally distinctive. In the generality of cases it rises quickly from the subnormal point caused by shock and may go as high as 102. Almost from the beginning its recessions are striking. On the morning of the day following the receipt of the trauma it may drop to 99, or even to normal, only to rise again in the evening to 101 or 101.5. The next morning may find it at 97.5; the evening at 99, or even 100. Throughout the whole duration of the case its behavior is consistent. In favorable cases the evening range gradually narrows to the normal point, the morning recession to a point but slightly subnormal. Toward the end, in unfavorable cases, temperature and pulse rise together and may reach a very high point. In brain laceration the initial fall of temperature from shock is of extremely brief duration. It makes little practical difference whether the tearing of brain tissue occurs in alleged heat-producing centers or elsewhere, or whether this tearing is associated with a considerable hemorrhage. In every case of laceration, regardless of surrounding conditions, the almost immediate trend of the temperature is steadily upward. And in severe cases it may rise to 104 or 105 in a few hours. In general it does not rise so quickly to this height. There may even be, in the course of a few days, recessions, but these are infrequent and insignificant. The fact remains that an early and persistently high temperature after craniocerebral traumatism invariably denotes brain laceration. He states categorically that the occurrence of chills during the course of a case of head injury is decidedly not an indication of pus formation. In arachnitis they are mainly conspicuous by their absence, but in uncomplicated contusions are often present. The development of an arachnitic process is, in general, seldom discernible for several days after the receipt of the trauma. Its onset is marked by a sudden jump in the temperature accompanied by such signs of cortical irritation as delirium, somnolence or great motor restlessness. The initial rise may be as much as 6° in a few hours. This more or less sudden and sharp elevation occurring at the epoch above indicated is, in and of itself, distinctive. Even more so, however, are the curious fluctuations in temperature which succeed it. Not only from day to day, but from hour to hour are these observable; and there may be a difference of 4° in the highest and lowest points noted in the space of twenty-four hours. The average temperature may be as high as 103° plus. In cerebral abscess the behavior of the temperature may be broadly outlined as follows: It is normal during a sinister period of quiescence which follows the antecedent activity of the process, whatever it may be, that prepares the soil for the growth of pyogenic organisms, and *subnormal* after an abscess has attained sufficient proportions to cause local manifestations of its presence. One must not, however, adhere rigidly to this formula in all cases. In certain cases development of an abscess may take place before the signs of an antecedent process have disappeared. In this event the temperature may continue high to the end.

New York Medical Journal.

October 13, 1917.

1. The Psychological and Therapeutic Value of Studying Mental Content During the Following Epileptic Attacks. L. Pierce Clark.
2. Onions in Tuberculosis. William Lintz.
3. Treatment of Chancroid. Frederick W. Robbins and
4. Health Insurance. August Schaehner.
5. War Depletion of the American Medical Profession. A. L. Benedict.
6. Differential Diagnosis in Cases of Suspected Pulmonary Tuberculosis. Arnold Minnig.
7. A Portable Operating Table Attachment. Thomas C. Stellwagon, Jr.
8. A Simple Painless Technique for Salvarsan Intravenous Administration. Charles C. Miller.
9. Circumruption of Prepuce in Lieu of Circumcision. Francis Kean MacMurrough.

1. The Psychological and Therapeutic Value of Studying Mental Content During and Following Epileptic Attacks.—L. Pierce Clark states that from past studies we have learned that a large number of individuals who suffer from essential epilepsy have epileptic reactions which range in severity from passionate episodes to the severest grand mal seizures. These are a result of a certain type of egoistic, sensitive, and poorly adaptive makeup, plus some irritative stress or demand that seems to act as a precipitating cause for the epileptic seizure. While there are many important phases of the physical and mental makeup of the epileptic constitution to be made clear, we should continue to study all the mental factors, both immediate and remote, which appear to initiate attacks in epilepsy. He summarizes the results of his study as follows: It would seem as though in many individuals suffering from essential or idiopathic epilepsy there is a peculiar type of makeup antedating the disorder, and that the frank epileptic attacks are but a more pronounced manifestation of this character makeup. The attacks are often induced by certain and varied types of stress, exogenous as well as endogenous, but the former have not been given the attention their importance demands. The mental content immediately after the convulsive part of the fit, either spontaneous or brought out by questioning, gives data highly important for studying the unconscious strivings as well as the patient's construction of the way by which he thinks he may overcome his malady. It also gives points upon which we may base psychopatherapeutic talks of signal aid in enabling the patient to better cope with his gigantic handicap of maladaptation to the stresses of life. This brief and fragmentary study of the mental content of definite though mild reaction episodes in a few epileptic cases show that the work is enormously complicated, as varying depths of consciousness may be tapped, as it were, even in the one patient and in the one attack. As our psychanalytic knowledge of the dream problem as well as of the mental content of many of the psychoses grows, the field sketched here will be found more necessary for scientific and therapeutic study.

Journal of the American Medical Association.

October 13, 1917.

1. Recent Biochemical Investigations on Blood and Urine: Their Bearing on Clinical and Experimental Medicine. Otto Folin.
2. Decency and Safety as Public Factors. Charles E. North.
3. Treatment of Chancroid. Frederick W. Robbins and Frank P. Seabury.
4. A More Delicate Wassermann Reaction Depending Upon the Use of Increased Quantities of Blood Serum. P. T. Bohan and L. A. Lynch.
5. The Etiology and Development of Nephritis. William Ophuls.
6. Juxta-Articular Bone Lesions of the Hip. Henry Ling Taylor and George Barrie.
7. The Treatment of Scoliosis. Frank E. Peckham.
8. Pain in the Arm: Subdeltoid (Subacromial) Bursitis: A Further Study of Its Clinical Types, Pathology and Treatment. Walter M. Brickner.
9. The Use of Bakers' Yeast in Diseases of the Skin and of the Gastrointestinal Tract. Philip B. Hawk, Frank Crozier Knowles, Martin E. Rehfuss, and James A. Clarke.
10. Specific Serum Therapy of Epidemic Poliomyelitis: A Report on One Hundred and Fifty-nine Cases Treated with Antipoliomyelitic Horse Serum. John W. Nuzum and Ralph G. Willy.

9. The Use of Bakers' Yeast in Diseases of the Skin and of the Gastrointestinal Tract.—Philip B. Hawk, Frank Crozier Knowles, Martin E. Rehfuss, and James A. Clarke in collaboration with four other scientists have worked out the effect of this form of treatment in skin diseases and gastrointestinal conditions and further state that yeast possesses properties of curative types that were appreciated in the olden times. Hippocrates recommended its use in leucorrhea, and the monks used it for the treatment of plague. Not, however, until the middle of the nineteenth century did the medical profession look favorably on its use. About that time it was used successfully in furunculosis, anthrax, and diabetes. Later it was used in diseases of the skin, suppurative processes, respiratory conditions, gastrointestinal troubles, vaginitis, and general infectious diseases. In all of their tests Fleischmann's compressed yeast was used, the fresh yeast being secured from two to three times a week and kept in the refrigerator until used. A study of ninety-one cases was made. Tests were also made on normal persons to learn the action of yeast in the stomach when suspended in water, beef tea or orange juice, with meals or between meals. The comparative effect of living and dead yeast was studied. The yeast was killed by treating it with boiling water for a few minutes. All stomach examinations were made by means of the fractional method. From the tests it was found that yeast may be administered satisfactorily either with meals or on the empty stomach; that killed yeast acts much the same in the stomach as living yeast. If the patient is troubled with gas formation it is preferable to use killed yeast, or to administer living yeast between meals. These tests also demonstrated conclusively that yeast is not readily destroyed in the human stomach, but that on the contrary, especially when taken between meals, a large part of the yeast passes into the intestine in the living condition. Hence, it is possible that in certain disorders, especially those involving constipation, the living yeast has a more pronounced action than dead yeast. The average dosage was one-half to one cake three times a day after meals, or before meals if the condition so indicated. The length of treatment ran from one to three weeks. These investigators draw the following conclusions as the result of their experimental data: (1) Bakers' yeast was found to be a useful remedy in the treatment of furunculosis, acne vulgaris, acne rosacea, constipation and in certain other cutaneous and gastrointestinal conditions. (2) The conditions which respond most favorably to the yeast treatment were (*a*) furunculosis, (*b*) the acnes (vulgaris and rosacea), and (*c*) constipation. Of seventeen cases of furunculosis, all but one of the patients were improved or cured. Of seventeen cases of acne vulgaris all patients were improved or cured. Of eight cases of acne rosacea, all patients were improved or cured. Of ten cases of constipation, nine were improved or cured. In other words, fifty out of fifty-two cases of furunculosis, the acnes, and constipation were improved or cured by yeast treatment. (3) We consider that yeast is fully as successful as any other remedy in furunculosis, acne vulgaris and acne rosacea. (4) In many of the cases which came under observation, the yeast treatment caused an improvement in the general physical condition of the patient quite unassociated with the improvement of the symptoms associated, with the particular disease in question.

British Medical Journal.

September 15, 1917

1. Infective Jaundice. Bertrand Dawson, W. E. Hume and S. P. Bedson.
2. A Clinical Lecture on Some Nose and Throat Diseases of Childhood. Douglas Guthrie.
3. Combined Vaccination with Multiple Vaccines (Quadruple, Quintuple, and Sextuple). Aldo Castellani and Frank Taylor.
4. Rupture of Left Bronchus from Trachea. John Patrick.
5. Note on the Treatment of Vincent's Angina. E. Embrys-Roberts.

2. A Clinical Lecture on Some Nose and Throat Diseases of Childhood.—Douglas Guthrie first discusses adenoids and tonsils and states that a lightning diagnosis is seldom a satisfactory proceeding. While the facial expressions, especially in children, are well worth studying, he warns that the adenoid facies is not invariably diagnostic of adenoids. A certain amount of adenoid tissue is present in the nasopharynx of every child, and

between the ages of two and ten it is very liable to hypertrophy. Over 90 per cent. of the children brought to the ear and throat clinic and his hospital suffer from adenoids, and the frequency of adenoids among children of school age has been estimated at 30 to 40 per cent. The symptoms are varied. Among all the well-known symptoms a flow of white gummy mucus from behind the soft palate is often a sign of adenoids, and sometimes a glimpse of the growths may be obtained in a post-nasal mirror. By attention to these points the disagreeable procedure of palpating the nasopharynx may be avoided, a procedure for which no child will ever forgive its doctor. In every child suffering from enlarged tonsils the tonsillar gland is palpable behind the angle of the jaw. This is a significant fact, and the important point to remember is that the tonsils and associated adenoids should be removed before the tubercle bacillus gains admission to the gland through the diseased tonsil. The tonsils should be attended to in all cases of enlarged cervical glands. Another childhood disease which should always lead to examination of the tonsils is that of rheumatism. "Growing pains" in a child should mean in the majority of instances the removal of the tonsils. The tonsil operation is outlined as follows: Having administered ethyl chloride, introduce the guillotine with its upper surface toward the tonsil, thread it over the tonsil, and dig the point of the instrument well in behind the tonsil, then lever the tonsil forward so as to produce a swelling on the palate; press upon this swelling with the left thumb, thus forcing the tonsil through the ring of the guillotine. Lastly, drive home the blade and withdraw the guillotine with its lower surface, carrying the tonsil, uppermost. After removing the tonsils, hook the curette well up behind the palate and shave off the adenoids with a downward sweep. Foreign bodies in the nose often produce symptoms resembling adenoids. The presence of a foreign body in this locality produces a unilateral discharge. Foreign bodies in the lower respiratory tract produce symptoms of a more serious nature. They usually lodge in the larynx and the right bronchus. As regards the larynx there may be no history of foreign body, but the child may be thought to be suffering from diphtheria or simple laryngitis. When a foreign body passes the larynx it usually lodges in the right bronchus, which is not only wider than the left bronchus, but lies in a more direct line with the trachea. Bronchoscopy is by no means an easy operation, but should be immediately performed in order to prevent complications in the lung. Should the direct method be unavailable tracheotomy had better be performed, as this operation has been proved to have a favorable influence on the mortality rate. Not infrequently the foreign body is coughed out through the tracheotomy wound. Coins are often impacted at the entrance to the esophagus in the postcricoid region. For relief a coin-catcher, or better, the more modern and scientific method of esophagoscopy may be employed. Guthrie directs attention to diseases of the larynx in small children, because of their difficulty of diagnosis. The child's larynx is a smaller structure than might be supposed, and its cartilages are very soft, hence stenosis and suffocation are more liable to occur than in adults. Laryngoscopy is more difficult. The inferior turbinal bone in the nose is a similar offender, and is sometimes mistaken for a polypus. Nasal polypus is very rare in childhood. Laryngeal stridor is another affection of infancy. It commences at birth or shortly after and is due to a backward development of the larynx. The epiglottis is sharply folded upon itself and the arytenoids are closely approximated so that the upper aperture of the larynx is narrowed. No treatment is required as the condition tends to disappear during the second year of childhood. Papilloma of the larynx is a possible cause of obstruction in children. Its diagnosis is difficult, tracheotomy is often necessary, and the growths are very liable to recur after removal.

British Medical Journal.

September 22, 1917.

1. The Meningococcus of Weichselbaum. Edward C. Hort.
2. An Experimental Investigation of the Suitability of the More Soluble Salts of Quinine and Cinchonine for Intravenous Injection. Leonard Rogers.
3. The Scabies Problem on Active Service. H. MacCormac and W. D. D. Small.
4. On a Convenient Method of Preparing Eusol. J. Lorrain Smith, James Ritchie, and Theodore Rettie.
5. A Note on the Carrel-Dakin-Daufresne Treatment. R. M. Rowe.
6. The Carrel-Dakin Treatment and a Method for Its Application on an Extensive Scale. Lyn Dimond and Robert McQueen.

1. The Meningococcus of Weichselbaum.—Edward C. Hort states that notwithstanding the results of recent experimental research, it is still taught, and it is in consequence widely believed, that the meningococcus of Weichselbaum is itself the direct causal agent of that form of epidemic cerebrospinal fever which is sometimes spoken of as meningococcal meningitis. It is also still taught, and the teaching is accepted without question, that the meningococcus, as one of the "lower" bacteria, is an organism with an extremely simple life-cycle, which begins and ends with binary fission into two equal parts. A meningococcus—so runs the legend—always arises directly from a meningococcus, and in no other way. As regards the first of these propositions—that the meningococcus is itself the direct cause of the disease which bears its name—he showed by experiment in 1915, and this, in conjunction with Captain A. H. Caulfeild, he amply confirmed in the following year: (1) That cultures of the meningococcus in cerebrospinal fluid or in suitable laboratory media frequently contain a minute filterable virus, which is just as pathogenic to monkeys (though not necessarily productive of meningitis) as are unfiltered cultures. (2) That the meningococcus itself appears to be inert, in so far as the production of systemic infection is concerned, whether the cultures be of the so-called epidemic strains, or of admittedly harmless types of carrier strains. As a result of these experiments, it became clear that the pathogenic results obtained in the past by injection into animals of living cultures of the meningococcus, believed at the time of injection to be pure cultures, are in reality to be ascribed to the injection of impure cultures, the "impurity" consisting in the minute filterable virus described. It became manifest, in short, as a result of these experiments, that there is no reliable evidence that the meningococcus as such is itself responsible for the disease, mere constancy of presence of the organism, even when combined with agglutinability, being of little value as proof of direct etiological relationship. Demonstration of the presence of this filterable virus in meningococcal cultures had, moreover, this important result, that it threw grave doubt on the validity of the second proposition, namely, that the reputed causal organism of the disease is a bacterium with a simple life-cycle, which begins and ends with equal binary fission. It unmistakably suggested, in fact, that the meningococcus represents one phase only—the filterable virus representing a second phase—in the life-cycle of an organism which has not yet been described, though, owing to the fact that the experimental method of investigation was mainly employed, it was not then possible to prove by ocular demonstration that this is indeed the case. To-day, as a result of direct morphological studies of cultures of the meningococcus—studies which are capable of ready verification by the adoption of an extremely simple technique—Hort has been able to confirm and amplify the results obtained already by the experimental method. He can now produce direct morphological evidence that the meningococcus is not a bacterium at all, and that both it and the filterable virus referred to do actually represent different phases in the life-cycle of an ascomycetic organism, which has hitherto been believed to be an involution form of the meningococcus. Even now the complete life-cycle in the human host of the causal organism (of which the meningococcus only represents a saprophytic phase) of cerebrospinal fever has not been worked out, and much yet remains to be done. Hort in this communication deals chiefly with the morphological characters of the meningococcus and its so-called giant forms. The morphological characteristics of the meningococcus were studied as developed in liquid cultures; examination of the unstained living organisms at room temperature; examination of stained fixed films; examination of unstained fixed films by the Congo Red method, and examination of the living organisms at room temperature and on the warm stage. Details of the technique employed are given, together with illustrative fermenta-

tion and serological tests of the serum-broth cultures employed in the above observations. As the result of such comprehensive work Hort draws the following conclusions: (1) The so-called giant meningococcus is not a bacterium. It represents an ascal stage in the life-cycle of an organism allied to the ascomycetes. The ascus may be either large or small, or of any intermediate size (0.2μ to 5μ). (2) The meningococcus of Weichselbaum is not a bacterium. It is an ascospore, derived from the "giant meningococcus" by a process of endosporulation. (3) The filterable meningococcal virus of my earlier papers probably represents a stage in the life-cycle of the ascomycetic organism described. (4) The true nature of the meningococcus and its alleged giant forms has hitherto been missed because of the practically exclusive use of solid media for purposes of identification, and because direct examination of unstained living organisms, including warm-stage development in liquid cultures, has not been carried out.

La Presse Médicale.

August 30, 1917.

The Warfare Against Tuberculosis.—Danysz states that we are not availing ourselves of the latest developments in our knowledge of pathology. Four substances present themselves for consideration: I. Tuberculine prepared *in vitro* from bacilli. II. The natural tuberculine in the blood of patients. III. Normal antigen which combines within the cells with tuberculine. IV. Antituberculine or excess of the preceding. Concerning these we know that artificial tuberculine does not act upon healthy tissues and repeated injections of it never produce antituberculine. We also know that natural tuberculine is pathogenic to the tissues after an interval of lateney and that it provokes the formation of antituberculine (specific antibody in excess) as shown by the reaction of fixation in the blood and the cutireaction in the skin. The microorganisms of the disease in a focus of disease secrete natural tuberculine which in part is fixed by the cells of the surrounding tissues. The unused excess enters the blood as antituberculin. The resulting immunity, however, is associated with a sensitizing of the body cells toward numerous substances and forces, comprising temperature changes, fatigue, various bacteria, toxins and even drugs (creosote). If after the development of specific immunity the subject shows active manifestations of the disease it amounts to a reinfection and connotes that the subject has actually been cured; also that immunity was of short duration. Animal experiment shows that a certain amount of protection can be obtained by the injection of dead cultures or of living, avirulent cultures, but the mechanism differs widely from that employed by Nature. Thus special antibodies are formed which agglutinate and precipitate the bacilli. But this method cannot rationally be used to immunize healthy subjects, and the author looks forward to the possibility that the latter aim will be secured by the exhibition of vaccine *per os*. In regard to future therapy he at present looks hopefully toward the use of such old remedies as creosote and its derivatives, and of new substances such as the double cyanide of copper and potassium.

Il Policlinico.

August 15, 1917.

Woody Phlegmon.—Filardi outlines the literature of this subject from the time (1891) when Reclus reported the earliest cases. The condition, while due to pyogenic cocci of low virulence, bears considerable resemblance to the lesions of actinomycosis. Another affection which stands in some relationship to the woody phlegmon is the so-called inflammatory pseudoneoplasm, which at times is seen to follow abdominal section and from its rapid growth may simulate malignancy. Despite the difference in the course, etc., of these affections there are present a number of points in common. The pseudoneoplasm has been known to form about a foreign body—in fact, there is on record an entire series of such cases. The woody phlegmon may appear in any locality, and hence is sometimes seen in the abdominal wall, while the pseudo-neoplasm seems to occur nearly always in the latter and when it projects inwardly may give rise to pressure symptoms or ileus. Recently cases of woody phlegmon have also been found to be due to the presence of foreign bodies and pseudo-neoplasms have been found to originate within the abdomen. It is becoming increasingly evident that the two types of lesion, while in some ways independent, shade very closely into each other. The author reports two cases as examples of woody phlegmon. The first occurred in the right lower abdominal quadrant and was very large and extremely hard. The young man had suffered from pain in the ileocecal region for four years. One year ago he first remarked the presence of a tumor. The diagnosis was made of tuberculous psoas abscess. Operation confirmed it, but there was no vertebral caries. Several months later symptoms appeared which led eventually to the diagnosis of cancer of the ascending colon. This was not concurred in by the author when the case was referred to him. He merely postulated the existence of a second cold abscess. Laparotomy showed the presence of a tumor-like mass, which upon puncture gave exit to a little pus from a small central cavity. A bacteriological examination showed the presence of the staphylococcus, while a histological study showed the absence of granulomatous, tuberculous or tumor tissue. The growth was of purely inflammatory origin with no evidence of foreign body. There was absolutely no apparent cause. The second case in an old man followed an operation for inguinal hernia, and the diagnosis had been malignancy. The lesion was a duplicate of that of the first case and also due to the staphylococcus.

Norsk Magazin for Laegevidenskaben.

August, 1917.

Rhinogenic Affections of the Optic Nerve.—Galtung recalls that a century ago Beer called attention to this association, but many years elapsed before it received serious consideration. Eventually separate literatures sprang up, ophthalmological and rhinological. Onodi studied extensively the anatomical relationship between the optic canal and the accessory nasal sinusis and showed that one optic canal could at times stand in definite relationship with the sinuses of both sides. *Vice versa* affections of the sinuses of one side can be associated with bilateral involvement of the opticus. Both blood vessels and lymphatics can play important rôles in the extension of disease processes. If the posterior sinuses of both sides stand in communication with the chiasm hemianopsia may result—bitemporal, binasal, unilateral and homonymous. Ordinary scotomata, central and paracentral, may appear in the visual field. Similarly various scotomata for white and colors may be produced, and the percentage of this incidence in rhinogenic affections may be very high. In sinus empyema it has reached nearly 50. Cases are reported which bring out many of the points involved. A patient was admitted with left retrobulbar neuritis. The nose was carefully examined with negative results. The condition in the nerve progressed and the opposite side had become involved before the author was consulted. A test for scotoma of the type found in these cases had been impracticable. The author, who is a rhinologist, found the nasal chambers normal, but there was a right ethmoiditis in both anterior and posterior cells in which pus was present. This condition did not prove that the patient's threatened blindness was of nasal origin. A neurologist could have with much probability diagnosticated multiple sclerosis (lues could be excluded). Intranasal treatment was vigorously carried out and from analogy the patient should improve; *i.e.*, treatment instituted in season has given very good results considering the seriousness of the outlook. In a second case the patient was suddenly stricken blind after an attack of nephritis. Examination revealed the presence of a bilateral peripapillary scotoma, and in addition a paracentral temporal scotoma. Neurological examination negative. The nasal chambers, maxillary and frontal sinuses were normal. In the anterior ethmoidal cells a mucocele was present. Patient received vigorous intranasal treatment and eventually the scotomata disappeared and the visual field became normal to the ophthalmoscope. The color vision, originally normal, had now become affected and patient had become blind to red and green.

Book Reviews.

Linfadenias en la Infancia. Por el Dr. Juan Carlos Navarro. Buenos Aires: Libraria "Las Ciencias," 1916.

The author of this monograph is a pediatrist who has published numerous articles on subjects pertaining to his specialty. In addition to the several well-known clinical types of lymphadenia the author includes chloroma, myeloma, the lymphosarcomatosis of Kundrat, granulomatosis, tuberculous and syphilitic granuloma of the lymph nodes, generalized endothelioma of the same, and finally a systematized gangliomic affection first described by Dr. Elizalde of Argentina. The book is well planned and executed and is doubtless unique in presenting all the forms of neoplasia not only of the ganglions proper but other lymphoid tissues, as limited to childhood. The research into literature is extensive. Two personal cases are described—one of the localized form of lymphogranulomatosis and the other of Kundrat's lymphosarcomatosis.

The Tree of Life. An Exposé of Physical Regenesis on the Threefold Plane of Bodily, Chemical, and Spiritual Operation. By George W. Carey, author of Text-Books on the Chemistry of Life. Price, $1. Los Angeles: Dr. George W. Carey, 1917.

It is enough to say of this book that it seeks to give a mystical interpretation to recent scientific discoveries. The author finds it advisable to rewrite etymologies. He derives the "mass" and "mason" from a root meaning dough; but the letter N in Hebrew means fish, and putting the N in mason is responsible for the friction between Catholics and Masons. Fish is symbolic of Christ, hence immaterial, while dough is material. Much of this symbolism is very old.

Food Preparedness for the United States. By Charles O'Brien. Boston: Little, Brown, & Co., 1917.

This little book, dedicated to Horace Fletcher, is a first rate summary of the problem of food preparedness for those who are not well informed on the subject. The medical reading man will probably not find much in the book which is actually new. The author, while a layman, steers clear of all medical solecisms, and the only point to criticise is a passage in which loss of weight seems to be regarded as equivalent to loss of adipose. Loss of water must be carefully distinguished from loss of fat.

Operative Surgery of the Nose, Throat, and Ear for Laryngologists, Rhinologists, Otologists, and Surgeons. By Hanau W. Loeb, A.M., M.D., Professor of Ear, Nose, and Throat Diseases in St. Louis University, in collaboration with Joseph C. Beck, George W. Crile, and Others. In two volumes. Vol. II. 476 illustrations. Price, $7.00. St. Louis: C. V. Mosby Company, 1917.

The second volume of this well-known work deals with the operative surgery of the nasal chambers and sinuses, pharynx, larynx, ear and mastoid process. It will be recalled that the earlier volume dealt chiefly with pathology and exploration, and that operative procedures were limited to plastic work on the nose, ear, etc. Volume II. therefore constitutes a separate work on operative surgery. The collaborators of the author in the second volume are Beck of Chicago, Haskin of New York, Levy of Denver and Richards of Fall River. Surgery of the nose naturally includes surgery of the hypophysis by the nasal route and all the other major operations involving the bones which enter into the formation of the nasal fossæ. Operations for cleft palate are properly omitted as belonging to oral surgery.

Operative surgery of the pharynx deals with adenoidectomy, tonsillectomy, and operations for growths in the nasopharynx. The older haphazard methods of excision of a portion of the tonsil have largely given way to dissecting and suture procedures which combine both the radical and conservative viewpoints.

Intralaryngeal intervention is limited to surgery of the larynx proper. Bronchoscopy is considered in Volume I, including extraction of foreign bodies in the bronchi.

Operative surgery of the ear is made up chiefly of interventions in the mastoid process and comprises a full account of intracranial surgery for otogenic conditions, including spinal puncture and surgery of the cranial vault.

It will always be a matter of opinion whether a single class of men should by implication cover the surgery of so many different localities at the same time; but in the smaller cities such a custom is universal and a work of this sort is extremely convenient for this already large and rapidly increasing class of specialists, for which, no doubt, the book was chiefly published.

University of Iowa Monographs. Studies in Medicine. First Series, Volume I, No. 10. Professor Henry Albert, M.D., Editor. Price, 40 cents. Published by the University, September, 1917.

This number of the Monographs contains thirteen original articles, all of which have already been published in well known medical periodicals during 1916-1917. Perhaps the most significant deals with the recent appearance of exanthematic typhus in Iowa, apparently for the first time. No problem is present, however, for the disease was simply an extension of Mexican typhus through intermediate states to Iowa by Mexican railway laborers.

The Small Community Hospital. A Series of Eight Papers by John Allan Hornsby, M.D., Editor of *The Modern Hospital*. St. Louis: The Modern Hospital Company, 1917.

The eight papers referred to comprise from first to last the creation or backing of the hospital as based on a community survey; the financing; the planning; the construction; the interior; the equipment; the organization and the resident personnel. Hospitals of this scope would probably come in a short time to have an average daily number of ten to twenty patients. In the plans given there are accommodations for twelve ward patients and three private room patients. The size and elaboration of the plant required to take care of this small number of patients would seem to a novice to be all out of proportion to the latter's requirements, but a small hospital must have everything which is really essential to proper operation and differs from the large institution chiefly in the number of guests.

The Practical Medicine Series. Volume III. The Eye, Ear, Nose, and Throat. Edited by Casey A. Wood, C.M., M.D., D.C.L., Albert H. Andrews, M.D., George E. Shambaugh, M.D. Series, 1917. Price, $1.50. Chicago: The Year Book Publishers, 1917.

Dr. Wood's section on the eye occupies one half of the book and is the only one to receive a preface, which calls attention to the importance of military ophthalmology at the present time. This section comprises over 100 abstracts from current literature, very many of which are suitably illustrated. The section on the ear could have been expanded considerably by reproducing more abstracts on the innumerable tests for simulation and military otology in general is not given much space (for example, we see no reference to the ear troubles of aviators). The nose and throat each receive separate consideration and the same sort of criticism applies equally to them.

Examination of Water, Chemical and Bacteriological. By William P. Mason, Professor of Chemistry, Rensselaer Polytechnic Institute; Member of the American Philosophical Society, the American Chemical Society, the American Public Health Association, the Royal Sanitary Institute, Great Britain; Honorary Member Association Générale des Hygiènistes et Techniciens Municipaux, the American Society of Civil Engineers, the American Water Works Association, the New England Water Works Association, the American Institute Chemical Engineers, the Franklin Institute, etc., etc. Fifth Edition, thoroughly revised. Price, $1.25. New York: John Wiley and Sons, 1917.

This work dealing with the examination of water by Professor Mason is practical and clearly expressed. All matter which does not directly deal with sanitary examination of water is left out. This, the fifth edition, has been brought into conformity with modern practice and may be recommended as a handy reference book concerning the subject with which it deals.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON SURGERY.

Stated Meeting, Held October 5, 1917.

DR. EDWARD W. PETERSON IN THE CHAIR.

Intussusception of the Appendix. — Dr. CHARLES E. FARR presented this case. He stated that the patient, a little girl 5 years of age, was admitted to the hospital with the history that four days previously she had had a sudden attack of pain in the abdomen, with repeated vomiting. Her bowels moved with difficulty, but there was no blood or mucus present at any time. There was considerable leucocytosis. The *x*-ray picture gave no definite information. Palpation of the abdomen showed a movable lump in the right iliac fossa. The case was diagnosed as one of appendicitis with mild obstruction. At operation it was found that the appendix had gone into the cecum and would neither go further in nor come out. Hence a resection of that portion of the cecum around the appendix was made, after which the patient made a good recovery. The cecum was edematous over an area from one and one-half to two inches in diameter. The case was reported because it was rather unusual to find an intussusception of the appendix into the cecum. Intussusception at the ileocecal valve or in the region of the sigmoid was quite common. In this case the ileum was not involved. Dr. Farr stated that there were 26 cases of intussusception of the appendix on record which Dr. Moschcowitz had collected and included in a paper in which he reported a case coming under his observation. He had heard of one or two other cases, so that while this form of intussusception was not extremely rare it occurred far less frequently than other forms of intussusception.

Hemiplegia and Aphasia Caused by Subdural Hemorrhage; Osteoplastic Flap; Recovery.—Dr. ANTHONY H. HARRIGAN presented this patient, a woman 40 years of age, who was admitted to the Fordham Hospital on August 2, 1913. He said that the injury was the result of an automobile accident, and that when brought to the hospital the patient was unconscious, with incontinence of urine. The physical examination was negative except for abrasions on the face, head, and arms. There was slight bleeding from the nose, but no depression of the vault of the skull. The temperature was 100° F.; pulse, 60 to 30. The blood pressure was 215. The attending neurologist, Dr. Cornwall, made the diagnosis of fracture of the base of the skull. There were, however, no focal symptoms, though there was Babinski on both sides, and the patellar reflex was slightly exaggerated. On the following day the patient could be slightly aroused. The blood pressure at 11 A. M. was 240 and at 9 P. M. 190 mm. At night of the following day a hemiplegia developed and there was also paralysis of the right side of the face. The patient could be aroused and when asked to shake hands presented the left hand readily; when asked to move the right hand she lifted it with the left. She could move the left leg, but could not move the right. There was a subconjunctival hemorrhage out of one-half the right eye. Dr. Cornwall advised an immediate operation. The fissure of Roland was outlined on the left side following the Kronlein method of cranial topography. The flap was outlined over this area. The bone was divided with the Hartley-Kenyon electric saw. On turning the flap down it was found that the dura did not pulsate. About four ounces of black clotted blood was found lying on the motor area; this was removed and considerable blood clot was taken from the base. This clot was mixed with disintegrated brain tissue. The exploring finger could easily detect a marked laceration of the brain on the inferior surface of the frontal lobe. The dura was sutured and the skin closed with interrupted silkworm gut. The patient was in excellent condition and regained consciousness during the day. The day following she could move her right arm and leg slightly. She continued to improve, though the incontinence of urine persisted for several days, and finally made a perfect recovery.

Fracture and Dislocation of the Sacrum. Rupture of the Third, Fourth, and Fifth Sacral Nerves; Laminectomy; Nerve Root Suture.—Drs. ANTHONY HARRIGAN and JOSEPH BYRNE made this presentation. The patient, a carpenter, 44 years of age, fell 9 feet from a scaffold, striking on a beam and thence 6 feet to the ground. Just after the injury he had power in the limbs, but no control. Ever since the injury he had loss of control of both bladder and rectum, with absence of erections and of sexual desire. Physical examination showed marked kyphotic deformity, with some scoliosis to the right at the base of the sacrum and a depression at the lower end of the spine on the left, the size of a hen's egg. To the right of this was the dislocated coccyx. Dr. Byrne stated that the neurological examination showed no motor defects except the bladder, rectal, and genital disturbances noted. The sensory manifestations were pain and soreness in the right buttock and at times a shooting sensation from the anus to the penis. Sensation for all forms of superficial stimulation was absent over both buttocks, corresponding to the root distribution of the third, fourth, and fifth sacral nerves. Where, however, the stimuli were of such a nature as to reach the deeper structures, that was pressure, touch, compass points, simultaneously and conecutively applied with steady pressure, extremes of heat and cold in prolonged massive applications, then sensibility was preserved even on the area of skin distribution of the third, fourth, and fifth sacral roots on the left, although these roots were found completely severed on that side. The glans penis was insensitive to prick, as was the perineum and scrotum, except on either side bordering the thigh. The bulbocavernosus reflexes were absent on both sides and the anal reflexes were absent on both sides to stimuli applied cephalad of the center of the anus. The diagnosis made was rupture of the third, fourth, and fifth sacral roots on the right side. Since operation repeated examination had shown a marked improvement on the sensory loss, especially over the perineum, scrotum, and penis. The genital function, as well as the control of the bladder and rectum, had returned and were almost normal. In discussing the symptoms in this case, Dr. Byrne said that the motor mechanism of the bladder and rectal sphincters were functioning irregularly before operation. They were in a state of postural tonus (Sherrington), which could be altered at times. There was a loss of sensibility over the skin supplied by the third, fourth, and fifth sacral roots on the left for all forms of superficial stimulation, and the retained sensibility even for critical elements reached the deeper structures. These facts warranted a reconsideration of Head's division of the peripheral nerves into epicritic, protopathic, and deep sets. A truer and more useful division was that of superficial and deep critical and superficial and deep affective systems, the aponeuroses underneath the skin being an important carrier of both central and affective receptors and nerves.

Dr. Harrigan described the operation which he performed in this case, as follows: With the patient in the prone position, under ether narcosis, an incision 7 inches in length was made over the center of the sacrum. This was extended above over the lumbar spine and below to the coccyx. There was a definite kyphosis of the upper part of the sacrum and a dislocation at the right sacroiliac synchondrosis, causing the posterior surface to occupy an inclined plane. With the use of chisel, gouge, and trephine the central canal of the sacrum was opened. In order to establish the identity of the cauda equina which was in doubt a part of the laminæ and the spine of the last lumbar vertebræ was removed. At the point where the cauda equina entered the sacral canal it had suffered a displacement or pushing backward, so that at this point its direction was almost at right angles to that which lay within the lumbar vertebra. This curving and bending backwards of the cauda equina was caused by the displacement and fracture of the sacral vertebra. The cauda equina was completely enmeshed in scar tissue. This was carefully dissected away and the cauda equina freed. A rupture of the third, fourth and fifth sacral nerves on the left side was demonstrated, confirming Dr. Byrne's diagnosis. The distance between the ends of these nerves and the cauda equina, following complete freshening of the ends, measured one-half to three-quarters of an inch. Each nerve was sutured to the central cauda equina with a mattress

suture of plain catgut, "suture à distance." The coccyx, which was completely dislocated from the sacrum, was removed. Further search showed a large plate of bone detached from the anterior surface of the sacrum and pressing against the pyriformis muscle. Between this bone and the sacrum an adventitious bursa had developed. The bursa was dissected away and the piece of bone removed piecemeal. The overlying muscles were sutured with catgut, a small drain was placed in the lower angle of the wound, and the wound closed. Primary union followed. Findings at subsequent *x*-ray examinations were also presented which showed extensive damage to the pelvic portion of the sacrum, and the sacrolumbar angle much increased, so that one would expect considerable interference with the function of the sacroplexus, cauda equina, and nerves.

Tumor of the Corpus Callosum.—Drs. HARRIGAN and BYRNE also presented this report. Dr. Harrigan stated that the patient was a man, 47 years of age, a crucible steel worker, whose general symptoms were headache, choked disc, vomiting, irritability, and failure of memory and concentration. The local symptoms were a right-sided hemiparesis, twitching of the right hand, general slight impairment of sensibility (pressure pain, posture, and passive movements) more marked on the right. Astereogenosis was present, especially on the right side; smell and taste were impaired on the left, and there were hallucinations of taste. The blood, Wassermann, and *x*-ray examinations were negative. A diagnosis was made of subcortical lesion under the left rolandic region, corresponding to the right hand area. Operation was advised and operation performed which was described in detail. An osteoplastic flap turned down over the rolandic region revealed a plaque of pachymeningitis. No tumor or cyst was perceptible to the eye or on palpation. The patient never regained consciousness, developed edema and coma, and died sixteen hours after the operation. Eight hours after death the brain was sectioned vertically by Dr. John H. Larkin, and the sections studied serially. He found a tumor measuring 8 x 6 cm. in the white matter of the left hemisphere, extending from beneath the cortex of the rolandic area down into the corpus callosum and backward into the occipital lobe. The microscopical diagnosis was infiltrating mixed celled sarcoma. The significant points in this case were: (1) The heredity, the parents, brothers, and sisters dying young. There was a history of headaches and insanity in the mother and of tuberculosis in three brothers. (2) The repeated injuries of the head and the convulsions, hysterical in type, appeared years after the injuries. It was possible that the first and second of these injuries might have played a rôle in the development of the neoplasm. (3) Hallucinations of taste, possibly from indirect involvement (pressure) of the uncal and hippocampal regions on the left. (4) Twitching and later paralysis of the right hand, which were the chief localizing signs. (5) The alternating slow and rapid pulse and the Cheyne-Stokes' respiration, both of which fitted well with the increased pressure found at operation. The comparatively low blood pressure represented probably vasomotor exhaustion. (6) In a similar case a primary decompression would probably best meet the indications, leaving more radical measures for a subsequent occasion.

Dr. MARTIN REHLING reported a case somewhat similar to the case of fracture of the sacrum which Dr. Harrigan had described. This occurred in a child, 4 years of age, as the result of falling four stories. The sacrum was split on both sides, but there seemed to be no injury to the sacroiliac synchondrosis. The child made a good recovery.

Dr. HARRIGAN, in closing the discussion, stated that he was of the opinion that a primary decompression might have been of some value. He thought that someone would raise the point in the case of aphasia and hemiplegia as to why decompression had not been performed when the blood pressure was found to be 240 mm. Some years ago in a paper published by Cushing a statement was made that a decompression should be performed in fractures of the base of the skull when the blood pressure reached 210. In this case he had not operated because the consulting neurologist advised against it; also he felt from his own experience in fractures of the base of the skull that non-intervention cured as many cases as decompression. He felt that it was not wise to make the dogmatic statement that when the blood pressure reached a certain point one should always operate. This was brought out by clinical results and observations.

Multiple Ureteral Calculi.—Dr. LEO BUERGER presented this case, a woman who had already been operated on for right ureteral calculus some four years previously. Because of attacks of intense colic and pain in the right lumbar region, radiating into the ureteral region, operation was again performed, five calculi being removed from the lower right ureter. The patient made an uneventful recovery. The case was of unusual interest from the diagnostic standpoint because cystoscopic examination, radiography, and pyelography demonstrated a number of instructive points: (1) The first radiographs of the pelvis showed nothing suggestive of calculi. A second radiograph showed clearly that a clear radiogram was essential for the demonstration of even multiple ureteral calculi, for two distinct shadows were seen in the course of the left ureter in the pelvis, and five distinct shadows in the course of the right ureter, at a point about 6 cm. from the ureteral orifice. (2) Cystoscopic examination showed that the right ureter, which harbored the five shadows, presented no obstruction to the ureteral catheter, and permitted of the collection of a fairly large quantity of purulent urine, the findings indicating a hydro-pyonephrosis on the right side, that was, the side with the five calculi in the ureter. On the left side, in spite of the presence of the two large suggestive shadows, the catheter passed up the ureter without any hindrance, and perfectly normal urine was obtained. On the passage of a shadowgraph catheter in the left ureter, which seemingly passed up for a distance of 20 cm. without obstruction, the radiogram demonstrated that the catheter had ascended to a point about 12 cm. from the ureteral orifice, and had turned back on itself, making a loop, the upper end of which was lying over the middle of the sacroiliac synchondrosis. The shadowgraph catheter did not come into contact with the two suspected shadows. It was clearly evident that in spite of the negative urine, the ureter was enormously dilated, so that it would permit the catheter to make a loop within it, and that the two suspicious shadows were probably in the ureter, although lying at a considerable distance from the shadowgraph catheter. At a subsequent cystoscopy, the injection of thorium clearly demonstrated the size of the left ureter, and showed that the two suspicious shadows were really calculi lying within it. (3) Another instructive feature was demonstrated when a shadow catheter was passed into the right ureter, for the radiogram showed that the catheter passed upward over the sacrum, and then took a sharp turn into the loin, its tip lying over the center of the ilium, way out in the flank. This unusual course of the shadowgraph did not indicate that the ureter had been perforated by the catheter, as was demonstrated at operation, but that the ureter was enormously dilated, being as large as a small intestine.

Vesical, Ureteral, and Renal Tuberculosis.—Dr. BUERGER presented this patient also and the specimen. He stated that the case was interesting because it emphasized how difficult it was to recognize a tuberculous lesion of the kidney, even when the kidney was bisected, and practically the whole of its pelvis brought into view. The patient was admitted to the surgical service of Mt. Sinai Hospital in July, 1917, under the care of the speaker. He presented the usual symptome of tuberculosis of the kidney and bladder, namely, frequency of urination, burning in urination, and nocturia lasting for about six months. Cystoscopic examinations showed the usual lesions of tuberculosis of the bladder, polypoid edema about the right ureter and slight retraction in this region. Both kidneys functionated fairly well, but tubercle bacilli were found only in the specimens obtained from the right kidney. A diagnosis of right renal tuberculosis and vesical tuberculosis was made, and a typical nephrectomy performed. The kidney was but slightly adherent, fairly movable, about normal in size, and with no gross evidence of tuberculous involvement. The ureter was found densely adherent to the posterior parietes, and surrounded by a mass of connective tissue. With some difficulty, a ureter

as thick as a man's little finger was freed for a distance of about six inches, ligated, cut through, and the kidney then removed. On bisection of the kidney which was presented, the only striking lesion that could be viewed with the naked eye was an intense inflammatory process involving the pelvis of the kidney and calyces, by virtue of which the pelvis was thickened to about three times the normal, its surface being granular as though covered by a multitude of miliary tubercles moderately reddened but nowhere showing the lesions of tuberculosis. The small granules appeared much larger than those characteristic of miliary tuberculosis. No miliary tubercles could be seen in the parenchyma nor were there any gross ulcerations of the apices of the papillae. It was not until a multitude of cross sections had been made through some of the hidden portions of the calyces which had not appeared on the bisection of the organ that typical cheesy ulcerative lesions of tuberculosis were found. These involved a calyx without, however, showing any true miliary tubercles. These cheesy lesions the speaker regarded as absolutely characteristic of tuberculosis and believed that when they were present in the kidney pelvis or ureter a diagnosis might be made even without the finding of endothelial and giant cells. From the standpoint of the operator the lessons to be drawn from this case were: that if the cystoscopic picture was that of tuberculosis, if there was retraction of the ureter, if there were more lesions about one ureter than about the other, if tubercle bacilli were recovered from one side with a moderate amount of pus, a normal appearing kidney upon lumbar incision must not be regarded as free of tuberculosis, but should be removed, particularly if the ureter or pelvis was thickened.

An Unusual Case of Renal Hematuria.—Dr. BUERGER presented a third patient, a man, 51 years of age, with a sufficient number of other lesions of the urinary tract to make the diagnosis of the source of hemorrhage quite difficult. He was admitted to Mount Sinai Hospital in August, 1917, with the history that in April, 1916, he had been under observation for three weeks for a very severe hematuria. The hematuria was painless, without increased frequency of urination, urgency, or any evidence of bladder irritability. The hematuria had continued for three weeks previous to his admission to the hospital, during which time he had lost ten pounds in weight. Cystoscopic examination on several occasions demonstrated the presence of a rather extensive cystitis cystica, and blood coming through the right ureteral orifice. An exploratory operation on the right kidney showed that organ somewhat enlarged and there was marked peripyelitis and periureteritis. The pelvis was opened and the interior mucous membrane inspected and found to be the site of an extensive pyelitis cystica, the ureter also being involved as far as it could be seen. The pathologist reported that a specimen of the kidney removed for miroscopical examination showed chronic interstitial inflammation and parenchymatous degeneration. The pelvis of the kidney and the wound were closed; within a few days the bleeding ceased, and the patient was discharged about seventeen days after the operation. The patient was then apparently free from symptoms until August, 1917, when he was admitted to Mount Sinai Hospital with a profuse hematuria. Cystoscopic examination made it evident that the right kidney was bleeding. The bladder was found to be the seat of an extensive cystitis cystica, but this was evidently not the source of the hemorrhage. The speaker concluded that he was dealing with an idiopathic or essential unilateral hematuria and decided upon an exploratory operation. Careful inspection demonstrated that the bleeding came from the kidney itself, which was small and sclerotic. No tumor or calculus was present. The diagnosis, therefore, was chronic nephritis or possibly essential hematuria. Decapsulation was done and the wound closed. Four days after operation the bleeding ceased. The patient was discharged apparently relieved of his symptoms within two weeks.

Dr. MARTIN REHLING said that he had had a case of hematuria in which cystoscopy showed the urine clear on one side and slightly bloody on the other. At operation a fibroma of the kidney was found.

Dr. WILLY MEYER said that he had not heard all of Dr. Buerger's presentation, but he wished to cite a case that emphasized the point that where one found a unilateral descending tuberculosis of the kidney, even though the kidney did not show a serious lesion, that kidney should come out.

Prognosis in Surgery of the Aged.—Dr. FRANK C. YEOMANS read this paper, which was based on a study of 100 cases selected from his operative experience of the four years to August, 1917. The summary of the 100 cases showed that 22 were from 50 to 59 years of age; 49 from 60 to 69 years; 27 from 70 to 79 years, and two were 80 years or over. The average age was 62 years. There were 65 males and 35 females. The anesthetic employed was ether and chloroform in 57 cases; nitrous oxide gas and oxygen in seven, and novocain in 36. Of the series, 88 recovered and 12 died. The operation was imperative in ten of the fatal cases, and elective in two. After analyzing the series in detail, Dr. Yeomans suggested the following five cardinal rules for successful surgery of old people: "(1) A correct diagnosis made by thorough and, if necessary, repeated examinations before operation. (2) A definite plan of operation, executed with the greatest celerity compatible with safety. (3) Rigid asepsis, for the powers of resistance in the aged are limited. (4) Control of hemorrhage by the Esmarch bandage, posture, segregation and division of vessels between clamps, for blood lost is not quickly replenished in old people. (5) Careful handling of tissues. Trauma of tissues results in diminished resistance and favors infection. 'Quickly in and quickly out' is imperative when invading the abdominal cavity and with the least possible evisceration." Furthermore, he emphasized that the body must be conserved by warm covering during the operation and must be protected thereafter, including the avoidance of drafts. The safeguards against shock were a definitely planned operation, short anesthesia, deft technic, "bloodless surgery," and conservation of body heat. The favorable prognostic factors as stated by the author were: (1) Physically the very old represented the survival of the fittest, or, if naturally delicate, they had not undermined their constitution by dissipation or excess. (2) Abstemious habits of eating and drinking and a routine life were accompaniments of advancing years, hence postoperative toxemia and delirium tremens were less frequent complications than in younger people. (3) The general condition of the patient would be of more weight in deciding the operability of a given case than any slight deviation from the normal of a particular organ as the heart, the kidney, or the lung. (4) The selection of the anesthetic suitable to the patient's condition and to the proposed operation would frequently be a more potent factor in the prognosis than the surgical procedure itself. In major operations under general anesthesia the responsibility of the anesthetist was on a par with that of the surgeon. The more frequently local anesthesia or gas and oxygen could be employed, the better the prognosis. (5) In cancer cases the liability to recurrence after radical operation diminished with advancing years and after palliative operations malignant growths were retarded for longer periods than in younger subjects with their more active tissue changes. Dr. Yeomans stated that his experience justified the conclusion that imperative operations must be performed irrespective of the age of the patient and that other things being equal, in elective cases, age per se was not a bar to successful surgery.

Dr. WILLY MEYER said there was no doubt that the past thirty years had brought about a great change in our ideas with reference to operations on the aged. It was rather difficult to draw a line and say when a man should be called aged. Some of the patients in this series were fifty-two years of age; it might be that some would object to calling them aged. He would prefer to draw the line at about seventy years. However, he thought they had all learned that one did not any longer consider the age of the patient as a contraindication to operation unless some chronic disease was present which would actually forbid operation. His personal experience in operations on the aged included a case of suppurative appendicitis in a man 83 years of age who recovered, gangrene of the gallbladder in a man 75 years of age with recovery, prostatectomy in a man of 82 years with recovery, cancer of the breast in

a woman of 73 years with recovery. An important point was that in operating on the aged the administration of the anesthetic should be in the hands of an expert. Personally he feared sudden dilatation of the right ventricle, and he never allowed an old person to be operated on under gas and ether; if it became necessary to administer a general anesthetic there was nothing better in these old people than a few drops of chloroform, perhaps 20 c.c. in an entire operation. Other important points were the necessity for scrupulous asepsis and attention to the aftertreatment. He did not keep elderly patients long in bed and started the first morning after the operation with breathing exercise. He had the patient draw a long breath every hour so as to inflate the lower lobes of the lungs. With attention to these factors there was no reason why years alone should prevent a person from getting the benefit of the modern advances in surgery.

Dr. FENTON B. TURCK said there was one factor in connection with operations in the aged of which he would like to speak and that was shock. He said he had done a great deal of work in reference to the study of shock when he was associated with Dr. Murphy. Dr. Murphy's success with old people was because of his remarkable care in the prevention of shock. In this factor of shock was to be found the whole crux of the matter as it affected the success of operations in old people. By the term shock he did not mean an arterial exhaustion, but a capillary-venous stasis. In shock the first phenomenon observed was the dilatation of the splanchnic capillary veins; they could be seen to dilate the minute the air reached the abdominal cavity. As a result of the loss of heat the splanchnic capillaries and small veins dilated and the fluid passed into the surrounding tissues, and as the dilatation continued the blood corpuscles also passed out into the tissues. In the prevention of this condition heat was the most powerful agent at our disposal. Heat stimulation applied to the stomach and colon brought about a very prompt reaction. To be effective the degree of heat must be above 110°, raised to 120° F., and must be applied directly to the interior of the stomach and colon as he had described in his articles at various times. As a protection against desiccation the rubber dam or rubber sheet should be used to cover the abdominal cavity, with the exception of the site to be operated upon. One could also make use of small rubber bags introduced gently into the abdominal cavity. It would be found that these procedures prevented capillary venous stasis and dilatation. Dr. Meyer had spoken of dilatation of the right ventricle, and it was quite probable that such dilatation was the direct result of venous stasis. It might be briefly stated that the prime factor in the prevention of shock was the application of heat within the abdominal cavity and heat stimulation applied to the feet, for it had been shown that heat applied to the feet directly stimulated the circulation in the splanchnic area.

Dr. YEOMANS, in closing the discussion, said that in regard to the remarks that were made on shock he had not given special consideration to this factor because the cardinal rules for surgery in the aged provided for the prevention of shock. Dr. Meyer had objected to some of these patients being considered as belonging to the old age class. The majority of the operations in this series were performed on patients in the Central and Neurological Hospital on Blackwell's Island and the patients met with there, because of neurological or other complications, were actually much older from the surgical viewpoint than their years indicated. Dr. Yeomans stated that among his private patients he had had no operative mortality in this series; among the hospital cases a number were *in extremis* when they were admitted.

A New Disease—Bradycardia with Edema.—This affection is perhaps the same as has been mentioned in dispatches in the daily press. According to Gerhardt who has seen 21 cases it is *sui generis*. Several cases ended fatally. The symptoms are few and uniform. At first bradycardia and edema set in, followed in time by anemia and asthenia. The first sound of the heart becomes very soft.—*Correspondenz-Blatt für Schweizer Aerzte.*

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

TEXAS STATE BOARD OF MEDICAL EXAMINERS.

Austin, June 19, 20, 21, 1917.

(*Concluded from page 662.*)

GYNECOLOGY.

1. What laboratory findings would prompt you to defer operating in elective cases?
2. Etiology of irritable urinary bladder.
3. Etiology and prognosis of chorio-epithelioma malignum.
4. How do neglected fibromata uteri render operative procedure hazardous?
5. Describe an operation for chronic inversion of uterus.
6. Discuss the thyroid gland from a gynecological standpoint.
7. Describe an operation for prolapsed (normal) ovaries with the uterus in normal position.
8. Describe an enteroptotic woman.
9. What is hysterotomy?
10. Sixteen hours after pan-hysterectomy no urine is excreted, patient otherwise O.K. What course would you pursue?

PATHOLOGY.

1. What is an aneurysm? Mention the principal causes of aneurysm.
2. Describe the microscopic appearance of the cerebrum in paresis.
3. Describe the micropic appearance of uterine carcinoma and state where it most often occurs.
4. What is a rhabdomyoma? Describe it microscopically.
5. Describe the changes which take place in tuberculous arthritis of the knee-joint.
6. Describe the pathology of glaucoma.
7. What is angina pectoris? Mention its most prominent causes.
8. What do you mean by cardiovascular-renal disease? What are its most prominent symptoms?
9. What important information could you obtain from a differential leucocyte count? Describe a method of performing it.
10. What is pulmonary emphysema? Mention the most frequent causes of this condition.

PHYSICAL DIAGNOSIS.

1. Differentiate floating right kidney from tumor of the gall-bladder.
2. How may acute peritonitis be distinguished from intestinal obstruction?
3. Differentiate mitral stenosis from mitral regurgitation.
4. Differentiate tabes dorsalis, or locomotor ataxia, from the condition known as spastic paraplegia.
5. What is Kernig's sign? Why is it important in diagnosis?
6. State how to test the patellar reflex, or knee jerk. Give its significance and name three diseases in which it is exaggerated and three in which it is absent.
7. Differentiate pulmonary edema from the first stage of pneumonia.
8. How would you test for motor aphasia?
9. Differentiate smallpox from chickenpox.
10. Say how you would distinguish erysipelas from acute eczema; also from the dermatitis of poison-ivy.

SURGERY.

1. Diagnosis of typhoid perforation of the intestine.
2. Diagnosis and surgical treatment of tuberculous peritonitis.
3. Describe in detail the most approved operation for umbilical hernia.
4. Differentiate acute appendicitis from acute pyelitis.
5. Give diagnosis, prognosis, and treatment of sarcoma of testicle.
6. Differentiate between acute and chronic ischiorectal abscess. Surgical treatment of each.

7. Describe in detail a method of testing out the functions of the kidney.

8. Diagnosis and surgical treatment of basal fracture of the skull.

9. Diagnosis and surgical treatment of fracture of the clavicle at middle third.

10. Diagnosis of tuberculosis of knee-joint in the beginning stage.

ANSWERS

GENECOLOGY.

1. *Operation should be deferred* when the hemoglobin estimation is below 40 or 50 per cent.; in cases of renal insufficiency, hemophilia, leucocythemia, diabetes, nephritis.

2. *Etiology of irritable urinary bladder:* Concentrated urine, lithemia, pelvic disease, cystitis, prolapse of urethra, cystocele, neurasthenia, hysteria, the presence of a tampon or pessary in the vagina, hemorrhoids, and sexual irregularities.

3. CHORIOEPITHELIOMA MALIGNUM. *Etiology.* It only occurs during the physiologically active period of life, and is preceded by pregnancy. Hydatidiform moles and abortions may predispose. *Prognosis* is very grave, as this is the most malignant of all tumors.

4. By delaying the operation there is opportunity for all sorts of complications to develop, such as hemorrhage, anemia, pressure upon bladder and ureters, cystitis, hydronephrosis, cardiovascular degenerations, thrombosis, embolism, pressure on intestines; all of these would increase the risk of operation. Further, the growth of the tumor would necessitate a more extensive operation, and the lowered vitality of the patient would further increase the risk.

5. *Operation for chronic inversion of the uterus.* "Küstner devised the following method: (1) a wide transverse incision into Douglas's cul-de-sac; (2) the introduction of the index-finger through this opening into the inversion funnel of the uterus and separation of any adhesions found; (3) a longitudinal incision through the posterior uterine wall in the median line, beginning about 2 cm. below the inverted fundus and ending about 2 cm. above the os externum; (4) reinversion of the uterus by fixing the funnel with the index-finger in Douglas's pouch, and pressing in the fundus with the thumb of the same hand; (5) suture of the uterine incision by deep and superficial sutures passed on the peritoneal surface; (6) closure of Douglas's cul-de-sac with sutures."—(Kelly and Noble.)

6. The *thyroid gland* is associated with the function of the reproductive organs. It enlarges at puberty during menstruation, and during pregnancy. It is more active in the female than in the male, as it is more prone to pathological affections, particularly during the reproductive period of life. Menstruation is normal if the thyroid is physiologically active; deficiency in the thyroid may delay menstruation at puberty. It is said to be excess of the thyroid secretion which inhibits menstruation during pregnancy. Thyroid secretion also accelerates uterine involution and promotes lactation. Removal of the ovaries causes the thyroid to enlarge. Removal of the thyroid causes atrophy of the uterus. Hypersecretion of the thyroid may be accompanied by amenorrhea and sterility. Ovulation may be stimulated by the administration of thyroid extract.—(McIlroy.)

7. In case of prolapsed (normal) ovary, with uterus in normal position, a conservative operation should be done, such as shortening the infundibulopelvic ligament. This is done as follows: "A silk ligature threaded on a small full-curved Hagedorn needle is passed twice through the infundibulopelvic ligament at the outer edge of the ovary and then carried through the peritoneum and underlying structures above the pelvic brim in front of the external iliac artery. The ligated portion of the ligament is then brought in contact with the lateral pelvic wall, and the free ends of the ligature tied. The ovary is thus raised out of the pelvic cavity and held permanently at its normal level in the pelvis." (Ashton's *Gynecology*).

8. Kemp's description of an *enteroptotic person* is: These patients are usually thin and slender; the abdominal walls are generally flaccid. The angle formed by the ensiform, and lower margins of the thorax is sharp (very acute) in the congenital cases, with a long narrow thorax. The form of the patient is angular and the muscles are thin. There is a concavity between the costal arches in the epigastrium from the ensiform to the umbilicus, and in some a vertical median sulcus between the recti muscles wider above than below. In the dorsal position the abdomen may be flattened above and bulge laterally, and when the patient is erect the epigastrium becomes more depressed, while the hypogastric regions from the umbilicus to the symphysis and the pubic region markedly bulge forward and outward.

9. *Hysterotomy* means a surgical incision into the uterus; it is sometimes used as the equivalent of cesarean section; it is also used to denote the enucleation of a fibroid tumor without opening the uterine cavity.

10. "The *treatment* depends largely upon the cause. When the ureter is obstructed the obstruction should be removed just as soon as a diagnosis can be made. In ileus, operative procedure for its relief is usually too late after suppression occurs, although it should be tried. In all cases where there is no obstruction of the ureter the treatment consists in cupping the loins, hot applications, free purging, and sweating with the vapor bath or with pilocarpine. It should not be forgotten that pilocarpine is a treacherous drug and likely to cause edema of the lungs. Diuretin is recommended after the secretion has started. Irrigation of the rectum with hot salt solution by means of a two-way tube is likewise recommended. The method of Murphy of permitting salt solution to run into the rectum drop by drop, averaging a quart every two or three hours, is to be commended highly. Enemata and subcutaneous injections of salt solution are very useful. The treatment of nephritis as a post-operative affection differs only from that usually laid down in so far as it is modified by the wound and other conditions pertaining to the operation." (Kelly and Noble.)

PATHOLOGY.

1. An *aneurysm* is a pulsating sac containing blood and communicating with the lumen of an artery.

Predisposing causes:—atheroma, syphilis, old age, arteritis, alcoholism, male sex.

Exciting causes:—increased blood pressure (which may be due to severe labor, sudden strains, violent exercise, chronic interstitial nephritis); injury to the artery, and embolus.

2. In *paresis*:—"The microscopic changes in the cortex, according to Mendel, as quoted by Folsom, are as follows: 1. Increase of nuclei and new cell-formation are observed, some nuclei small, some large, and with such varying reactions to coloring agents as to suggest dissimilarity of origin. The stellate or "spider" cells are increased in the upper layer of the cortex, where some may be normally found, and extend to lower layers, as is not the case in normal brains; they, too, may be several times the usual size and also push through the white substance to the ependyma of the ventricles. Proliferation of neuroglia or connective tissue, and in time sclerosis of the cortex which involves the medullary substance also in a greater or less degree is common. 2. The larger blood-vessels may or may not be atheromatous; in the capillaries there is an increase of nuclei in the walls, with thickening and hyaloid degeneration. 3. In the nerve-cells, the ganglion-cells, there are granular and fatty degeneration of protoplasm, sclerosis, and atrophy. 4. Atrophy and final disappearance of the nerve-fibers is observed, not limited to the cortex."—(Hughes' *Practice of Medicine.*)

3. "Carcinoma of the uterus is a malignant atypical neoplasm arising from epithelial structures and showing, as a rule, the well marked alveolar arrangement so characteristic of cancer. Since we find two different kinds of epithelia in the uterus we also find carcinomata differing in the types of their cells. The cancers springing from the portio are almost invariably squamous celled carcinomata. The epithelia lining the portio proliferate rapidly, and infiltrate the underlying connective tissue in the form of pegs or columns or pillars of cells. These cells in proliferating vary a good deal in shape, and deviate from the type from which they originally sprang. In the cervix, where

we normally have no squamous, but only cylindrical cells, we likewise find besides columnar celled cancers, squamous epithelial carcinomata. This is probably due not so much to a preceding or coinciding metaplasia of the epithelia, as to a preceding substitution by which the columnar epithelium has been replaced by that of a squamous type. Carcinoma of the corpus consists, as a rule, of epithelia of the columnar type." (Reed's *Gynecology*.) It occurs most frequently in the cervix.

4. A *rhabdomyoma* is a tumor composed of newly formed striped muscle fibers.

Rhabdomyoma. "In these rare tumors striated muscle fibers are the characteristic elements. They very rarely compose a great part of the tumor, but are intermingled with other elements, fibrillar connective tissue, spindle-shaped and spheroidal cells of various forms, which often appear to be incompletely developed muscle cells. They are not infrequently associated with sarcomatous tissue. Blood vessels and sometimes nerves are also present. The muscle fibers differ, as a rule, from normal striated muscle fibers in their arrangement, which is usually quite irregular, and also in size, being in general smaller than normal fibers, although varying greatly. The sarcolemma is either absent or incompletely developed." (Delafield and Prudden's *Pathology*.)

5. *Tuberculous arthritis*. "As a rule, the deposit of tubercle begins at one spot, and only in the later stages is the disease general. In the *synovial membrane* tubercles form, caseate run together, and burst into the joint, so that general infection occurs. In the meantime the synovial membrane has become thickened and the fringes hypertrophied. The synovial membrane is converted into granulation tissue, which spreads over and erodes the cartilage. When the cartilage has been removed by ulceration and necrosis, the disease spreads into the bone and along the periosteum. In the *bone* the disease begins with a deposit, which leads to rarefying osteitis. The tuberculous focus may caseate and form a chronic abscess, or a sequestrum may occur as a result of surrounding sclerosis. It is only when the disease burrows through the articular cartilage that the joint becomes infected." (*Aids to Surgery*.)

6. *Pathology of glaucoma*.—"If there is a rapid rise in tension, the lens is pressed forward, a fact proved by the shallowness of the anterior chamber, and the suspensory ligament is stretched beyond the power of the ciliary muscle to relax it, as is shown in the lessening in the range of accommodation. There are marked circulatory changes in the eye. Pulsation is noticed in the retinal arteries, and the retinal veins are tortuous and swollen from the increased pressure. As the venæ vorticosæ are also squeezed by the intraocular pressure, an excess of blood is discharged through the anterior ciliary veins, which, in consequence, become dilated and tortuous. The cornea becomes cloudy from pressure, and even the acqueous and vitreous participate in this change. From pressure on the ciliary nerves neuralgia is produced, and paralysis of the sphincter pupillæ and anesthesia of the cornea result. By increase in the vitreous the intraocular pressure is raised. The most important diagnostic change is the excavation or cupping of the disc and atrophy of the nerve-fibers. The final result of intraocular tension is active inflammation and swelling of both the internal and external coats of the eye. Naturally, vision is very much reduced."—(Gould and Pyle's *Compend on Eye*.)

7. *Angina pectoris* is a condition characterized by severe paroxysmal pains in the cardiac region, usually extending into the left shoulder and arm, and accompanied by a feeling of constriction of the thorax and with a sense of impending death. *Causes*:—Interference with the nutrition of the heart, such as obstruction of the coronary arteries, atheroma, lesions of the aortic valve, adherent pericardium, excessive enlargement of the heart. It may be associated with diabetes, syphilis, gout, overexertion, great mental excitement. It is sometimes hereditary.

8. *Cardiovascular-renal disease* is a synonym of chronic interstitial nephritis. It is a condition in which there is disease of the cardiovascular system and also of the kidneys. Its most prominent symptoms are:—Increased blood pressure, arteriosclerosis, accentuation of the aortic second sound, and hypertrophy of the heart, especially the left ventricle; dyspnea and palpitation may also be present.

9. From a differential leucocyte count we can learn whether a leucocytosis is physiological or pathological, differentiate the various forms of leucemia, ascertain the presence of eosinophilia, lymphocytosis, and of pus or infections.

Differential Counting.—For satisfactory work a mechanical stage is essential. At least 500 leucocytes should be counted and checked off according to their variety (small mononuclear, large mononuclear, transitional, polynuclear, eosinophile, mast cell). Begin in the lower right-hand corner of the film, and, by turning the thumb-screw, work upward, covering the film carefully, checking off the leucocytes as they appear and are recognized. When the top of the film is reached, move one field to the left and work downward; continue till a sufficient number of corpuscles are counted.

10. *Pulmonary emphysema* is a condition in which the air vesicles of the lung are over-distended. *Causes*:—Prolonged high intraalveolar tension, such as is associated with heavy lifting, chronic bronchitis, playing on wind instruments, glass-blowing, whooping cough.

PHYSICAL DIAGNOSIS.

1. *Floating right kidney* is usually found behind the colon, it can be replaced, there may be no symptoms referable to the kidney, there may be pain which radiates down the ureter, and there may be nausea, chill, vomiting (Dietl's crises) and red blood cells may be found in the urine; the condition is aggravated by the erect posture.

Tumor of the gallbladder is nearer the surface, is continuous with the liver, cannot be replaced into the renal region, moves with the respiratory movements, and is generally accompanied by symptoms associated with liver or gallbladder; posture does influence it.

2. During the first 24 to 36 hours, the following differential points are of value:

	ACUTE PERITONITIS.	ACUTE INTESTINAL OBSTRUCTION.
Rigidity	Uniform and marked.	Not so marked.
Abdominal distention	Gradual	Rapid except in intussusception.
Visible peristalsis	Not present.	Often visible in early hours.
Pulse	Gradual increase in frequency.	Rapid increase in frequency.
Vomiting	Present at first but does not recur until third day.	Incessant from beginning, becoming fecal.
Constipation	Some results from enemata in early hours.	No result except in fecal impaction.

(Eisendrath.)

3. In *mitral regurgitation*, there is a systolic murmur, heard loudest over the apex, and transmitted round to the left axilla and under the left scapula; the murmur is soft and blowing.

In *mitral stenosis*, there is a presystolic murmur, heard loudest over the apex, and not transmitted; the murmur is generally low-pitched, and rough.

4. In *spastic paraplegia* there is loss of power in both legs, rigidity of both legs, and exaggeration of the deep reflexes.

In *tabes dorsalis*, there is no loss of power in the legs, the knee-jerk is absent, and there will be observed the Argyll-Robertson pupil, lightning pains, ataxic gait, and crises.

5. *Kernig's Sign* consists of an inability to extend the leg completely when the patient is in the recumbent position with the thigh flexed at a right angle with the pelvis. It is of value in the diagnosis of meningitis.

6. The *knee-jerk* or *patellar reflex* is produced by striking the tendon of the quadriceps extensor muscle between the patella and its insertion while the patient crosses the leg loosely over the opposite knee or allows it to hang, relaxed, over the forearm of the examiner.

Simultaneous muscular effort on the part of the patient will serve to increase the reflex. The knee-jerk is *increased* in lateral sclerosis, disseminated sclerosis, incomplete lesions of the cord above the lumbar segment, irritability of the spinal cord such as occurs in spinal meningitis, strychnine poisoning, hysteria, etc., and in some cases of organic cerebral disease. It is *diminished or absent* in locomotor ataxia, neuritis, pseudo-muscular hypertrophy, poliomyelitis, myelitis, and in poisoning by spinal depressant drugs. Pronounced physical exhaustion also serves to lessen the tendon reflexes.

7. In the *first stage of lobar pneumonia* there will be found fever, chills, and crepitant rales. In *pulmonary edema* there is no fever, there are moist rales of all sorts, and bronchial breathing is present.

8. In motor aphasia the patient cannot express himself by spoken language. He should be tested as to voluntary speech, power of repeating what is said to him, reading aloud, voluntary writing, writing what is said to him, copying; he should be tested further as to his ability to understand what is said and what is written.

9. *Smallpox and chickenpox*: (1) Very young children are attacked with varicella, whereas variola usually shows itself in adults. (2) Vaccinated children readily take varicella; not so variola, even in the modified form. (3) Children who have had varicella may contract variola, even soon afterward; or the two diseases may co-exist. (4) Varicella is not inoculable, whereas variola is notoriously so. (5) The eruption of varicella appears in twenty-four hours; that of variola not till the third day. (6) The febrile symptoms continue after the eruption appears in varicella; those of variola subside. (7) In varicella the spots come out in successive crops; this is never seen in variola. (8) The spots in varicella are unilocular, and collapse on being punctured; the spots in variola are multilocular, and do not collapse on being punctured. (9) In varicella the eruption is very irregular, and appears over the body generally; in variola it appears in groups of threes and fives, and is always seen on the limbs. (10) The papule in varicella is soft, and disappears on stretching the skin; in variola it is hard and shotty, and does not disappear on stretching the skin.

10.

Erysipelas	Eczema Erythematosum
1. Sudden onset with chill and marked constitutional symptoms.	1. No constitutional symptoms.
2. Eruption sharply marginated.	2. Fades into surrounding skin.
3. Glazed, shining surface; great edema.	3. Dull, scaly surface; slight infiltration.
4. Color violaceous.	4. Color bright or dull red.
5. Burning pain.	5. Itching more marked.
6. Occurrence of discrete vesicles or blebs.	6. Vesicles occur in patches if at all.
7. Progressive peripheral spreading.	7. Spreading irregular.
8. Runs an acute course.	8. Runs a chronic course.
9. Contagious.	9. Not contagious.

In a typical case of *dermatitis from poison ivy*, the hands, face and genitals become the seat of innumerable closely studded vesicles and blebs, accompanied by redness, swelling, and great burning or itching. The eruption may be carried to various parts of the body by autoinoculation. When the face is involved, the eyelids are greatly swollen and the affection may simulate erysipelas in appearance; the absence of high fever and other systemic symptoms will readily exclude the latter disease.—(From Schamberg's *Diseases of the Skin.*)

SURGERY.

1. *Intestinal perforation in typhoid fever*: Sometimes there is severe, sudden pain localized in the abdomen, and sometimes there is little or no pain. Marked tympanites, great weakness, collapse, anxious look, small, rapid pulse, and difficult breathing are present. The legs are apt to be drawn up, and nausea and vomiting may ensue. Hepatic and splenic dulness disappear, and leucocytosis may be present. The treatment is surgical; laparotomy, with suture of the intestine, should be done as soon as possible. In the meantime opium (or preferably morphine) should be administered.

In case of *intestinal hemorrhage*, blood will be passed by the bowel after an hour or two. In *appendicitis*, there is less collapse at the beginning, and the vomiting is more apt to accompany the pain at the beginning of the attack.

2. Tuberculous peritonitis. *Symptoms:* Poor general health, alternate constipation and diarrhea, abdomen is tender, pain is present in abdomen, wasting is marked, loss of appetite, ascites may be present, enlarged lymphatic glands may be present. *Treatment* is by hygiene and good feeding at first. If this fails, simple laparotomy often cures the ascitic variety, sometimes the fibrous, but seldom the ulcerous. It is not necessary to wash out the abdominal cavity, but only to drain away the fluid and stitch up the opening. Laparotomy may also be required to relieve intestinal obstruction, fecal fistula or localized abscesses.

3. *Operation for radical cure of umbilical hernia.* "(1) Incise at first through skin and fascia only; the incision is elliptical, with upper and lower ends in the median line, and widest part opposite the greatest width of the hernia. (2) Carefully deepen the wound on one side until the abdominal aponeurosis (sheath of the recti) is reached, aiming to come down upon it a short distance to the outer side of the hernial neck. (3) Having once reached the rectal aponeurosis, similarly expose this aponeurosis and the neck of the hernial sac all around the outline of the ellipse. All bleeding is controlled by clamp and ligature. (4) The hernial sac is now incised and its contents dealt with as indicated. Adhesions are separated. Excess of omentum is ligated and excised. All remaining contents of the sac are returned to the abdomen—and kept in place by a large, anchored gauze pad—which is removed just before closure of the abdomen. (5) The entire sac, with the umbilicus and the coverings included in the ellipse, is now excised—dividing the peritoneum in an elliptical manner about the neck of the sac. (6) The peritoneum—or the peritoneum and transversalis fascia together—is sutured with interrupted or continuous gut sutures. (7) The borders of the abdominal ring—formed by the sheaths and margins of the recti muscles—are freshened with curved scissors. The edges of the ring are then brought together with interrupted sutures of kangaroo tendon or chromic gut—using either the plain interrupted suture, or the mattress type. (8) The skin and fascia (unless the fascia be thick enough to require separate gut suturing) are sutured with interrupted silkworm-gut sutures. (9) The part is then well supported by an abdominal dressing."—(Bickham's *Operative Surgery.*)

4. "When the three cardinal symptoms of the disease are present—that is, sudden onset of acute abdominal pain, followed by vomiting, occurring in one previously well; unilateral rigidity of the right lower abdominal wall; tenderness over the site of the appendix—the diagnosis of *acute appendicitis* is warranted in nearly every case. . . . *Pyonephrosis* differs from appendicitis in such marked degree that a diagnosis should seldom be difficult. Its onset is gradual, the pain radiates from the loin to the umbilical region, groin and testicle, and retraction of the latter may occur. Palpation of a tender mass which moves with and is continuous with the kidney is the most reliable sign of abscess of the kidney, while irritability of the bladder and the presence of pus and possibly blood in the urine are important confirmatory signs. In every case where a kidney lesion may be suspected a cystoscopic examination with catheterization of the ureters should be undertaken."—(Deaver's *Appendicitis.*)

5. *Malignant tumors of the testicle* are either sarcoma or carcinoma. They are impossible to distinguish clinically, though in the young only sarcoma occurs. A rapidly-growing tumor, retaining the shape of the testis at first, is found, but soon irregular bosses of unequal consistence, and fluctuating in parts, appear. The disease spreads along the cord, and the lumbar glands are early effected in both. The chance of cure by operation is slight. When the skin of the scrotum becomes infil-

trated the inguinal glands also become enlarged. Death usually occurs in a year from the time the tumor is noticed. *Treatment* consists in early castration.

6. *Acute ischiorectal abscess* is due to infection of the fat of the ischio-rectal fossa with pyogenic organisms. It occasionally results from skin infection, but usually spreads from the rectum. The mucous membrane is abraded by a constipated motion, and the *Bacillus coli* then invades the wall and spreads to the fossa. A fish-bone or pin occasionally causes the wound in the rectum. An abscess forms alongside the rectum, and may burst into the rectum, on the surface, or both, a fistula being likely to follow. *Treatment.*—A free incision should be made at once, opening up every part of the abscess, including the communication with the bowel if it can be found. Cellulitis of a gangrenous type may also occur, and must be promptly treated by free incisions and stimulants.

Chronic ischiorectal abscess is met with in phthisical patients. A caseating focus is found in the fossa, which breaks down and discharges by several sinuses, which may be at a distance from the anus. *Treatment* consists of a free incision, scraping out the tuberculous area, and applying pure carbolic acid.—(*Aids to Surgery.*)

7. The phloridzin test for the functional activity of the kidneys. This consists in the hypodermic injection of five milligrams of phloridzin. This substance is transformed into glucose by the secreting cells of healthy kidneys. If these cells are normal glucose should be found in the urine in from 20 to 30 minutes, and should continue to be excreted for three or four hours. Delayed or prolonged elimination of glucose indicates renal insufficiency.

8. FRACTURE OF BASE OF THE SKULL. The *Signs* are those of (1) injury to the brain, (2) escape of cranial contents, (3) injury of cranial nerves. (1) *Injury to the brain* may be of the nature of concussion, compression, or laceration. (2) *Escape of cranial contents*, which may be blood, cerebrospinal fluid, or rarely brain itself. 1. *Hemorrhage* manifests itself in various situations, according to the position of the fracture. In the *anterior fossa* the bleeding may be from the nose or into the orbit, or may pass back into the pharynx, be swallowed, and subsequently vomited. The eye may be pushed forward and pulsate if the cavernous sinus be ruptured. In the *middle fossa* blood usually runs from the ears; but slight bleeding from the ear may be caused by minor injuries, such as rupture of the membrana tympani, tearing of the lining of the auditory canal, and fracture of the tympanic bone. In the *posterior fossa* a hematoma may form behind the mastoid process. 2. The escape of *cerebrospinal fluid* is a certain sign that a fracture communicates with the subdural space. It may appear in the same situations as hemorrhage, but is usually found escaping from the ear owing to fracture of the petrous bone. The fluid is limpid, specific gravity 1005, with no albumin, but containing pyrocatechin, which gives the same reaction as sugar with Fehling's solution. The amount which escapes may be small or very large, but as a rule it soon ceases. (3) *Injuries to the cranial nerves* vary according to the site of fracture. That most commonly involved is the facial, in the aqueductus Fallopii, and the paralysis may come on immediately from rupture, or after two or three weeks from the pressure of callus.

Treatment. The chief aim of treatment is to prevent sepsis. The ear must be mopped out with an antiseptic, and then kept covered with an antiseptic dressing, as if it were a wound. The patient must then be kept quiet, the bowels opened with a purge, and an icebag applied to the head. The diet should be low, and a return to active life not permitted for six weeks. If septic meningitis occurs the patient is bound to die.—(From *Aids to Surgery.*)

9. *Fracture of clavicle at middle third.* The shoulder, and with it the outer fragment, is depressed, rotated forwards, and drawn inwards. The inner fragment retains its normal position, being held by the rhomboid ligament, so that the outer end of the inner fragment is easily felt under the skin, and appears to be drawn up. The patient usually comes in supporting the elbow on the injured side, and with his head bent over to the side of the fracture to relax the muscles. The displacement is due to the weight of the arm pulling down the outer fragment. *Treatment.*—The displacement must be corrected by drawing the shoulder upwards and backwards and maintaining it in that position by Sayre's method, viz., a broad strip of adhesive plaster is stitched loosely around the middle of the arm, so that the arm can be pulled backwards by it. The plaster is then carried round the back, beneath the opposite axilla, and across the front of the chest, and is finally pinned to itself just beyond the loop for the arm. The loop acts as a fulcrum, so that when the elbow is pushed forwards the shoulder and outer fragment are carried backwards. This position is maintained by a broad piece of plaster, with a hole cut in it for the olecranon, which supports the elbow, and is fastened back and front over the opposite shoulder. The apparatus should be worn for three weeks, and a sling for two weeks more.—(*Aids to Surgery.*)

10. In *tuberculosis of the knee-joint* there are: Swelling at sides of and above patella; joint is semiflexed; skin is edematous; there is a doughy feel round patella; foot is everted; muscles of thigh and calf are wasted; pain is variable; tibia displaced outward and backward, is flexed and externally rotated; the limb shortened; abscesses may form.

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†
Alabama*	W. H. Sanders, Montgomery	Montgomery
Arizona*	J. W. Thomas, Phoenix	Phoenix
Arkansas	T. J. Stout, Brinkley	Little Rock....Nov. 13
California	C. B. Pinkham, Sacramento	Sacramento....Jan. 8
Colorado	David A. Strickler, Empire Building, Denver	Denver....Jan. 1
Connecticut*	Chas. A. Tuttle, New Haven	New Haven....Nov. 13
Delaware	J. H. Wilson, Dover	Dover....Dec.
Dist. of Col'a.	E. P. Copeland, Washington	Washington....Jan. 8
Florida*	W. M. Rowlett, Tampa	Jacksonville....Dec. 4
Georgia	C. T. Nolan, Marietta	Atlanta
Idaho*	Charles A. Dettman, Burke	Pocatello....April 2
Illinois	F. C. Dodds, Springfield	Chicago
Indiana	W. T. Gott, Crawfordsville	Indianapolis....Jan. 8
Iowa	G. H. Sumner, Des Moines	Des Moines
Kansas	H. A. Dykes, Lebanon	Topeka....Feb. 12
Kentucky	J. N. McCormack, Bowling Green	Louisville
Louisiana	E. L. Leckert, New Orleans	New Orleans....Dec. 6
Maine	F. W. Searle, Portland	Portland....Nov. 13
Maryland	J. McP. Scott, Hagerstown	Baltimore....Dec. 11
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston....Nov. 13
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Ann Arbor....June 11
Minnesota	T. McDavitt, St. Paul	Minneapolis....Jan. 2
Mississippi	J. D. Gilleylen, Jackson	Jackson
Missouri	G. H. Jones, Jefferson City	St. Louis....Dec. 17
Montana*	Wm. C. Riddell, Helena	Helena
Nebraska	J. J. Hompes, Lincoln	Lincoln....Nov. 14
Nevada	S. L. Lee, Carson City	Carson City....Nov. 5
N. Hampshire	Walter T. Crosby, Manchester	Concord....Dec. 10
New Jersey	A. MacAlister, Trenton	Trenton....June 18
New Mexico	R. K. McClanahan, Santa Fe	Santa Fe
New York	H. H. Horner, Univ. of State of New York, Albany	New York / Albany / Syracuse / Buffalo....Jan. 29
N. Carolina	H. A. Royster, Raleigh	Raleigh....June
N. Dakota	G. M. Williamson, Grand Forks	Grand Forks....Jan. 1
Ohio	, Columbus	Columbus....Dec. 4
Oklahoma	R. V. Smith, Tulsa	Oklahoma City
Oregon	B. E. Miller, Portland	Portland....Jan. 7
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia....Jan.
Rhode Island	B. U. Richards, Pawtucket	Providence....Jan. 3
S. Carolina	H. E. Boozer, Columbia	Columbia
S. Dakota	P. B. Jenkins, Waubay	Pierre....Jan. 8
Tennessee	A. B. DeLoach, Memphis	Memphis / Nashville / Knoxville....June
Texas	M. F. Bettencourt, Mart	Austin
Utah	G. F. Harding, Salt Lake City	Salt Lake City
Vermont	W. Scott Nay, Underhill	Burlington....Feb. 12
Virginia	J. W. Preston, Roanoke	Richmond....Dec. 11
Washington*	C. N. Suttner, Walla Walla	Spokane....Jan. 1
W. Virginia	S. L. Jepson, Charleston	Clarksburg....Nov. 21
Wisconsin	J. M. Dodd, Ashland	Madison....Jan. 14
Wyoming	H. E. McCollum, Laramie	Laramie

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary for all the details regarding the examination in any particular State

Mumps Orchitis Followed by Eunuchoidism.—The old popular fear that mumps in a boy might settle in the testicles and emasculate him is shown to be grounded in fact. In a case reported by Laignel-Levastine and Courbon a young man had a severe case of parotitis with meningeal reaction and double orchitis and developed as sequelæ hypertrophy of the mammæ with atrophy of the penis and testicles.—*La Presse Médicale.*

Miscellany.

Limitation of Biopsy to Frozen Section Methods.—It may be said that the opposition to the use of the exploratory incision for the removal of tissue suspected of malignancy is very real. Many surgeons believe it is never necessary or advisable; others, and they are the majority, believe that in certain situations it is permissible when all other resources of diagnosis (in which should be counted the benefits of consultation) have been exhausted, and even then only (1) when the tumor is a superficial one, or (2) when a frozen section can be obtained immediately and the operation completed under one anesthesia. Under these conditions only can exploratory incision of the tumor tissue be justified.

As a result of the analysis of the replies received a modification of the "Procedure Recommended in the Diagnosis of Early and Suspected Cancer of Different Organs" can be made.

1. Suspected, but doubtful, lesions of the *external skin.* If small, complete excision of the lesion should be performed. If large, excision of a portion of the growing edge of the lesion, followed by cauterization, is to be advised only after all other resources of clinical diagnosis, including consultation, have been employed, and then only when facilities for immediate frozen section diagnosis are available and the operation for cancer, if it prove necessary, can be completed under one anesthesia.

2. Suspected, but doubtful, lesions of the *lip.* If small, V-excision, with a good margin, of the whole lesion, should be performed. If large, excision of a portion of the growing edge of the lesion, followed by cauterization, is to be advised only after all other resources of clinical diagnosis, including consultation, have been employed, and then only when facilities for immediate frozen section diagnosis are available and the operation for cancer, if it prove necessary, can be completed under one anesthesia.

3. Suspected, but doubtful, lesions of the *tongue.* Excision of the whole lesion, if small, should be performed. If large, excision of a portion of the growing edge of the lesion, followed by cauterization, is to be advised only after all other resources of clinical diagnosis, including consultation, have been employed, and then only when facilities for immediate frozen section diagnosis are available and the operation for cancer, if it prove necessary, can be completed under one anesthesia.

4. Suspected, but doubtful, lesions of the *palate,* the *tonsil,* and the *buccal mucous membranes.* If small, excision of the whole lesion should be performed. If large, excision of the margin of the lesion, followed by cauterization, is to be advised only after all other resources of clinical diagnosis, including consultation, have been employed, and then only when facilities for immediate frozen section diagnosis are available and the operation for cancer, if it prove necessary, can be completed under one anesthesia.

5. Suspected, but doubtful, lesions of the *esophagus.* Esophagoscopy and excision of the margin of the lesion may be performed, but the danger of perforation must be borne in mind.

6. Suspected, but doubtful, lesions of the *stomach.* Pylorectomy, gastrectomy or primary gastroenterostomy, to be followed at a later operation, if necessary, by gastrectomy. Here the difference in the severity of the possible operations for benign and for malignant disease is not sufficient to make an exploratory excision into suspected cancer tissue a necessary or advisable preliminary to radical operation.

7. Suspected, but doubtful, lesions of the *small intestine* and *colon.* Excision, with anastomosis. Here the difference in the severity of the possible operations for benign and for malignant disease is not sufficient to make an exploratory incision into suspected cancer tissue a necessary or advisable procedure.

8. Suspected, but doubtful, lesions of the *gall-bladder.* Cholecystectomy. Here the difference in the severity of the possible operations for benign and for malignant disease is not sufficient to make an exploratory incision into suspected cancer tissue a necessary or advisable procedure.

9. Suspected, but doubtful, lesions of the *liver.* If cancer, generally secondary to cancer elsewhere. Exploratory excision, or incision into liver tissue, is rarely necessary or advisable, except to confirm a diagnosis of hopeless malignancy, and thus avoid unnecessary radical operation.

10. Suspected, but doubtful, lesions of the *rectum.* Excision of a portion of the growing edge of the lesion, with cauterization, is to be advised only after all other resources of clinical diagnosis, including consultation, have been employed, and then only when facilities for immediate frozen section diagnosis are available and the operation for cancer, if it prove necessary, can be completed under one anesthesia.

11. Suspected, but doubtful, lesions of the *kidney.* Nephrectomy. Here the difference in the severity of the possible operations for benign and for malignant disease is not sufficient to make an exploratory incision into suspected cancer tissue a necessary or advisable procedure.

12. Suspected, but doubtful, lesions of the *bladder.* Cystoscopy and excision of a portion of the lesion, with cauterization, is to be advised only after all other resources of clinical diagnosis, including consultation, have been employed and then only when facilities for immediate frozen section diagnosis are available and the operation for cancer, if it proves necessary, can be completed under one anesthesia.

13. Suspected, but doubtful, lesion of the prostate. Prostatectomy. Here the difference in the severity of the possible operations for benign and for malignant disease is not sufficient to make an exploratory incision into suspected cancer tissue a necessary or advisable procedure.

14. Suspected, but doubtful, lesions of the *testicle.* Orchidectomy. Here the difference in the severity of the possible operations for benign and for malignant disease is not sufficient to make an exploratory incision into suspected cancer tissue a necessary or advisable procedure.

15. Suspected, but doubtful, lesions of the *cervix of the uterus.* (*a*) Excision of the lesion; (*b*) amputation of the cervix; (*c*) excision of a fragment of tissue, with cauterization. Opinion is not con-

clusive. Some advise hysterectomy on suspicion of malignancy. This is undoubtedly radical, but preserves the patient her best chance of cure. Others prefer the exploratory excision of tissue, or amputation of the cervix, to be followed immediately by the complete operation if frozen section shows cancer.

16. Suspected, but doubtful, lesions of the *fundus of the uterus*. Curettage. Opinion divided. Some advise hysterectomy on suspicion of malignancy. Others advise curettage and immediate frozen section diagnosis.

17. Suspected, but doubtful, lesions of the *ovary*. Oophorectomy. Here the difference in the severity of the possible operations for benign and for malignant disease is not sufficient to make an exploratory incision into suspected cancer tissue a necessary or advisable procedure.

18. Suspected, but doubtful, lesions of the *breast*. Local excision of tumors of the breast suspected of being malignant and submission of the tissue for subsequent pathological report cannot be recommended. If direct incision with frozen section diagnosis is not possible, amputation of the whole breast, with dissection of the axilla, should be performed in suspected cancer in women over thirty-five years of age. This is endorsed by 90 per cent. of the replies.

10. Suspected, but doubtful, lesions of the *lymph nodes* in the *neck*, *axilla* and *groin*, in cases where radical operation is a possibility, even if cancer is found to be present. A block dissection of the area involved, including the adjacent lymph nodes, is to be recommended in preference to the excision of a single suspected node. Where obviously a hopeless case of cancer is shown to be present, removal of a single node may prevent a useless operation and is to be recommended.

20. *Sarcoma* and *obscure tumors* deeply placed. Exploratory removal of tissue for subsequent pathological examination cannot be recommended. Facilities for direct exploration and frozen section diagnosis should be secured in cases where doubts exist after *x*-ray studies and other clinical means of diagnosis are exhausted, before radical operation, such as amputation, is performed.

21. In general, *superficial* and *ulcerated lesions* are the only ones in which fragments of tissue may safely be removed for microscopic diagnosis. In deep tumors, where the exploratory incision necessarily opens up normal tissue to infection, exploratory excision of suspected tissue is to be condemned and should be avoided. Where other resources of diagnosis have been exhausted an exploratory excision, with an immediate frozen section diagnosis, and immediate performance of the radical operation if it prove necessary, is the least dangerous procedure for the patient. *No suspected tissue should be excised for diagnosis, unless by a surgeon who is equipped to perform immediately the radical operation for the cure of cancer of the organ involved* [italics ours].

22. The routine pathological examination of all tumor tissues removed by operation should be made compulsory. To this end, laboratories for the free diagnosis of pathological material should be maintained by the State.—ROBERT B. GREENOUGH, M.D., in *Annals of Surgery*, October, 1917.

Therapeutic Hints.

Scientific Babies.—Herbert B. Wentz states that in his work with children and infants he has tried to carry out the scientific feedings offered by various pediatrists, but his one difficulty has been to find the average baby upon which to demonstrate. After a close study of the young of many species he has found that the desire of the infant is the criterion which governs its early life. So it is with the human baby. No two babies will time their hungry times alike, and no baby will get hungry at like intervals on any two consecutive days. These, he says, are but ordinary observations.

One observation Wentz brings out is that the infants of the animal world do not drink water before they desire it, therefore water should not be forced upon the human infant. He demonstrates this by the training he has given two children, one a girl three and a half years old, who, not having shown a desire for water until she was past six months of age, received nothing but her mother's milk. Likewise, the boy, two years of age, was nearly six months old before he manifested a desire for water, and he, too, during that time subsisted upon his mother's milk. The cutting of their incisors indicated that the alimentary canal was sufficiently developed to digest proteids other than what was contained in their natural food. Upon the cutting of their grinders the starch foods were added, and the appearance of the canines signalized the admission of the full diet. Neither child has had a dose of castor oil or other aid to defecation. They are turned out of doors every day and encouraged to gymnastics. The sleep of these children is sound, and they rise at daybreak.

In the cases where artificial food has been necessary, the food requirements of each particular child has been studied. The digestive habits and alimentary condition of both parents has been ascertained, the Mendelian law making it probable that the chances were even that the child would exhibit in a marked degree its parental proclivities. Excellent results have always been obtained. Weights have been greater than those of the so-called average baby of definite age.

Wentz further states that scientific treatment does not consist in blindly following a textbook outline based on laboratory analyses—the reduction of a multitude of babies to an average baby. An average treatment cannot consistently be successfully applied to the special baby in hand.—*Journal-Lancet*, October, 1917.

Alopecia.—

℞ Tinct. capsici ..... ℥xx
Tinct. cantharidis ..... ʒiss
Glycerini ..... ʒss
Cologne ..... q. s. ad ʒvi
Sig.: Apply thoroughly to the scalp morning and evening.

Myalgia.—

℞ Tinct. iodi.
Tinct. aconiti ..... āā ʒii
Tinct. opii ..... ʒss
Lin. chloroformi ..... q.s. ad ʒiv
M. Sig.: For external use.

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Original Articles.

WHAT THE AMERICAN SOLDIER NOW FIGHTING IN FRANCE SHOULD KNOW ABOUT TUBERCULOSIS.*

By S. ADOLPHUS KNOPF, M.D., (NEW YORK AND PARIS)

NEW YORK.

CAPTAIN, M. R. C., U. S. ARMY; PROFESSOR OF MEDICINE, DEPARTMENT OF PHTHISIOTHERAPY, AT THE POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; SENIOR VISITING PHYSICIAN TO THE HEALTH DEPARTMENT'S RIVERSIDE HOSPITAL-SANATORIUM FOR THE CONSUMPTIVE POOR OF THE CITY OF NEW YORK.

WITH AN INTRODUCTION

By WILLIAM H. WELCH, M.D., LL.D.,

BALTIMORE, MD.

DEAN AND PROFESSOR OF PATHOLOGY AT JOHNS-HOPKINS MEDICAL SCHOOL, BALTIMORE; CHAIRMAN OF THE ADVISORY COMMITTEE ON PUBLIC HEALTH TO THE UNITED STATES GOVERNMENT; PRESIDENT OF THE BOARD OF DIRECTORS OF THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH.

MY DEAR DR. KNOPF:—You have added to your many services in the antituberculosis cause by the preparation of your timely brochure "What the American Soldier Now Fighting in France Should Know About Tuberculosis."

I find this article characterized by the same skill, simplicity, and lucidity in presentation and by the same ability in the selection of essential points which have marked your previous publications in this field.

Particularly interesting is your suggestion that our soldiers possessed of such knowledge as you impart and trained in habits of cleanly, healthy living may be missionaries of health as well as comrades in arms to their French colleagues.

Everything possible must be done to protect our soldiers from the risks of tuberculosis, and I believe that the public may be assured that this will be done. Undoubtedly the education of the individual soldier is an important part of these efforts and your pamphlet is an important contribution to this end. There is every reason to anticipate that our army will be spared the pitiful experience of the French in this matter of tuberculosis.

Very sincerely yours,

WILLIAM H. WELCH.

FOREWORD.

Ever since the publication of Prof. Hermann M. Biggs' remarkable article, "Tuberculosis in France," in *The Survey* of May 5, 1917, I have been the recipient of many letters and personal visits from parents and friends of our boys who have gone to France to fight for the liberty and democracy of the world. I have been asked again and again what can be done for our boys so that they may not contract tuberculosis while fighting in France. In the number of *The Survey* just mentioned, Dr. Biggs made the following authoritative statement: "In the beginning of this year it was estimated that about 150,000 French soldiers had been returned to their homes with active tuberculous disease and that more are constantly being discharged for this cause." Besides these 150,000, Dr. Biggs conservatively estimated that there would be altogether, including the civilian population, not far from 500,000 cases of tuberculosis in France to be dealt with, if the war were to terminate at once. This was in January, 1917.

That such statements as these should cause serious anxiety to parents whose sons are now in France, or are about to leave for that country, is easily understood. Yet these parents, as well as their brave boys, should know that the danger of the latter becoming tuberculous is not nearly as great as one might think from the figures quoted.

There was a time in our own country when the frequency of tuberculosis and the deathrate therefrom were as high as it is now said to be in France. It was knowledge of the origin of the disease on the one hand and the methods of cure of the disease on the other which have resulted in a remarkable decrease of tuberculosis throughout the United States. Popular antituberculosis education under the leadership of Dr. Biggs, and the sanatorium movement under the guidance and inspiration of the late Dr. Trudeau, have made the United States rank next to England, the country which has the lowest tuberculosis morbidity and mortality of any of the great countries of the world.

To summarize in as concise and practical a way as possible the ordinary precautions and measures which have helped in the fight against tuberculosis in the United States, as they may be applicable to the lives of our boys in the fields and trenches in France, is the object of this little essay. It is the author's hope that thereby not only may the anxiety of American fathers, mothers, and wives be allayed but that by the example given to their brave French comrades in the methods of living even in trenches, dug-outs, tents, or barracks, or when billeted in the homes of French civilians, our own soldiers may be effective not only in fighting for liberty and democracy, but also in fighting that other great enemy of mankind, known as consumption. Let our American soldiers in the field and also our French brethren in arms know as much as possible about tuberculosis, its causes and prevention, and they will be able to fight this insidious and

*Read before the general session of the American Public Health Association, at its forty-fifth annual meeting in Washington, October 19, 1917. and published by authority of the Surgeon General of the U. S. Army.

invisible enemy as victoriously as they are fighting the visible powers which brought upon the world this indescribable catastrophe.

To make this little essay as practical as possible,

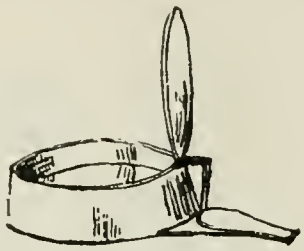

Fig. 1.—Metal floor cuspidor with large opening. Should be partly filled with wet sawdust. Cover worked by the foot.

I will arrange the subject matter in the form of questions and answers.

What is tuberculosis, particularly the most common type known as pulmonary tuberculosis, or consumption? It is the most prevalent of all diseases and is chronic, infectious, communicable, preventable, and curable. All these terms are self-explanatory, except perhaps the word communicable, which the author prefers to the word "contagious." To illustrate the difference between the words "communicable" and "contagious," let us take the two diseases smallpox and consumption, as examples. Smallpox is a highly contagious disease, the word contagious coming from the Latin *contingere*, to touch. No matter how clean or conscientious the smallpox patient may be, no matter how well conducted the smallpox hospital, it is most dangerous to touch the smallpox patient and it is most unsafe to visit a smallpox hospital unless you have been vaccinated and revaccinated recently. On the other hand, the honest and conscientious tuberculous patient, who takes care of his expectoration in the manner which will be described later on, can be associated with and touched without any danger of contracting the disease. The sanitorium or tuberculosis hospital, where all precautions concerning the proper disposal of infectious spittle or expectoration are religiously observed and the patients taught to be conscientious, is the safest place not to contract consumption.

What is the direct cause of tuberculosis? The direct cause of tuberculosis, or consumption, is always the bacillus of tuberculosis, which is a microscopic organism found in the affected parts of the body. Pulmonary tuberculosis, or tuberculosis of the lung, is the type of tuberculosis most frequently found and the type with which those brave French soldiers are now so frequently afflicted; but all other organs of the body (bones, intestines, etc.) can become affected by tuberculosis.

Fig. 2.—The same as shown in Fig. 1, when closed.

Tuberculous disease is locally characterized by countless tubercles, that is to say, small rounded bodies, visible to the naked eye. The bacilli, lodged in these tubercles of which they cause the formation, are parasites belonging to the lowest scale of vegetable life and must be considered as the specific cause of all tuberculous diseases. This parasite, so small that it can only be seen with the aid of a powerful microscope, not only gradually destroys the lung substance through ulcerative processes,

Fig. 3.—Nickelplated oval pocket flask manageable with one hand. Funnel removable.

but at the same time gives off certain poisonous substances called toxins which cause various, and often serious, symptoms. In the secretions or expectorations coming from an affected lung, millions of bacilli can often be found.

What are the early symptoms of pulmonary tuberculosis which can be recognized by the layman? The important earlier symptoms of pulmonary tuberculosis are long-continued cough with or without expectoration, or hoarseness, loss of flesh, flushes or pallor in the face, feverish sensation in the afternoon, occasional night sweats, chilly sensation in the morning, loss of appetite, sometimes a little streak of blood in the expectoration, loss of strength manifesting itself in easy tiring, frequent colds, a perceptible quickening of the heartbeats after slight exertion, a little change in disposition, such as an increased irritability or a feeling of depression.

What are the methods whereby tuberculosis is communicated from one human being to another,

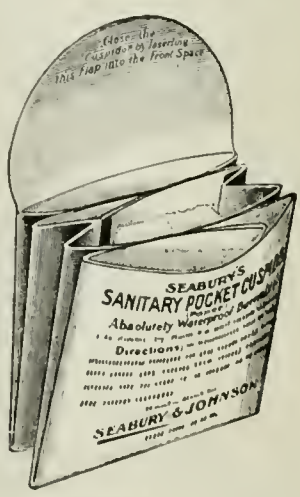

Fig. 4.—Pasteboard sputum purse.

or from animal to man? The three methods by which the germ may enter the human system are by inhalation, ingestion, or inoculation. The tuberculous sputum, when dried and pulverized and mingled with the dust of the air, may be inhaled.

Tuberculous meat or milk taken as food is prone to produce tuberculosis, particularly in children. Inoculation may take place when an open wound or abrasion of the skin comes in contact with tuberculous substance.

Fig. 5.—Pasteboard sputum purse (small size).

How can these methods be prevented or the germs destroyed? The main method of contracting tuberculosis is by inhalation. Whoever coughs and expectorates, whether it be in the trenches, dug-outs, barracks, armories, or other confined places should endeavor not to deposit the sputum where it has a chance to dry up, unless it be where exposure to direct sunlight will render it harmless. When one coughs, let him always hold his hand before his mouth. He will thereby avoid inhalation infection and also spray or droplet infection if he should happen to be afflicted with tuberculosis, influenza, or even an ordinary cold. By droplet infection is understood that manner of conveying the disease by the spray of small particles (droplets) of infectious saliva during the so-called dry cough or even sneezing, and in some individuals during excited speaking.

Of course, it is out of the question to speak of the use of spittoons placed on the floor (Figs. 1 and 2), pocket spittoons (Figs. 3, 4, and 5), or even pieces of cloth to be used for expectoration in the trenches, dug-outs, or similar places, but when in ordinary places of human habitation, barracks, tents, armories, or houses of civilians, even if one expectorates only because of a simple cold or influenza, measles, or whooping cough, he should never do so on the floor or anywhere but in some kind of receptacle where he is sure that the contents cannot dry and become pulverized.

Whenever a receptacle is used it should be covered so that flies cannot have access to it and thus carry the germs of the disease on to food or whatever they may alight on. Spittle should be either poured into the water-closet or rendered harmless by some antiseptic fluid (5 per cent. carbolic acid solution); pieces of cloth used to receive sputum should be burned and paper spitcups with their contents should be disposed of in the same way, for it must be remembered that even the germs of ordinary colds may prove quite serious, particularly when inhaled by one whose general health has been undermined by fatigue, privation of sleep, want of food, etc. These precautions with the expectoration should be especially adhered to when the soldiers after leaving the trenches temporarily or permanently, are billetted in peasants' houses in villages or citizens' homes in towns or cities.

Against the danger of tuberculous food in the form of infected milk or meat, sterilizing or boiling the milk and thoroughly cooking or broiling the meat suffice for all practical purposes. To protect oneself against getting tuberculous inoculation from any skin wound or scratch, it is best to let the wound bleed freely so as to wash away any infectious substances and then use a clean piece of cheesecloth or muslin, steeped in hot water or alcohol, and tie up the wound until surgical aid can be obtained.

What protects the healthy individual against contracting tuberculosis? It should be known to all those who fear to contract tuberculosis because they have been in contact with a tuberculous patient and believe they have inhaled some bacilli, that a healthy individual need not fear to become tuberculous unless he is constantly exposed to the inhalation of the germs. In health, when the human system is in good condition, it is provided with many means of defense against the accidental inhalation of bacilli. First of all, there is the mucous membrane of the nose, the secretions of which have what is known as bactericidal, that is to say, germ-killing properties. The upper air passages are lined with very fine hair-like bodies, known as cilia, which, by an upward waving motion, prevent foreign bodies such as dust particles and germs from entering the deeper respiratory tract. Lastly, in the blood itself, the white blood corpuscles are active in destroying the bacteria. Similar powers are also ascribed to the secretions of the stomach. Besides these four sources of defense, there exist probably in most of us in our circulatory system what is known as antibodies, which likewise counteract the invasion of tuberculosis germs. Thus, anyone possessing average good health need not be afraid of becoming tuberculous even though he may from time to time come in contact with a patient who is not overcareful.

In order for tuberculosis to be contracted from the occasional inhalation of tuberculosis germs or

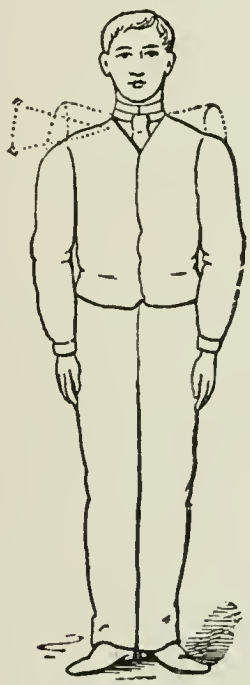

Fig. 6.—Breathing exercise with rolling of shoulders.

even the ingestion of tuberculous food, there must exist the conditions in which the tuberculosis germs can grow; in other words, the subject must be predisposed either by heredity or acquisition. This predisposition may be accounted for by the subject

never having possessed or having lost the power of natural resistance to the germs. When an individual has never been robust and has never possessed the power of natural resistance to tuberculosis, he has probably inherited this predisposition.

What constitutes an hereditary predisposition to tuberculosis? A tuberculous parent, particularly a tuberculous mother, when she has been actively ill with the disease during the time of pregnancy, may transmit to the child such a weakened system that it becomes a ready prey to tuberculosis. If the mother is careless she is sure to infect the child after birth, and because of this early after-birth or post-natal infection tuberculosis is often considered hereditary.

However, for the comfort of those who may have a tuberculous parent let me say here that by reason of the good care bestowed upon him, many such a child has grown up strong and well, and if he has not had tuberculosis by the time he has reached military age, and the disease has not been discovered by the recruiting surgeon, he may safely consider himself free from danger of developing tuberculosis if he leads what might be simply called a normal God-fearing life.

Aside from this hereditary condition, there are, of course, many ways in which a predisposition or loss of natural resistance, producing the ready soil for the growth of the tubercle bacillus, may be acquired.

How is the predisposition to tuberculosis acquired? First of all, there are certain diseases which often leave the system in a weakened condition; among them are measles, whooping cough, typhus and typhoid fever, grippe, chronic bronchitis, pleurisy, pneumonia, also all venereal diseases. Privation, want of food, lack of air and sunlight, insufficient clothing, and the prolonged inhalation of irritating substances, as well as over-fatigue and lack of sleep, may also render the system susceptible to tuberculosis. One of the greatest predisposing causes of tuberculosis is the excessive use and abuse of alcoholic drink. When the alcoholic contracts tuberculosis, the outlook for a cure is most unfavorable. Patients recovering from the above mentioned diseases should be particularly careful to avoid prolonged contact with tuberculous individuals.

What can the soldier in the field do to prevent becoming predisposed to tuberculosis? Since one of the greatest predisposing causes to tuberculosis is alcohol, it is, of course, best for the soldier to abstain etirely from the use of liquor and strong alcoholic drinks. As far as possible he should eat regularly, keep his body clean, and rest when he can so as to avoid over-fatigue. He should keep his bowels in good condition and drink plenty of good, pure water. He should also try to clean his teeth after meals whenever this is feasible. When his garments have become wet from rain or snow, he should not lie down and sleep in them if this can possibly be avoided; and he should be equally careful not to lie down on the moist ground without sufficient protection. But, of course, on the firing line and in trenches and dug-outs these precautions cannot often be carried out and one must do the best he can.

If the air in the dug-outs and trenches seems to be vitiated, that is to say, foul and lacking oxygen, whenever circumstances will permit it the soldier should go where the air is pure and take some deep breathing exercises. The simplest one of all is to inhale deeply, raising the shoulders during the act of inhalation, moving them backward and remaining in that position, retaining the air for about 5 or 6 seconds, then exhale a trifle more quickly by moving the shoulders forward and downward. The accompanying illustration (Fig. 6) will help to explain this exercise. Repeat this exercise 6 to 8 times, and, if convenient, repeat it after half an hour or hour.

If the dug-outs and trenches can be ventilated to admit fresh air, this should by all means be done. In tents and barracks and all other sleeping quarters, the soldier should of course make it his business to see that these habitations are always well ventilated. Fresh air by day and by night is the best preventive as well as curative agent against tuberculosis.

What should the soldier do so as not to spread tuberculosis?—The first symptoms of tuberculosis have been described above. With these he should make himself familiar, and if he coughs and expectorates he should gather a specimen of his sputum and take it to the doctor for examination. Until he has seen the doctor he should use all the precautions possible, that is to say, spit in a piece of cloth or in a receptacle which he should empty into the trench latrine, water-closet, or drain. During the cough he should hold the hand before the mouth and should never swallow his expectoration.

If the soldier perceives any of the symptoms described, he need not think at once that he has tuberculosis, but it is his duty as a soldier to report his condition immediately to the surgeon in charge of his company. He will then be carefully examined and proper care taken of him. If the ailment is not tuberculosis, the examination willl demonstrate it; if it is tuberculosis, the early diagnosis and timely treatment will save the individual's life, for let it be known right here that of all the chronic diseases human flesh is heir to none offers so favorable a chance for cure as does pulmonary tuberculosis if discovered early.

Should the American soldier in France greatly fear contracting tuberculosis after what has been said of the frequency of the disease among French soldiers and the French civilian population?—First of all, let us consider that even before the war the deathrate from tuberculosis in France was twice as high as, for example, in New York City; that is to say, while in France three out of every thousand population were due to tuberculosis, in New York there were only one and a half per thousand. Brave and beautiful France had to mobilize a great army and had to do it quickly. The thorough physical examination, so essential for the discovery of tuberculosis, could not be made, and thus many a young man strongly predisposed had to enter the army in defense of his country. While military life even in trenches and dug-outs may be conducive to the increase of strength and vigor in the normal and healthy individual, the stress and strain of the soldier's life in war time, long marches, life in trenches and dug-outs, and the actual work on the firing line, will develop an active tuberculosis in the strongly predisposed, or in those already afflicted

with incipient tuberculosis, often at an alarmingly rapid rate.

This must be the explanation for the great frequency of tuberculosis among the fighting soldiers in France. Although popular education against tuberculosis had been carried on some time before the war, it was not nearly so intensive and far reaching as in the United States. Thus, for example, in the United States we had 30 organizations doing antituberculosis work in 1905. We have now 1,400 different antituberculosis associations and committees. Dr. Biggs tells us: "At the beginning of the war there were in the whole of France only 1,000 sanatorium beds for tuberculosis and these were in private institutions. There were no provisions for the care of advanced cases excepting as they were received in the general wards of the general hospitals." In the United States we have at this time 530 special tuberculosis sanatoria and hospitals with 35,000 beds. Aside from this, we have 450 clinics and dispensaries for the treatment of cases which do not require or are waiting for institutional care. Of open air schools, which are little known in France, we have nearly 1,000. Thus there is in France a great scarcity of sanatorium and hospital accommodations for the tuberculous in the various stages of the disease, with only a small number of tuberculosis clinics available for the treatment of early ambulatory cases.

Aside from the lack of preventive and curative institutions we must mention another factor responsible for the seriousness of the tuberculosis situation at this time in France. With all our love for the French people, and particularly for our French brethren in arms, we must admit that as a whole they are not taught from their childhood the love of fresh air and the use of cold water as invigorating agents as is the average American boy or girl. This is the fault of their tradition, and their prejudice against the use of cold water and fresh and cold air by day and by night must be overcome in order to reduce the frequency of tuberculosis among the French people. Of course, the hardship this war has imposed upon the French civilian population, the deportation of many of them and the sufferings they had to endure during their enforced absence from home, is largely responsible for the fearful increase of tuberculosis among these people.

All the sad conditions which predispose the individual to tuberculosis either by heredity or custom, and those which are acquired by privation, want, lack of food and air, physical and mental suffering, have combined to increase the number of tuberculous individuals throughout France. Fortunately for the American soldier, his early training in the love of fresh air and the use of cold water on his body have made him naturally more resistant to the disease, and to the honor of our military surgeons it must be said that the examinations at the recruiting offices are most thorough so as to weed out those who are strongly predisposed to tuberculosis or already afflicted with the disease in the incipient stage. The examination is repeated after a few months training so as to make sure that no tuberculous invalid is in active service. Yet, the possibility that some of our soldiers may develop tuberculosis must be admitted; but even should this occur, if the American boy now serving under arms in France will remember his obligation to his comrades, to himself, to his country, and to his allies and profit by these few words of advice, he will not be in great danger of the disease and will be well taken care of if he should get it. There are, as already stated, a large number of institutions which will take care of him on his return home. Many public and private sanatoria throughout the United States have offered to take care of any of the American soldiers who may be returned from France as tuberculous invalids. Do not be discouraged even if you should get a tuberculous infection. The disease is nearly always curable in the early stages.

What can the American soldier, now in France, do to help in the fight against tuberculosis?—I have already stated in my short preface that this essay is written not only to protect our American boys, but also in the hope that by example and teaching they may help to combat this disease of the masses among their French comrades as well as among the citizens with whom they may come in contact.*

Most French people and not a few Americans still fear the night air and are too much afraid of drafts as being most dangerous and the cause of catching colds. First of all, the practice of sleeping with the window open at night in winter and summer should be taught by example and by word of mouth or by printed instructions. But this must be done with great tact so as not to offend. These good people should be made to realize that night air is as good as day air and even purer, for as a rule there is less traffic, less commotion, and less dust in the air at night. Drafts are only dangerous to the individual when he has perspired and the pores of his skin are open; at all other times drafts are beneficial since air currents and winds tend to purify the atmosphere. Colds are never contracted from drafts, but are due to infection just as much as tuberculosis, for all grippes and colds are due to certain specific organisms. The germ of the former is known under the name of Pfeiffer bacillus and the latter by the name of bacillus of catarrh.

It is in the closed and badly ventilated room that the ordinary germs of colds, influenza, measles, whooping cough, and sometimes even the germs of pneumonia are spread by persons coughing into the air. We have already alluded to the precautions every individual should take during the act of coughing, no matter whether he thinks he is ill or not. Ordinary colds, grippe, measles, bronchitis, pleurisy, and pneumonia are often the forerunners of tuberculosis, and we should do all we can to prevent them by hygienic methods; we will thus reduce the frequency of tuberculous disease.

To clean the dust from furniture with the feather duster is still a favorite practice in French and in many American homes. It is in reality one of the most unhygienic ways of cleaning. It does not clean but simply causes the dust to settle in another place, and the people who dust as well as the people who live in rooms cleaned by this method are subject to inhaling the dust which in many instances is not free from disease producing germs. The same conditions result from dry sweeping of rooms or corridors. Cleaning furniture with a moist

*A French translation will be available for distribution to their French comrades.

or slightly oily cloth is far more hygienic and more effective, and scattering moistened bits of torn newspaper or sawdust before sweeping prevents the dust rising.

To avoid the possibility of becoming infected or of infecting others you should never kiss any one, especially not a child, on the mouth. The French custom of kissing on the cheek is far more hygienic. Do not swap eating or drinking utensils, and see that they are always thoroughly clean before use.

Any one who has never used a cold water bath and is fearful of not reacting, that is to say, of not getting warm again after its use, can easily become accustomed to this health-giving measure by beginning to take his cold water applications in the morning in the following way: Stand in a tub containing moderately hot water a few inches in depth and have within easy reach a washbasin full of cold water in which a large sponge has been placed. Squeeze out the sponge full of cold water rapidly over the back, holding it at the neck, then in front over the throat, and over each shoulder in such a way that the whole body receives an ablution of cold water. Dry yourself quickly, not necessarily very thoroughly, and return for a few minutes to the bed, which had been covered after leaving it so as to retain the warmth. Reaction is thus absolutely assured. By this method any individual can train himself to the use of a cold ablution, shower bath, douche, or cold plunge.

In most parts of France there is even a prejudice against drinking water. Now it should be distinctly understood that next to fresh air there is perhaps no greater factor in keeping a man well and strong than a plentiful ingestion of pure water. A moderate quantity (about a glassful) with meals and two glasses between meal times is most conducive to good health.

If the American soldier should come in contact with any comrade or man or woman of the civilian population in whom he should recognize as a result of the study of this brochure the symptoms of a tuberculous disease, let him urge his friend to see a physician and institute such precautions as are necessary to avoid the possible conveyance of the disease to others.

In most American communities, every case of tuberculosis is reported to the health department, whence the physician, if he so desires, can obtain literature which will enlighten the patient and his friends as to the best methods of prevention and cure. In the United States there is usually a large corps of trained nurses attached to the health departments for the purpose of visiting the tuberculous poor, teaching them practical hygiene and seeing that the physician's directions for food and medicine can be and are carried out. If the people are too poor to obtain good and nutritious food, special tuberculosis committees attached to charity organization societies help to obtain it.

What are the agencies now at work to help the French soldier who may have contracted tuberculosis? The Rockefeller Foundation has sent a tuberculosis commission to France composed of expert diagnosticians, sanitarians, and trained nurses under the leadership of Prof. Livingston Farrand, formerly the executive secretary of the National Association for the Study and Prevention of Tuberculosis, and Dr. James Alexander Miller, director of the tuberculosis service of Bellevue Hospital, New York City. In cooperation with the American Red Cross and the French authorities they will foster an educational campaign and establish tuberculosis dispensaries, preventoria, sanatoria, special hospitals, and agricultural colonies. In the sanatoria and hospitals the unfortunate French soldiers who have contracted tuberculosis may be taken care of. In these institutions they will not only have an opportunity to recover but will learn by practical demonstration what to do and what not to do to prevent reinfecting themselves or infecting others, and the surest and best way to regain their health and strength and become fit to enter the ranks again. On returning home they will be useful citizens and will teach others by their example what to do so as not to contract and spread tuberculosis.

What may we hope for regarding the tuberculosis problem in all civilized countries after the successful issue of this war of democracy against autocracy? Since tuberculosis is as much a social disease as it is a medical disease, the prospect of combating the social causes will be brighter when militarism and autocracy will have disappeared from civilized countries. The countries which are now the enemies of the Allies will also become democratized and there will be a united Europe as there is now a united America. Social justice for all will then be the maxim and there can be devoted to the betterment of the social conditions of all peoples the countless billions of dollars that now are spent for maintaining fighting armies because one country would not consent to disarmament, but wished to dominate the world by brute force and uphold the maxim that might makes right. Medical science will then once more be able to devote all its energy to the prevention of diseases. All other branches of science, now utilized in the practice of war, will likewise be consecrated to the betterment and advancement of human happiness, comfort, health, and the enjoyment of life, and with these blessings attained the disease which has justly been called the great white plague, one of the geatest enemies of mankind, will disappear. Thus in the end the sacrifices of life, property, and treasures beyond price made by millions of brave men, women, and even children, will surely lead to a higher civilization where lasting peace on earth and good will toward all men will reign supreme.

16 West Ninety-fifth Street.

CLOUDY ENGLISH AND CHOLECYSTOSTOMY

By Douglas H. Stewart, M.D.

New York.

Professor Henry Johnson once said that for years he had been teaching his students that the cloudiest English often arises from what should be its highest sources. Cholecystostomy is a time-honored operation, the value of which is at present belittled. Yet debate itself is caused by the use of inexact English, as that is exemplified by those who should be authoritative writers but are not expressing accurate thought in clear diction. Should this connection between cloudy language and doubtful esteem for the operation not have been noted, any reader may easily convince himself that the two are cognate. Let him but take any modern

work upon operative surgery, let him read aloud a sentence or two stating that a tube of large caliber and also a prolonged drainage should be employed, let him select for his audience any gathering of his medical friends and let him ask them if the portion of the book that is read is not perfectly clear. A unanimous affirmative would be the expected answer. But let him ask what is a large caliber and how long is prolonged drainage; then it becomes apparent that gall-bladder surgery is in its infancy, that the audience is reasoning as an infant would reason and that the language of the selected sentences, so far from being a light on the subject, proves to be kin to that darkness to which Moses called Pharaoh's attention. That any member of such an audience as the one referred to has ever really measured the caliber of the tubes that he may have employed in performing cholecystostomy or has carefully worked out by actual trial the different effects that may result from the use of different sizes of those tubes, is hardly to be expected in view of the trouble involved in the process.

Admitting that the well-known figures running from 8 to 32 represent a guessing leeway of two dozen numbers to indicate the French scale for tubes or the usual number of days of drainage-duration; yet any one or several of them may be selected by haphazard opinions that are founded upon a basis of "no information." The ultimate conclusions would be such that drawing lots might nearer hit the truth. This little essay is a plea for light because in ancient times, when the cloud abode, then stood the people still for a day, a month, a year, or a longer time. The profession was standing still, is now going backward, and is preparing to condemn a valuable expedient, because the performance of an operation too often means that a second or a third operation is its sequel. That this is due to an obscure thought-conveyance by the use of the indefinite terms "large" and "prolonged" needs nothing more than mention for its defense.

A great stumbling-block is the lack of practice. In fact, who in all the world can sit down at any leisure hour and place a few tubes in a gall-bladder; or who can study that placement carefully or can thoroughly test the joints that he has made? Yet an unlimited means of experiment is within reach of anyone who will expend a few cents to obtain a small urinary bladder with its urethra. The butchers and the slaughter houses have an abundant supply of pigs' bladders, a small straw or blowpipe in the urethra serves for inflation and an ordinary ligature closes the urethra and maintains that inflation. Thorough trials of different stitches and of all sorts of details may then be made at one's leisure. In such trials it is readily discovered that to make a tight joint with a number 6 or number 7 catheter is almost impossible. Surface and elasticity are both deficient. If such a joint is tight it has been made so by a tension of ligature that would cause necrosis of living tissue.

In spite of this fact certain surgeons consider the words "large caliber" as synonymous with sizes six to nine, number ten being termed "very large." Three non-medical opinions are:

1. "A tube for drainage may be capillary or several yards in diameter. Large caliber means from 48 to 60 inches."

2. "We would consider that 'large caliber' in surgical drainage tubes might mean one-half inch or more in diameter; but we would be unwilling to fill an order that merely specified 'large caliber.'"

3. "In view of the enormous pressures developed by the explosion of gases a caliber of 1-10 of an inch would be 'large.'"

A tube must be compressible in order that a tightening ligature may meet elastic counter-pressure against the tissues. The happy medium is not sufficient pressure to produce necrosis and enough tight embrace to prevent leakage. Size No. 32 has many good points for purposes of study. For clinical use a larger size is an advantage, a smaller one is a disadvantage. Red rubber is rather better than black, though either may be used. The walls of the black variety of tube are a little too soft which makes short stitching easy and essential. Also this tube collapses under both pressure and bending. Perhaps as good a plan as any is to describe tubing according to internal diameter and to state that ¼ inch is the smallest size that should be employed, that ⅜ inch is ideal, and that ½ inch may be used in a thin adult where the work is fairly accessible. Through the ½ inch tube a catheter may be introduced for purposes of either medication or cleansing and remaining stones pass readily through such a size. Therefore it is probably true that the stone that was not found, and could not be found at the time of operation, remained permanently because it was securely shut up by the use of a tube, the lumen of which was less than a quarter-inch in diameter.

In practising stitches all sorts of methods may be tried until a single most valuable way is selected. The writer suggests making the gall-bladder climb the tube rather than crowding the tube into the gall-bladder. The steps suggested are: (1) Introduction of tube; (2) Purse-string of tube and orifice, with two or three superficial needle sticks into the rubber to keep the tube from slipping; (3) A Gould mattress stitch that shall clear the tube by at least one-quarter of an inch everywhere, on all four sides. Pulling this tight covers the previous stitch perfectly; (4) A purse-string that enters the outer wall of the tube at one or two points; but without penetration to lumen. This stitch when fastened makes the tube secure, gives an air-tight or water-tight joint; a Bartlett pear with its stem would make a schematic representation of the result, to obtain which the gall-bladder need not be attached to the abdominal wall. The usual catch drain of gauze may be fastened to the tube with a couple of turns of catgut.

When a small tube, of less than ¼-inch lumen-diameter, is used the wound may appear fairly well at first but the leakage of an irritant, like bile, will cause a runaway (a square unhealed place two or more inches on a side) around the tube. On the contrary a large tube and a tight joint allow the tissues to retain all their hugging powers, unaffected, changes of dressings are small trouble to the surgeon, and his nurses are not utterly worn out with many replacements of sheets and bedding.

The absence of odor is also a favorable point. If, however, any one should be wedded to the use of a tube that is ⅛ in. or less in diameter he can make it answer by putting a larger tube over, in sword and sheath style. But why bother with it?

Prolonged drainage has a duration that is in direct proportion to consideration for the patient's interest. The longer the better. Tubes fastened with No. 1 catgut are fairly apt to come out about the ninth day. Those fastened with silk at about the thirtieth day. Much depends on the mode and the size of the bites that have been used in the fastening. Sometimes a tube will remain indefinitely, or until removed. If it is explained to a patient, who has already had an operation or two, that the longer the tube drains the less the chance for a return; then if he is allowed to go home with instructions as to personal care for himself, there will be difficulty in persuading that patient to part with his tube.

The ordinary square bottle of the shops is in no way comparable to the French diamond-shaped one for an ambulant patient. It pokes into him, slips around among the bandages and usually has too small a mouth for a drainage receptacle. It is all angles, whereas the diamond shape may be stuck fast to skin or bandage and will lie flat.

The gauze catch drain is removed on the fourth day and the hole left behind it is packed with Bipp, after which it will need no further attention, save reasonable cleanliness. Or it will do fairly well if cleansed with H_2O_2 and then filled with powdered boric acid. The treatment of the gallstone-patient and of his postoperative wound is important; but may well be left for future consideration.

The summary of the matter under consideration is that "large" and "small" are terms that are absurd unless they are precisely defined by measurements.

Unless a tight joint and a large unchokable tube prevail, the wound will run away from the tube.

Large caliber means from one-quarter to one-half inch, internal measurement.

Prolonged drainage means that a tube is left in place until it falls out. This makes "return" rare even when gallstones are overlooked. A small tube or one 3/16 inch or less in lumen-diameter; or a short time drainage (8 days) make such return fairly sure.

A scale of drainage-duration from 1 week to permanency and based on suture material would be formed about in this order: Catgut, tanned catgut, Pagenstecher linen, linen, silk, and silver wire.

128 West Eighty-sixth Street.

PREMATURE OLD AGE.

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Some men grow old at fifty or even forty—women less often. The key to many obscure clinical phenomena will be found by reading them in the light of fluctuating stages of development, maturity and decline. Growth and survival values are influenced, often disastrously, by faulty behavior aggravating morbific agencies, but are capable of much amendment. Premature senility is a condition of gravest significance, but too often escapes attention or right interpretation.

The oncoming of old age is marked by a series of changes which follow in more or less regular order. Variations of course occur due to diversities in original make-up, to circumstances, and above all to manner of life. Occasionally adverse circumstances and unfavorable surroundings become so pressing as to bring about signs and insignia of ageing long before the ordinary time. It is particularly important that these should be recognized at the earliest possible moment, since many of them evidence degenerative changes which can be largely checked and repaired; valuable lives are thereby lengthened and restored to usefulness.

Among the structural origins of presenility to which attention is being critically directed by scientific physicians, research workers, and also by the great life insurance organizations, are conditions of the heart, blood vessels, and kidneys. Disorders in this cardiovascular-renal cycle are those which form the weak spots where final giving way occurs in the course of most diseases; what is known as the "terminal phenomena." The causes are receiving such thorough attention that we may soon hope to learn how to limit them satisfactorily.

Among sources recognized as forceful are variations and alterations in the tone of the blood-vessels, notably in the brain whereby areas of that organ exhibit changed actions. A popular impression prevails widely to the effect that we in America are peculiarly liable to premature breakdown that we frequently show the phenomena of presenility. This is not proven although it is well established that we, as a group, subject ourselves more recklessly and prodigally to mental strains, responsibilities and anxieties, than is customary in older countries.

It is more than probable we are becoming adjusted to these hurtful conditions, are learning how to minimize their effects, and will come in time to an equilibrium, a state of stability. Assuredly we may congratulate ourselves on excelling in prodigal energizing. Newspapers deserve the credit of fostering admiration and emulation for men who are "hustlers," "live wires," "human dynamos." If one fails to attain similar qualities, or rather habits, one might as well "fade away," "go be a farmer" or otherwise self-abnegate.

In consequence of this fashion of prodigal energizing, the outcome of intensive, even grandiose affirmations, a multitude of mountebanks of super-energizing arise, becoming exemplars, "the glass of fashion and the mould of form." Often enough they hasten their own elimination by early acquiring conditions of presenility, then "go smash" and "evaporate from the map." Unfortunately too many of our young men imitate these misguided ones and suffer a like fate.

Now let it be clearly understood that the mere process of working hard, intensively, absorbingly, unremittingly, does not *per se* bring about destructive changes. The foundations of presenility, or other phenomena of breaking down under strains are laid by forming erroneous habits or methods of work and of so called "recreation." Unpardonable sins are committed in the name of sensible

gratification, even though the means be no worse than those which can be legitimately included under the term amusement, recreation, or even relaxation.*

Conditions of fierce, frantic competition, breeding as they do envy, hatred, and malice; inviting to indiscretions in act, in amusements, in food, in drink, irregularity in hours of sleep, inadequate forms and kinds of rest and of exercise, form the foundations of and supply favorable conditions for presenility. Hence it comes to pass that when these unfortunates reach early middle age they show the earmarks of overcombustion, disintegration, cellular decline.

Another factor in this retrograde process is frantic efforts to keep up the pace by using diverse misleading remedies for "nerve tire," headaches, disorders of digestion or of sleep, then acquire sundry perverted appetites and false cravings. Hence we may be often dealing (clinically) with "dope habits" as well as with real evidences of early decline.

Here is a sketch of the common psychic indicators of "physiological senility," the insignia of normal old age changes which appear and along with them certain others, in those who consume their tallow dips at both ends of the wick and otherwise abuse their constitutions: The reproductive powers wane; the emotions no longer act or react normally; capabilities of attention fixing and holding, and of memory fail; desire and capacity to carry on sustained effort both mentally and physically diminish; so are initiation, imagination, confidence, and enthusiasm all lowered; so does adaptability to change, to shift the point of view or of attack subside; also command of speech, *i.e.* of marshalling effective phrases and arguments, grows less.

These changes correspond to the normal ebbing of powers shown in the "period of slowest decline," old age. When, however, they begin to appear before fifty they are good evidence that presenility is setting in.

In addition to these phenomena there are many significant ones only to be detected by exact methods employed by experts such as blood and blood-vessel changes, evidences of disorders in the ductless or blood glands. These last may be the only ones to appear except such vague manifestations of the former group as are in themselves not convincing.

In true senescence, normal decline, the outstanding phenomena have to do with degeneration of the ductless gland. Since these glands regulate the effects of self-poisoning, when they fail of their integrity, autointoxication progresses almost unhindered.

A close connection exists between the adrenals and the thyroids in the genesis of old age, in the form of functional interrelationships. The function of the adrenals is to sustain oxidation and metabolism, the fundamental processes of life. In the aged the adrenals become shrunken and correspondingly deficient in function as the oxidizing agent of the hemoglobin.

The asthenia of senescence and also of senility thus finds a normal explanation in the defective supply of adrenal secretion. In the young, atrophy of these glands may produce similar conditions. "It is quite probable," says Sajous, "that centenarians owe their prolonged longevity mainly to integrity of the adrenals." Lorand says: "All hygienic errors, be they of diet or any kind of excess, will bring about their own punishment and premature old age, or a shortened life, will be the result. In fact it is mainly our fault if we become senile at 60 or 70, and die before 90 or 100."

In ordinary men of good physique and self-control, under emotional strain there may be lost equipoise, they may become irascible, impatient under trifling provocation, also introspective, unable to put aside worries; they exhibit abnormal fatiguability of the mind; "brain fag," are indisposed to mental exertion, avoid the effort of exact reasoning. Associations of ideas exhibit weakening; short cuts are made to conclusions; impatience is shown in trying to follow out new channels of thought. Speech becomes colloquial, fewer and simpler words are used; falling back upon the dialectic peculiarities of childhood, or the "patois"; the whole vocabulary narrows. The sufferer grows indisposed to exertion of any kind or when made it is spasmodically or frantically. After unavailing efforts to achieve, disappointment becomes acute and is often pathetic, followed soon by indifference.

While conscious of failing powers the untimely aged may seem strangely resigned or absurdly incensed at the successes of others. Impairment of memory is an early and significant symptom, along with periods of apathy and dullness.

Certain forms of fierce sudden headaches resembling migraine occur in some clear-headed men after unusual or only moderate strain. These give evidence of over-irritability of the brain vessels to the products of fatigue. As has been said, this whole subject of disturbance and susceptibility of the circulatory mechanism is one of especial significance in connection with untimely ageing.

Among the symptoms noted in the presenile are attacks of giddiness coming on with slight changes in posture, as in stooping down or suddenly turning round, or on closing the eyes. On laying the head on a pillow, a sense is felt as of blood flowing swiftly from the front to the back of the head. Also sudden fatigue and drowsiness coming on the latter part of the day, and subsequently at any time, followed by sudden "clearing of the head," and flights of ideas, mild excitements, waking in the early hours, suddenly and completely, with a cloud of dismal forebodings. All the worries of the previous day seem crowding to the foreground; this is also a phenomenon of vascular degeneration and is common in presenile states.

The senescent individual also becomes hypersensitive to the effects of narcotics, to stimulants, or however one chooses to classify tobacco, alcohol, tea, coffee, etc. These, acting as they do largely on the caliber of the blood-vessels, cause a powerful push to the blood and an overflooding of the hypersensitive brain areas. Hence these effects are not so much evil in themselves as inducing states of uncertainty out of all proportion to the amounts or substances taken. Indeed, great caution should then be exercised in the use of drugs, there being some special susceptibilities difficult to learn.

In a maturing person, otherwise of good poise, who exhibits the following states, presenility may

*A young roysterer was warned by a solicitous aunt that he was thus "shortening his days." He replied: "But you have no idea how I lengthen out my nights."

be shrewdly suspected: Atrophic and flabby condition of skin, fluctuations of blood pressure, often too high for age, accompanied by general evidences of arterial rigidity or hardening, small and sluggishly reacting pupils, also traces of arcus senilis. At that stage it is entirely possible to contribute materially to recovery and add not only to length of days but to efficiency and happiness. A balanced ration is of paramount significance.

The chief means for salvation is to impress the need for circumspection upon the subject. The late Prof. Jackson of the University of Pennsylvania, said about himself at the age of 90: "When I broke down in middle age I came to realize I was a four-minute horse trying to do a two-forty gait. Just so soon as I settled down to a five-minute gait I was able to work satisfactorily till the present."

The whole story is one of working within one's capacities as to speed and sustained effort and these may and do alter with age but more with the effects of exhausting agencies which one must be wise enough either to learn for one self or to employ competent experts to teach one. Then obey directions implicitly and consistently.

1504 Pine Street.

EMERGENCY HEAD SURGERY.*

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Let us suppose that a physician is called to see an individual who has been hit on the head, or who has sustained a serious fall. Perhaps the patient is not rendered unconscious, but is able to walk to his home or to resume his work; yet a few hours later he becomes drowsy and goes into an unconscious state. Perhaps he becomes unconscious immediately upon receiving the injury and shows no tendency to come out of this condition, but rather sinks deeper into a state of coma. Perhaps unconsciousness is only transitory, the patient regaining full consciousness a few minutes after the injury. Perhaps there may be only a slight laceration of the scalp, with or without evidences of brain damage. What will the physician do under these various circumstances? Will he be content with making a purely superficial examination, and leave instructions that he will see the patient the next day; or will he assume the attitude that any injury, however slight it may appear, may have caused serious damage to the underlying brain, and is therefore worthy of the closest scrutiny and study before he is willing to pronounce the condition trivial?

It is difficult to imagine any type of injury which demands more careful observation and clearer surgical judgment. *A correct diagnosis is all important.* The physician must be well informed on the subject of the pathology of increased intracranial pressure. He must inquire most carefully into the character of the accident in each particular case. His examination should consist of frequent observations of the pulse, the respiration, the blood pressure, the reflexes; if possible, the eye grounds, etc. He may even wish to make a spinal puncture and examine the cerebrospinal fluid for blood. If an *x*-ray apparatus is accessible, this examination may assist him in arriving at a definite conclusion.

When the physician arrives at his diagnosis, the next thing is to determine what should be the nature of the treatment. In discussing this phase of the subject, I will endeavor to give the results obtained by some of the best workers in the field of cranial surgery.

The important question to decide in all such head injuries is whether the underlying brain has undergone damage or not; and if so, what line of treatment is best for the individual case under observation. We still hear a good deal about so-called "concussion of the brain." Unfortunately a great many cases in which the brain has undergone definite lesions, are diagnosed as "concussion." Adami, though admitting that in so-called "concussion of the brain" the nature of the lesion is obscure, claims that in some cases minute hemorrhages are noted. According to him, it is probable that the injury in such cases leads to a rupture of the finer capillaries, solution of the continuity of certain nerve paths, and degenerative changes in the fibers and ganglia. It is generally admitted today that the term "concussion of the brain" is to be used only when a definite organic lesion is not found to be present, thus making the condition a purely functional one. To make such a differentiation, the most painstaking and continuous observation of the patient is required. When the brain is undergoing intracranial pressure the physical signs are practically the same, whether the pressure is due to the accumulation of blood from a ruptured middle meningeal artery or to the edema which follows disturbances of the brain tissues themselves.

The vasomotor, the cardioinhibitory, and the respiratory centers are all situated in the floor of the fourth ventricle, and are affected by the anemia which results from severe compression of the brain mass. As soon as the cerebral pressure exceeds the blood pressure, the vasomotor center is stimulated and the blood pressure is raised above the cerebral pressure; the center thus receives fresh blood and again relaxes and the pulse curve falls below the compression curve. Again an anemia is produced and the vasomotor center stimulated; the blood pressure again goes up, and so on. The respiratory center, instead of being stimulated during anemia, is depressed. This causes the well-recognized slowing of respiration which occurs as cerebral pressure is increased. The cardioinhibitory or vagus center is also stimulated by the progressive anemia, giving rise to a slow pulse.

Thus we have in the study of the pulse, the respiration, and the blood pressure most valuable guides toward a correct diagnosis.

Not infrequently following the accident, the signs of shock (which is usually present) overshadow or even prevent the signs of increased intracranial pressure. If the patient survives this acute condition of shock, then the pulse rate gradually descends, the blood pressure rises, and the deep deflexes, often obliterated immediately after the accident, return. These changes in the reflexes are most interesting. Not infrequently when the patient emerges from the condition of shock to enter the so-called "pressure stage," the abdominal reflexes will appear depressed or absent on the side opposite the cerebral lesion.

*Read before the Georgia State Medical Association, April, 1917.

It is most important in all such cases to make careful examination of the eye grounds. It is rarely possible to observe the early stages of choked disc within six hours after the injury. If the shock is slight and the intracranial hemorrhage a fairly rapid one, blurring of the nasal sides of the optic discs may occur. As the intracranial pressure increases, the veins of the retina become engorged, and eventually choked discs will be noticed.

In doubtful cases it may be wise to do a lumbar puncture and obtain enough spinal fluid to examine microscopically for blood. Some information may be gained by noting the pressure of the cerebrospinal fluid when the puncture is done. If there has been severe brain laceration at the time of the injury usually red blood cells will appear in the cerebrospinal fluid. The absence of blood, however, does not necessarily mean that the brain is not undergoing severe pressure, for it is easy to understand how an epidural hemorrhage from a ruptured middle meningeal artery could take place without blood escaping into the cerebrospinal fluid. It must be kept in mind, also, that a spinal puncture is not entirely without danger. Should the pressure in the spinal canal be reduced too rapidly, it is quite possible that the pressure in the brain may cause the medulla to herniate down into the foramen magnum, thus causing a severe disturbance of the vital centers situated in the floor of the fourth ventricle. The result is immediate death. This valuable aid to a diagnosis, however, should not be overlooked, and should certainly be resorted to whenever one is in doubt.

X-ray examinations are of little importance in the treatment or diagnosis of fractures of the skull. In depressed fractures they may be of some help; but in basal fractures and even in linear fractures of the vault, not only is it rare for the line of fracture to be revealed by the *x*-ray, but the treatment is the same whether a fracture is evident or not.

Severe head injuries usually fall into one of the three following classes: (1) those cases in which there is generalized contusion of the brain and its envelopes, with or without fracture; (2) circumscribed depressed fractures, with or without localized injury of the brain or meninges; (3) a combination of the above two types; namely, those cases in which the character of the fracture and its mode of production are exaggerations of the depressed type, although the effects upon the contents of the cranium are of the first type.

Besley, in his analysis of 1,000 cases of fractures of the skull at Cook County Hospital, gives a report of seventy-four cases examined at necropsy. He was convinced that fractures of the base are not produced by a bursting force, but are due to a direct force applied through the articulation of the condyles and atlas. The thinness of the skull in the region of the middle fossa accounts for the frequent fractures at this site. In other words Besley feels justified in the assumption that in a large majority of fractures of the base, the bursting force is not a factor; but that the true mechanism is the counterforce at the condyles producing a fracture by imbending, or that basal fracture is the direct extension of the fracture at the vault. In his opinion fracture of the base is much more frequently associated with fractures of the vault than is commonly supposed. He found them associated in 72.9 per cent. of his cases. Brün, in an analysis of four hundred and seventy cases, found them associated in 70 to 75 per cent.

There is little need for a discussion of simple depressed fracture cases. Here we have as a rule a localized depression, with or without laceration of the overlying structure. The symptoms vary according to the location involved. Frequently there are no symptoms other than those of the localized trauma, especially when the underlying brain is one of the so-called "silent areas." Occasionally, however, one will have symptoms according to involvement by pressure on one or more of the active cortical centers. This was illustrated in one of my own cases where a depressed fracture over the left temporal region caused an aphasia which cleared up immediately after the bone had been raised. I have been in the habit of treating these simple depressed fractures by cutting down on the depressed bone and elevating it, at the same time examining the underlying structures to see if possible whether or not there was any injury to the brain. I do not think that this treatment is necessary in all cases, for one not infrequently sees patients who at one time or another had a depressed fracture and who never developed any untoward symptoms whatsoever, although no operation had been done.

It is the treatment of those cases in which we have definite evidences of an increasing intracranial pressure, that gives rise to many conflicting opinions.

There are some who still follow the teachings of the late Dr. Fenger concerning the management of skull injuries. According to his method, any patient who had been injured sufficiently to be rendered unconscious, was put to bed with an ice pack on his head and kept there for six weeks, regardless of his symptoms. This so-called "palliative treatment" of head injury is still followed by a great many surgeons.

At the Cook County Hospital of Chicago during 1912, there were 130 cases of skull fracture, 72 being recognized as involving the vault and 58 involving the base. A decompression was done only in those cases which showed a depressed fracture. In all cases of fracture of the base of the skull, the so-called "expectant treatment" (as outlined by the late Dr. Fenger) was carried out, except where a depressed fracture involving the vault co-existed with a basal fracture. The mortality on the expectant plan for basal fracture during this year is shown to be 56.9 per cent. Elsberg reports a series of 60 cases of fracture of the skull treated according to the so-called "expectant method." The mortality in this series was 60 per cent. Compared with this might be his series of 22 patients who were operated upon, either a unilateral or bilateral subtemporal decompression being performed. Of this series the mortality was only 22.7 per cent. Cushing's mortality according to the "expectant method" was 60 per cent. while in his series in which decompression was practised, his mortality was not over 13 per cent. In three of the large hospitals of New York, between the years 1900 and 1910, the mortality of all cases of brain injury was from 46 to 68 per cent. In the 1,000 consecutive cases of

fracture of the skull at the Cook County Hospital of Chicago the mortality was 53 per cent. The so-called "expectant treatment" was practiced in practically all these cases.

Thus it is seen that the mortality of brain injuries in adults is very high when these patients are simply put to bed and not treated with operative measures. This high mortality is due chiefly to the fact that the patients are allowed to reach the dangerous stage of medullary compression which is the result of extreme intracranial pressure. There is no question but that oft-repeated and careful examinations should enable one to anticipate this dangerous stage.

There is no one who will contend that a case diagnosed as ruptured middle meningeal artery should not be operated upon. Is it logical that one should be so energetic in relieving the brain of that pressure which is caused by the accumulation of a blood clot, and yet utterly overlook the necessity of relieving the brain of severe pressure caused by hemorrhage within the brain tissue itself or by the edema which is sure to follow the brain injury? Personally, in the final analysis, I fail to find the distinction. The ruptured middle meningeal artery gives rise to pressure which perhaps comes on more rapidly. Nevertheless the edematous, swollen brain may cause just as much damage to nerve fibers and important centers.

An early operation in such cases is advisable, not only as a means of saving the life of the patient but also of lessening the danger of the post-traumatic conditions so commonly the result of fractures of the skull. These neuroses, such as marked depression, irritability, persistent headache, and even epilepsy, are due in the majority of cases to the resulting unrelieved intracranial pressure, often prolonged over a period of several weeks or more. Dudley Allen of Cleveland, several years ago published a paper in which he analyzed a large number of cases of skull injury without penetration of the dura. Most of the patients eventually found their way to an asylum—most of them had subdural irritation. Sharp of New York was able to trace, several years after they had been discharged from the hospital as cured, 34 per cent. of the patients, who had had fractures of the skull and had been treated expectantly. Of these 34 per cent. 67 per cent. were still suffering from the effects of the trauma; that is, they did not enjoy the same good health they had previous to the injury. The most common complaints were headache; fatigue on slight exertion; vertigo; a lessened emotional control usually of the depressed type; irritability; inability to keep employment; and listless lack of interest in things. Many of these individuals were called "good for nothing," "bums," "happy go lucky," etc. Epileptiform attacks were of not infrequent occurrence. I believe the supposition is justifiable that the majority of these late sequelæ were due to the damage to important nerve structures, brought about by the edema from which the brain suffered during the so-called "compression period." Therefore, if by doing well-timed decompressive operations we accomplish nothing more than the prevention of these distressing late symptoms, such operations would certainly be justifiable. But in addition to this, statistics show us that more is accomplished, for operative interference in the hands of experts has brought the mortality from 50 to 60 per cent. down to 13 to 23 per cent.

I do not wish to be misunderstood as advocating operative procedure in all head injuries. If oft-repeated examinations give no evidences of greatly increased intracranial pressure, operation can be safely delayed. However, if symptoms due to pressure from blood or from edema of the brain tissue appear, then the brain should be given room by means of a decompression operation. It is poor surgical judgment to operate on patients having brain injuries, no matter how extreme, if a condition of severe shock is present. If the pulse is above 120 it is advisable to avoid even all examinations not absolutely necessary, and to depend for the time being on the routine palliative treatment. Very often during this period of shock one is unable to elicit any of the signs or symptoms of increasing intracranial pressure. Any operative procedure for the relief of increased pressure should be undertaken while the pulse is descending (at 60 or below), for once it has reached the lowest level of medullary compression the danger of medullary edema is great. If this occurs, the pulse rate begins to rise rapidly; and it is doubtful that a patient ever recovers, whether operated on or not, once the pulse rate has descended to its lowest level and then begun to rise rapidly.

Conservatism, above all, is indicated in fractures of the skull, and one should have definite signs and symptoms of increased intracranial pressure before surgical interference is instituted. If, however, these signs and symptoms are present, one should not hesitate to give the brain room by means of a well-timed and well-placed decompressive operation. No surgeon would allow a plaster cast to remain on a leg where the swelling is so great that there is danger of grangrene. Why then should he allow the brain to be subjected to an analogous pressure? Conservatism, therefore, in my opinion, means careful study and well-timed operative procedures; and *not* superficial, careless observation and the salving of one's conscience with the statement: "Oh, well, he will either die or get well anyway, so put him to bed and we will see what will happen."

Conclusions: 1. In all head injuries most careful and oft-repeated examinations should be made in order to arrive at a correct diagnosis.

2. Concussion of the brain is a purely functional condition and should never be diagnosed when repeated examinations give evidence of organic intracranial disturbance.

3. We have in the study of the pulse, the respiration, and the blood pressure most valuable guides toward a correct diagnosis.

4. Engorged retinal veins and eventual choked disc indicate increased intracranial pressure.

5. When in doubt a lumbar puncture should be done, although the danger of a possible herniation of the medulla down into the foramen magnum should be remembered.

6. The *x*-ray is of little value except in certain depressed fractures.

7. In patients giving evidence of increased intracranial pressure the mortality is very high (50 to 60 per cent.) when the so-called expectant treatment is employed.

8. A large percentage of patients who recover without operation, after having suffered from an unrelieved increased intracranial pressure, become victims of neuroses, such as marked depression, irritability, persistent headaches, epilepsy, etc.

9. Well-timed and well-placed decompressive operations in those cases giving evidence of increased intracranial pressure will lower the mortality from 50 to 60 per cent. down to 13 to 23 per cent.

10. There is reason to believe that such decompressive operations will also prevent to a large extent the distressing late sequelæ.

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PROTEIN DISORDERS AND CONVULSIONS.*

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Maudsley once said: "A person does not inherit insanity, but a tendency or predisposition to it; and secondly the tendency is inherited from the stock and not from any particular development of it in the parentage. It is easy to understand that it is not in special outcomes, but in a foundation of a family nature, that we search for the foundation of insanity." Might this not be applied to epilepsy or the "convulsive diathesis," and every case of convulsions be looked upon as a biological problem, and thus bring its study into not only the knowing of what an individual is born with, but also what has happened after birth?

The object of this preliminary report, therefore, is to bring to your attention a group of disorders which have for years past received little direct investigation. Much stress, heretofore, has been laid upon heredity, and as a result the attention has ended there. Undoubtedly, many cases of convulsions do develop upon an inherited tendency, but the actual attack or seizure is very much different from that which one expects to find in true idiopathic epilepsy.

The relation of convulsions to anaphylaxis might be a matter of conjecture, but investigations tend to show that anaphylactic reactions based upon either protein, fat, or carbohydrate cleavage-products do oftentimes result in convulsive seizures which undoubtedly lead to a state which either resembles or is a true epilepsy. It therefore seems proper to discuss the physiological phenomena which may occur in a so-called pre-epileptic state, as noted in a small series of cases observed by the writer.

There are many points and phases of tissue metabolism due to either native or foreign protein products. The writer will attempt briefly to demonstrate a possible interrelation between the action of these toxic cleavage products of protein metabolism and the vegetative nervous system and its allied endocrine group of ductless glands.

In experimental work upon protein poisons, Vaughan used bacteria of various types for his material. In short, bacteria are nucleoproteins or glyconucleoproteins, very complex in their structural make-up, containing a poisonous radicle which is poisonous to the body cell only during its breaking-down process. This parenteral digestion is influenced in rate or progress by the amount of native ferment present, the physical condition, and the presence of fermentative products. The cells of the body at the same time react to these products by developing another ferment, so that interfunctioning is constantly going on, producing either disease or immunity. This immunity is a sensitization, which sensitization is usually a protein.

These proteins, whether native or foreign, soon distribute themselves through the tissues. Let us turn for a moment to Rosenow's idea of elective localization of bacteria in disease of the nervous system. This investigator has shown that bacteria will retain for a long time their peculiar properties which determine their characteristic localization. He has produced experimental endocarditis with the *Streptococcus viridans*, portal thrombosis by use of the diplococcus, and arthritis by using strains of streptococci.

In 1916, he showed that bacteria obtained from teeth sockets and tonsillar crypts, when cultivated, and injected into animals, would produce myositis, neuritis, meningeal and cord-substance disorders. Given these bacteria in the human body (resting probably, or, better, one may call them "bacterial rests," somewhat similar to the resting of the *Spirocheta pallida* of long-standing syphilis), there undoubtedly is a bacterial and tissue metabolism which has its resultant effect upon the human body in throwing off split protein products which give specific tissue reactions.

This constant introduction of split products is followed by the production of antibodies, which are demonstrated in the phenomenon anaphylaxis. The signs of this disorder are many, both local and general. Rashes, edema of the face and ankles, neuralgic pains, joint pains, headaches, local or general edema of the meninges and brain, or both. The severity of the reaction depends upon the amount of protein split products thrown off, the individual characteristics, and so forth. Grysez and Dupuich have observed extensive edema of the meninges and the brain evincing symptoms of pressure and pseudotumor.

May not these symptomatic phenomena of anaphylaxis be due to autonomic irritation, and when occurring in certain types of individuals thus produce more serious disorders? It is a fact that these cases show further signs of a vegetative nervous disorder, as the writer will attempt to demonstrate.

Gay and Southard, as well as Vaughan, have studied the mechanism of anaphylaxis in animals, and describe the same somewhat as follows: "Within a few hours the stage of peripheral irritation occurs, characterized by a sudden appearance of an urticarial or erythematous rash. The lips and tongue become swollen. Oftentimes the back of the hands. The individual becomes apprehensive. Says he cannot breathe, and falls into a state of collapse. In extreme instances there is retching and vomiting." This can plainly be seen not to be a disturbance of the central nervous system, but rather an irritation of the autonomic nervous system, producing a selective vasomotor paralysis. That this is a peripheral autonomic irritation is further proved by the immediate response to atropine.

Coincident with this peripheral vasomotor paraly-

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sis there is a fall in blood pressure, and yet little change in the pulse rate, but with a more or less general flush or peripheral vessel dilatation. This then easily explains the central nervous system symptoms, such as anemia of the brain, disturbances in respiration, retching, expulsion of urine and feces, great depression, muscular weakness, tonicity, and even convulsions.

How clearly this compares to the condition of "vagotonia" of Eppinger and Hess. These writers describe a vagotonic disposition, and then a clinical entity which may develop upon such a disposition. These individuals have periodic flushings, profuse salivation, gastric and intestinal disorders, mucous colitis, sluggish intestinal peristalsis, bladder disorders, sweatings, etc., conditions which heretofore have been grouped under the heading of neurasthenic symptoms. Here, too, atropine soon clears the symptoms, thus indicating an autonomic irritation, and yet many of these cases will not recover completely until a foreign protein of some form or other is introduced, either by mouth or hypodermatically.

It is not within the scope of this report to refer to the theory of ionization, as it would require much more speculation than has even now been offered for your approval. But it might be stated, before going on with my case reports, that undoubtedly in convulsive disorders there is a bacterial or tissue protein particle or molecule which causes disharmony in the oxidation and reduction processes of the tissues. This may be viewed in the reverse by considering the older methods of treatment in epilepsy, especially in Europe, by adding to their sodium, potassium, or strontium salts which are electropositive, a weak base such as sodium biborate, which is an electronegative salt. Theoretically, this increases the alkalinity of the blood. How often one observes cases of epilepsy in which will develop an acute infectious disease with a high and continuous temperature, during which illness the convulsions will cease and the patient appear quite well? Here, again, fever increases the alkalinity of the blood, and there is a change in the oxidase-reductase radicle. The actual relationship between vagotonia and fever is speculative at this moment, but Stefani and his collaborators regard the vagus nerve as playing the most important part in heat regulation. Meyer and Auer and Lewis not only regard bacterial poisonings as autonomic depressants, but also believe that the reduction of the body proteins by enzymes can cause the same result with temperature increase.

Thus one can see that within the confines of biochemistry there is a broad stretch of dense forest in which one can meddle in the construction of a paper upon this subject of convulsions.

Case 1.—E. S., age 7 years and 2 months at the time of examination in August, 1916.

Family history: Mother, age 30, an extremely nervous and emotional woman who is said to have had an attack of "hysteria." Father, age 35, a temperate storekeeper who has a gastric neurosis and psoriasis. Maternal grandmother, age 60, has had convulsions dating back to the time of her last childbirth, 23 years ago. Maternal grandfather suffers from "hay-fever." Two maternal aunts, both well. One maternal uncle has attacks of "acute indigestion." Paternal grandmother died at 55 years, of pulmonary tuberculosis; she was a "faith healer." Paternal grandfather died at 82 years of age from "senile psychosis"—he had a chronic skin affection all his life. One paternal aunt has a "chronic skin disease."

Personal history: The patient is the oldest of a family of two, the second child, a girl of five years, who is a "bed wetter." The mother was quite well during gestation; the child was full term, labor was sixteen hours in length and somewhat dry as the bag of waters broke in the early hours of labor. Child weighed 10 pounds; perfectly well so far as could be seen. He was breast fed. He had no convulsions or spasms in infancy. Teeth came through without difficulty. He began to walk at one year and talk at 1½ years. He had no sickness of any kind during the first two years. There were no night terrors, he never walked or talked in his sleep, never fell out of bed; there was no blood noted on his pillow in the morning. He ceased to wet the bed at five years of age. He began school at four years of age, has done well and is now in the third grade. Two years ago, in the spring, he was out of school eight weeks with acute tonsilitis, grippe, and rheumatism—his larger joints were swollen and he was a "very sick" boy. He had no convulsions during this illness. His recovery was uneventful, he went back to school and remained well until his present trouble.

Present condition: The first week in June, 1916, began with night terrors; he would yell and screech, sitting up in bed waving his arms, but would answer when spoken to. Family and attending physician thought he had worms, received treatment accordingly. On July 11 he had two attacks of temporary loss of consciousness while watching a parade. In these attacks he would become limp, raise his arms, and stagger. At this time they began to increase, ranging from four to six a day. His nights became quieter. The condition was considered to be indigestion. Treatment was of no avail. The spells gradually increased in number up to twelve a day, at which time he was called an "epileptic" and bromide treatment was commenced. He was brought to Providence and referred by Dr. Nat Gifford to the writer.

To summarize: A neuropathic family with a decided tendency toward autonomic irritability, gastric neuroses, skin disorders, tuberculosis, and late development of convulsions following childbirth. The patient, a well child until the onset of an acute infectious disease, having had no previous epileptic or epileptoid manifestations, suddenly develops a convulsive seizure. The seizures increase from twelve to one hundred and fifty a day so that on Labor Day he had 94 in eight hours.

With this history and a few days observation, during which time it was noted that milk and eggs invariably increased the number of attacks within two hours after ingestion, the writer was led to seek a cause in a disturbance of metabolism. The attacks were sudden, no aura—he simply became lax and then developed the tonic state, rolling his eyes upward, but did not grind his teeth or bite his tongue. Examination of the blood and urine gave negative findings. Fecal examination revealed very large quantities of mucus. The appearance of this mucus in such large quantities suggested "mucous colitis," probably related to vagotonia, an intestinal neurosis with an abnormal secretory activity. At this same time he demonstrated other signs of autonomic irritability—there were excessive nocturnal sweatings, slow pulse, the secretion of large quantities of saliva, and a great increase in urinary output.

The day following Labor Day he had over 100 attacks in twelve hours, and at the same time his face, neck, and scalp became puffy so that by evening his eyes were closed, his lips and tongue were enlarged, and the edema extended down onto the shoulders and chest. This edema showed pitting on pressure. He was more or less dazed during this period. There was also a feeling that the scalp was raised from the aponeurosis for there was a sensation of fluid under the scalp.

This appearance naturally called for lumbar puncture at which tap 60 c.c. of clear fluid under pressure was obtained. The examination of the fluid for cells, bacteria, albumin, globulin, complement deviation, and colloidal precipitation test proved negative in every respect. Lumbar punctures twice daily for the next four days brought the condition back to normal. The af-

fection was regarded as an extensive edema of the meninges with oozing through the emissary channels under the scalp and a disturbance of the circulation of the face and head resembling the condition of anaphylaxis of the skin.

Having thus tentively concluded (1) upon the introduction of an infection, and (2) upon the irritability of the autonomic nervous system as indicated by his mucous colitis, sweatings, salivation, polyuria, etc., it seemed proper to infer that there must be an altered susceptibility of his body cells to proteins. Therefore two lines of treatment were followed, one directed toward the vegetative nervous system and the other toward tissue sensitization. Atropine sulphate 1/300 grain was given every day for eight days. Foreign protein in the form of tuberculin, 30/100ths of a 1/300 Mg. to a c.c. was given every day for fifteen days. September 28, 1916, he had his last spell and continued perfectly well, gaining in weight and color until four weeks ago (May 1, 1917), when he began again with seizures, having had as many as six in twenty-four hours. Protein sensitization is now being given for the second time.

Case II.—R. W., school boy, age 14 (examination February, 1913).

Family history was negative except for the fact that the father of the child was a relative of the family in which Huntington's chorea is so manifest.

Personal history: He is an only child. Birth was normal, no instruments. Bottle fed. He began to walk at eighteen months and talk at two years. At two years of age he had what was called "meningitis," with residuals in the form of muscular weakness and slow physical development. He had chorea at seven years of age, pleurisy and pneumonia at ten years of age, and frequent attacks of tonsilitis. Following each acute infection he appeared more "nervous," but at no time did he have any convulsions or epileptoid manifestations.

Present condition: At the age of eleven years he had a fainting spell while out automobile riding, falling out of the machine and injuring himself. No further attacks occurred until he was fourteen years of age. He began his adolescent period at the age of 13½ years. In January, 1913, he complained of numbness in his legs, pain around the ankles, black spots before the eyes, dizzy spells, headaches, a sensation of wheels going around in his head, and a sick, exhausted, and weak feeling. Finally actual loss of consciousness in the form of petit-mal attacks would begin to occur several times a day.

It is evident that in this case one was dealing with an adolescent boy who was developing seizures epileptoid in type. This led the examiner to feel that the difficulty bore a direct relation to glandular changes and their products upon the nervous system. Forced feeding of thyroid and pancreatin alone cleared the young man of his attacks in two months and for the last four years he has been perfectly free.

The third and last case report is quite different from the two just cited, and is recorded not because of the presence of convulsive seizures, but because the patient has unconscious attacks, periodical in type, and lasting from a few hours to several days.

Case III.—I. W., age 24, a pupil nurse, American. Family history: One can safely say there is no evidence of nervous or mental disease for at least two generations back.

Personal history: The patient was born outside of Boston, seventh in a family of nine. All she can remember is that she had "inflammation of the bowels" when a small child and ptomaine poisoning at the age of fourteen years. Her menstrual periods began at the age of fourteen years, always regular, moderate in flow, whole period lasting five days. Up until she entered puberty she had no headaches, but since then she has had frequent severe headaches, bearing no relation to her periods.

Present condition: In 1913 she began her training as a nurse and continued at the same for two years. In November, 1914, she states: "I was on duty all day until six o'clock and had been working very hard—as well as studying for an examination. I went off duty at six o'clock feeling very tired, but that was all. I went in to take a bath and I felt faint, I had an awful pain in my side. I lay down on the bed and when one of the girls came off duty an hour later she found me on the bed in a faint; she called in some of the other girls, but they could not bring me to. They called the doctor and he worked over me quite a while before he thought he could bring me to. They were sure I was not going to get better—they sent for my people that night. It was eleven weeks before I was able to go home. There was that awful vomiting, almost constantly for the first few days, during which time I was in and out of consciousness. After the first week I felt pretty good. My color, which had been a black-blue, came back, the vomiting stopped, but it was six weeks before they would let me out of bed." Her next spell was three months later. They are sudden in onset with a feeling of weakness for only an hour or two before the actual attack, which is characterized by retching and vomiting, complete muscular relaxation, absolute loss of all superficial and deep reflexes. Her tongue and lips become swollen. Her color becomes a black-blue. She becomes unconscious. These attacks have occurred every two to four weeks since 1915, and between times she complains of a great deal of tiredness, inability to do things, and says she can't get around as quickly as she used to do.

She was seen by the examiner in October, 1916. Three weeks following the initial examination she had an attack and was found in the following condition: She was lying on the bed unconscious, color a bluish-black, puffed lips, large edematous black tongue, finger tips and nails blue. If one moved her she would retch and vomit a greenish-black mucous material containing free lactic and butyric acid and blood. All superficial and deep reflexes were abolished. Pulse was 84. Blood pressure 90, breathing 28 per minute. At that visit nothing was done but the examiner returned in three hours and decided to perform a lumbar puncture, make blood smears and raise her blood pressure. Patient was given 1 c.c. of pituitary extract intravenously and immediately the blood pressure became elevated 20 mm. Lumbar puncture gave a clear fluid under marked pressure (not estimated in mm.), the examination of which showed 90 cells per cm., 85 per cent. polynuclear leucocytes, and increase in globulin and albumin. Wassermann reaction negative. Colloidal gold negative—no reducing bodies. The Wassermann reaction upon blood serum was also negative. Blood smears showed a polynucleosis. Blood count showed a leucocytosis. She did not pass water nor did her bowels move for eighteen hours. The first specimen of urine passed was highly colored and filled with blood cells. No casts or albumin. Tests for urochrome, indican, urobilin, and acetone were all markedly positive, evidently indicating a high degree of acidosis. Smears from the feces showed the presence of blood.

During the months of November, December, and January the attacks diminished in severity, her color did not change to a deep black, they were shorter in duration, lasting only a few hours. During this period she was given foreign protein hypodermatically and thyroid and pancreatin by mouth—about ten intravenous injections of pituitary extract and occasionally calcium lactate. In February her medication was cut and within a few days she had a severe attack.

During her last attack, two weeks ago, colorimetric examination showed her blood to be 35 per cent more dense than normal blood. Clotting was complete in 1½ min. White blood count 16,000. Urea output 38 grams. Acetone, faint trace in urine. Urochrome and urophein markedly increased.

There is much to be done with this case before a definite decision is given, but it is quite a fact, it seems to me, that here, as in the other two cases, we are dealing with protein split products which damage severely the body cell and cause this characteristic reaction, which coincides with the phenomena of autonomic irritability.

In conclusion it should be stated that it is not the desire of the writer to add another type of

epilepsy to the already enormous group, but it is his desire to demonstrate that many individuals with convulsive seizures might be excluded from the class of epilepsies should their biological mechanism be probed and searched; and this is especially so in the case of those individuals who show this irritability of the vagus system.

BUTLER HOSPITAL.

THE MODERN TREATMENT OF SYPHILIS.*

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IT would seem that the most important part of the treatment of syphilis, in the light of our present knowledge, would be prophylactic or preventive, consisting in the application to the genitals, especially in the male, of drugs in the form of ointments to destroy the organism that causes the disease, and of the registration and segregation of all prostitutes during the infective period. Measures of this sort, however, require years of missionary work on the part of the members of the medical profession, to prepare the public for the necessary legislation.

Calomel ointment, 30 per cent. (Metchnikoff and Roux), applied to the penis before, and within an hour or two after, sexual intercourse insures against infection. The condom is, in our estimation, of little value for the upper edges roll and pull out the pubic hair and the secretion from the vagina is deposited in this space which is favorable for infection. Within the last year we have had two patients presenting chancres who had used condoms. The lesions were in the pubic hair and the *Spirocheta pallida* was demonstrated in both cases. As a prophylactic for gonorrhea the condom is of service, but our experience leads us to question its value as a preventive in syphilis.

Attempts have been made at various times to prepare a vaccine or a serum that would confer immunity, but all have failed, and as there is no immunity established by an attack of the disease—as shown by reinfection—the probabilities are that future efforts will avail us nothing.

Extragenital chancres represent but a small percentage of the total and their prevention is being accomplished by the fight for individual drinking cups, inspection of school children, and a dissemination of knowledge of the dangers of infection.

We recently saw two extragenital chancres, one on the finger of a dentist, who had scratched his finger on a patient's tooth, and the other on the tonsil of an old lady who had been treated for tonsillitis. When seen, both cases presented a macular rash and both gave positive Wassermann reactions.

Once infection has taken place and the lesions appear on the surface of the body in any form, or on the mucous membrances, the best way to prevent the spread of the disease is by means of an injection of salvarsan, arsenobenzol, or diarsenol, for then within a few hours the *Spirochcta pallida* will disappear from the lesions on the surface of the body and the mucous membranes, and the patient will no longer be a source of danger to those with whom he or she may come in contact.

It is our custom to excise or destroy the initial lesion or chancre in the primary stage of syphilis. If excision is possible it is done just prior to the first injection of salversan or diarsenol, and if excision is not possible because of the location of the sore, it is destroyed with the high frequency spark. It is always better to do this for the indurated scar may be and is in most cases a focus of infection, and if left to heal may break down at a later date with a recurrence of some of the secondary symptoms.

The question of further treatment is now under debate, some maintaining that it is better to wait until the disease has progressed to the stage of the development of immune bodies, showing that the patient's resistance is being raised. Others use mercury and follow this with one of the arsenical preparations, or the arsenical preparation may be first administered and the mercury given at a later date, again they may be given concurrently instead of consecutively. Some use iodide of potassium in the primary and secondary stages, others only in the tertiary.

Waiting for the patient to develop a resistance to syphilis is a bad procedure, for if syphilis is a self-limited disease its course, like that of tuberculosis, is very long and the chances are that the patient will be overcome by the toxemia before immunity is established.

Mercury is slow in its action and very often the disease progresses even under active mercurial treatment; then again, some patients do not tolerate mercury well. Our experience with salvarsan and mercury given concurrently has been unfavorable. The toxicity of both is increased and the beneficial results, because of this toxicity, are lowered. Iodide of potassium is probably an activator for some ferment within the body which acts on tissue such as we find in gumma, therefore we give it in the secondary stage. It is our practice to give six doses of salvarsan or diarsenol, each dose representing three decigrams, at intervals of seven days, and follow this with one of the mercurial preparations.

The mercurial preparations which are used in the treatment of syphilis are classified as those used: (1) by mouth or ingestion: bichloride, protoiodide, blue pill, calomel, gray powder; (2) by fumigation: calomel; (3) by inunction: mercurial ointment; (4) as plaster: calomel; (5) by injection into the veins or muscles: the drugs used intravenously are the soluble salts of mercury, cyanide, bichloride, succinamide, benzoate, sublimate; (6) for intramuscular injection the following insoluble salts are used in addition to the soluble salts listed above: salicylate, gray oil, calomel, mercurial cream, metallic mercury. Of these preparations, I would select either the salicylate for intramuscular injection or the mercurial ointment as an inunction.

The soluble salts are too quickly eliminated, given either intravenously or intramuscularly, and better results are obtained by us with the insoluble salicylate and the inunction.

The contraindications for the use of mercury are intestinal or renal irritation, salivation, or dermatitis, the last named due to the inunction alone.

*Read at the annual meeting of the Chattahoochee Valley Medical and Surgical Association, held at Warm Springs, Ga., July 10-12, 1917.

It is best to put the patient on daily inunctions or the injection of one grain of salicylate of mercury every other day for a period of six weeks following the course of six doses of salvarsan. After the six weeks of mercury, the patient is given another course of salvarsan, consisting of six doses at weekly intervals, to be followed by mercurial treatment for approximately one year.

A Wassermann test is made after each injection of salvarsan, at intervals during the mercurial treatment, and every three months for one year after all treatment is discontinued. If the Wassermann is negative for one year following treatment, the patient is looked upon as being free of the disease.

The spinal fluid should be examined, but a majority of the patients object to the long-continued treatment, and practically all refuse spinal puncture.

There is no difference in the effect of diarsenol and salvarsan, their toxicity and curative effects being practically the same, as in the mode of preparation. We have had no experience with arsenobenzol, but from the literature on the subject should judge that its action is the same as the two above-mentioned drugs.

The secondary stage of syphilis develops with the appearance of the positive Wassermann reaction, though no secondary eruption is present. It is not unusual for a patient to have a very mild secondary eruption, even when no treatment is administered, so it is better to look upon the appearance of the positive Wassermann reaction as a sign of systemic infection.

Treatment of this stage of the disease is practically the same as that of the primary, with the exception of its being more prolonged.

From six to twelve doses of salvarsan followed by a year of mercurial treatment, after the Wassermann reaction becomes negative, should be the rule and in all cases the spinal fluid should be examined before the patient is dismissed. The blood test should then be negative for one year following the treatment.

Treatment of tertiary syphilis requires a great deal of judgment on the part of the attending physician, but as a general rule it may be said that the best results are obtained when the mercury precedes the salvarsan. The patient's general condition should be improved as much as possible, the teeth being given special attention. Next, he or she should be instructed as to how to live, for this is unfortunately one of the things that few of us know how to do. At least eight hours sleep and, if possible, more. One or more bowel movements every twenty-four hours, nourishing food, abstenance from alcoholic drinks, and moderation in the use of tobacco. Iodide of potassium should be given in 15 grain doses throughout the whole treatment.

It is very difficult in some cases to obtain a negative Wassermann, and we have given from twenty to thirty doses of salvarsan, together with mercurial treatment, at times, before this result could be obtained.

These patients, as a rule, stand mercury well, and it should be continued for a year or more, following a negative Wassermann reaction, for if this is not done the symptoms together with the positive Wassermann will return. The spinal puncture is imperative, for the fluid will be found positive to one or more of the tests in a great many cases.

Spinal fluid for examination should be collected in three tubes, the first for the Wassermann test, the second for the globulin test, and the third for a Lange colloidal gold and cell count. The reason that the fluid is collected in three tubes is because the first is likely to contain a few red blood cells, which will not interfere with the Wassermann, the second is also likely to contain a few red cells and is therefore used in the globulin test, and the third is perfectly clear for use with the colloidal gold and the cell count. After puncture the patient should be kept in bed for at least twenty-four hours to prevent puncture headache.

If any one of these tests is found to be positive, spinal treatment should be instituted at once and continued until results are obtained, or until it is evident that further treatment is useless.

Fluids giving a paretic curve will rarely be changed to normal, but will, after treatment, sometimes present a luetic curve. High cell counts return to normal more quickly, and the globulin and Wassermann tests usually run together.

In general it may be said that a spinal infection can be arrested by means of spinal treatment, but it must be remembered that the best results are obtained in early cases and not after pathological processes have advanced to the point of scar tissue formation, but even then the treatment should be carried out faithfully, for brilliant results have been obtained in some cases.

Where gumma of the central nervous system is diagnosed, or in inflammation of the meninges, it is better to give the mercury first and follow this with salvarsan or diarsenol than to give the salvarsan primarily. If quick action is wanted without the congestion of the affected area, which always follows the injection of the arsenical preparations, give several doses of mercury intravenously and follow with the intramuscular injections or the inunctions.

In concluding this paper, we wish to say:

1. The prophylactic treatment is of the utmost importance in syphilis.

2. A dose of salvarsan should be given all patients with lesions on the skin or mucous membranes to destroy the organisms in these lesions, and thereby prevent the spread of the disease.

3. The initial lesion should be removed and the patient treated energetically with salvarsan and mercury consecutively in the primary stage.

4. At least six doses of salvarsan followed by mercury should be given after the Wassermann becomes negative in the secondary and tertiary stage.

5. A positive Wassermann, in the absence of secondary lesions, constitutes the secondary stage of syphilis.

6. An examination of the spinal fluid—Wassermann, globulin cell count, and Lange celloidal test should be made in every case, if possible, before the patient is dismissed.

7. In the event that any of the above tests are positive, the patient should be treated until the fluid returns to normal.

A CASE OF HYDROPHOBIA; ATTEMPTED SPECIFIC MEDICATION.

By OSCAR BERGHAUSEN, M.D.,

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A boy aged 5 years was admitted to the children's service of the Cincinnati General Hospital on June 28, 1917. The chief complaint was spasms of the throat on attempted drinking of water. Family history: Father is living and well, aged 25 years; mother, living and well, aged 26 years; one brother living and well, aged 2½ years. No history of tuberculosis or syphilis in family. Grandfather died at age of 64, of carcinoma. No history of insanity in family. Uncle of child was bitten by same rabid dog, on the same day, bite inflicted through clothing. Had twenty-one inoculations of Pasteur vaccine, with no unusual symptoms up to this date. Past history: Aged 5 years (born November 6, 1912). No history of measles, pertussis, or pneumonia. Diphtheria at age of 3 years. Chickenpox at age of 4 years. Otherwise was never ill, up to time of present illness. Six weeks ago the patient was bitten by a dog in the left arm, and the pinna of the left ear was torn. Dog was killed same day and the head sent to Columbus, Ohio, for microscopical examination. Injury occurred at 8 A. M. Physician cauterized the wounds at 8.05 A. M. of the same morning. Report from Columbus was positive for rabies, and Pasteur inoculations were instituted within forty-eight hours. In all twenty-four treatments were given. Last treatment was on June 13, 1917 (two weeks ago). There was no ill reaction. Patient had no complaint and took his meals well and slept well. Monday (three weeks ago), the child complained of pain in the abdomen, which started as cramps followed by diarrhea. Tuesday, the patient vomited all day and lost his appetite, refusing almost all food with the exception of small amount of crackers and an occasional sip of water or milk. Mother noticed spasm of throat yesterday, on attempted drinking of water. There have been no retraction of head, convulsions, or rigidity of extremities. Has never complained of headaches, nor has he been startled by any sudden noises or excitement. There has been no unconsciousness. Patient was seen by members of Cincinnati Health Board and advised to go to the General Hospital for further treatment and observation.

Physical examination: Patient, lying quietly in bed, is a fairly nourished, poorly developed, white male, aged 5 years, of pallid appearance and cheerful countenance. The head is well formed. There are no abnormalities about the scalp. The face is pale and without paralysis or twitching. The pupils are somewhat dilated, but respond to light and accommodation. There is no nystagmus nor strabismus. The conjunctivæ are pale. There is no icterus nor injection of the scleræ. No abnormalities about the ears; there is no discharge and the tympanic membranes are intact. Scar 2 cm. in length in midline of pinna of left ear. No discharge from the nose, no obstruction. The tongue is heavily coated, white, and does not deviate when protruded. No tremor. The breath is offensive. The inferior six-year molars are erupting and can be felt beneath the gums, which are hyperemic and painful to the touch. The lower deciduous molars on both sides are carious. The tonsils are inflamed and somewhat enlarged. No herpes about the lips. No rigidity, no retraction, no visible pulsations, no edema, no thyroid enlargement; the cervical lymph nodes are palpable on both sides, but not greatly enlarged. The thorax is of the long, slender type, the musculature is flabby, and the clavicles and ribs are prominent; it is symmetrical with equal expansion and respiratory excursion on both sides. Tactile fremitus equal on both sides. There is no change in percussion note throughout the entire chest; both fronts and sides are clear on auscultation. Posteriorly breath sounds are somewhat harsh at left base, but no rales are to be heard at any point. Heart: Apex impulse at fourth intercostal space, just outside the midclavicular line. Area of relative cardiac dullness at fifth space is 1.5 cm.; (right) 6.0 cm.; (left) no murmurs are audible. The aortic second sound is accentuated. Rhythm is regular; rate is rapid; volume good. Abdomen is retracted. There is no tenderness, no masses are palpable. The spleen cannot be felt. The liver is not enlarged. The inguinal lymph nodes are palpable on both sides. Right arm presents no abnormalities. On the left arm are numerous scars distributed, extending from the deltoid region to the elbow. No abnormalities about the lower extremities; no paralysis, no deformities, no tremors, no contractures. There is congestion at tip of glans penis surrounding the meatus urinarius. Reflexes: no Kernig, no ankle clonus, no Babinsky, no active knee jerk. Uranalysis: cloudy; light amber; 1020; acid to litmus and methyl red; albumin, negative; heavy sediment; urates xxx; sugar negative; blood negative; no casts. Throat culture sent to laboratory for examination for Klebs-Loeffler bacillus.

Treatment: Rest in bed, absolute quiet, elixir lactopepsin, 1 ounce every four hours. Simple enema (to be retained). Sulphate of magnesia given.

June 29, patient has been very restless during the night. Delirious part of the time with picking at bedclothes and irrational talk. Did not recognize mother. No convulsions during the night. This morning temperature is 102.2°; pulse, 112; respiration, 26. Patient seems more comfortable; is cheerful, and has no complaint. Laryngospasm still marked on attempted swallowing. 10 A. M. Patient has just had a convulsion. Nurse reports that child became rigid, head extended, "eyes rolled upward and remained stationary." Left knee was flexed. Convulsion over by the time the resident physician arrived. The duration of the convulsion was about one minute, and it was followed by complete relaxation.

Treatment: Infusion digitalis, oz. 1, every 4 hours; sodium citrate, potassium acetate, each gr. x, every four hours. Custards, cereals, milk, buttermilk, broths, ice-cream, water *ad. lib.* 11 A. M. Spinal puncture by Dr. Bentley. Results: 20 c.c. of clear fluid under slight pressure. Fluid sent to laboratory. 1 P. M. Discontinue infusion digitalis, substituting tr. strophanthus. Chloral hydrate and potassium bromide, per rectum, p. r. n. for restlessness. Leucocytes, 13,400; reds, 6,820,000. Has had two attacks of convulsions this P. M. of short duration (few seconds). During attacks, the patient extends head with rigidity of neck, flexion of both knees, and rotation of eyes, with delirium and irrational conversation. Patient very restless. Temperature, 105° (rectal). Patient died June 30 at 4.10 A. M. Findings: Spinal fluid—2 lymphocytes per c. mm.; colloidal gold curve in normal zone. On June 29, at 9 P. M., 18 c.c. of blood serum obtained from the median vein of the uncle of the child was injected into the spinal canal.

Although we were not permitted to make an autopsy, we felt justified in adhering to our diagnosis of hydrophobia. Tetanus could be safely excluded. The case is reported because of the general interest in the subject, and because a method hitherto untried was employed as a last resort. The writer was not asked to see the patient until about twelve hours before death, and therefore was not in position to employ this new procedure immediately upon admission of the patient to the hospital. Surely the serum of a man who has just completed the Pasteur treatment contains specific immune bodies. Judging by results obtained in the combined intravenous and intraspinous injection of tetanus antitoxin in patients suffering from tetanus at this institution during the past four years, the writer felt justified in employing a specific serum in this case of hydrophobia. He regrets that he is not in position to carry on further experiments along this line in animals; possibly others more fortunately situated can do so.

The writer wishes to express his indebtedness to Dr. James Bentley for the privilege of seeing this patient.

19 West Seventh Street

POINTS ON NITROUS OXIDE.*

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It is not the intention of the author of this paper to try to dissuade you to exclude ether and chloroform from the field of general inhalent anesthetics. These two have in the past done yeoman service and must perforce remain, because of their convenient bulk and slight cost, as valued aids in general surgery. But I desire rather to bring to your minds the notable difference in the effect of nitrous oxide-oxygen on your patient, not only at the time of administration, but following the administration of this agent.

The great public from which we take our patients, I call it the comfort-loving public, has awakened to the fact that anesthesia can be produced without the discomforts heretofore endured, and so a large percentage of patients demand gas.

To my opinion, nitrous oxide-oxygen is the anesthetic of choice. Its safety is generally recognized, provided always the administrration is in the hands of an expert. Right at this point, I wish to say, that the old idea of allowing an inexperienced or unskilled attendant to administer any inhalant anesthetic is evidence of thoughtlessness on the part of the surgeon who values good results.

Briefly, I will enumerate some of the properties of nitrous oxide. A gas practically odorless, colorless, with a sweetish taste, non-inflammable, rapid in its action, producing complete anesthesia in from two to five minutes, fleeting in its effect when discontinued, non-irritating to mucous membranes, producing no ill effect upon kidneys, lungs, or heart.

What does the patient gain by these properties? It gives the anesthetist an opportunity to reassure the patient, to relieve the mental anxiety and stress by assuring him that he will not be subjected to discomfort while he is being put to sleep. That his lungs, heart, and kidneys will not be put to an extra strain. That he can confidently expect a safe conduct to anesthesia and following that a quick return to consciousness; which latter is uppermost in the patient's mind.

In a large percentage of cases of administration of nitrous oxide, we see a total lack of struggling and excitement, these two potent interferences with the respiratory rhythm and consequent causes of acidosis nearly always evinced in the other inhalant anesthetics. The tendency to nausea and vomiting is minimized and when present is rarely prolonged. Nausea is most frequently caused by insufficient use of oxygen.

A point that I wish particularly to stress is that no patient should be allowed to become even minutely cyanotic, as even a slight degree of cyanosis over a lengthy period of time produces acidosis with subsequent vomiting, and acid findings in the tissues and urine, acetone or diacetic acid.

Another point of interest is regarding the use of nitrous oxide-oxygen in the very old. These cases, as a rule, require very little mixture and are rapidly anesthetized; all danger of post-operative pneumonia is evaded, rendering them excellent risks.

The author has in mind the case of an old lady, Mrs. ———, seventy-six years of age, presenting for abdominal section. The patient was admitted at 2 A.M., carried to the operating room in a state of considerable shock, a rupture of the appendix being suspected. Pulse 120, temperature 103°, respiration 32, abdomen distended; leucocystosis 17,000; the urinary examination gave albumin plus, the heat test precipitating the albumin until the content of the test tube was a solid mass. The patient was warmed with packs and hot water-bottles, a preliminary injection of morphine, gr. ¼, atropine, gr. 1/150, was given immediately, and she was made as comfortable as possible on the table and reassured that all would be well. Nitrous oxide-oxygen was administered for a period of forty minutes, the appendix was removed, and a drain used. The patient awoke immediately after the operation, was put to bed and placed in the Fowler position for eight hours. Soda and glucose in solution were given by rectum; the patient voided urine without use of catheter, and the albuminous urine cleared up in about seven days. The patient made an uneventful recovery.

If time permitted I could give you histories of many very old patients who have undergone successful operations by the aid of nitrous oxide.

A point that is of interest is that the necessity of catheterization is rare when nitrous oxide is used. Another point that may well be borne in mind is that patients with high blood pressure can safely take nitrous oxide-oxygen, as under it the pulse is slowed and we have a temporary engorgement of blood in the capillaries, lessening the strain on the heart. The danger attendant upon struggling and excitement is avoided.

And lastly a point that appeals to all concerned, the patient following the operation begins his fight for recovery immediately with full consciousness, with less of shock, and with heart, kidneys, and lungs unimpaired. "Literally without encumbrance."

*Read at a meeting of the Chattahoochee Valley Medical and Surgical Association, held at Warm Springs, Ga., July 10-12, 1917.

Oxygen in Eclampsia.—Rössle sees a mechanism which comprises overfeeding with protein and lack of oxygen. He treats eclampsia in part with subcutaneous infusion of oxygen and intravenous injection of hydrogen peroxide.—*Correspondenz-Blatt für Schweizer Aerzte.*

Action of Poison Gases on the Eye.—Teulières and Valois have seen many examples of injury to the eyes from deleterious gases in the Ophthalmic Center of the XIII Region. The subjective symptoms agree throughout with those produced by the introduction of active irritants in the conjunctival sac—prickling, lacrymation, blepharospasm, and photophobia. These are sufficient to bring about subjectively diminished vision, irrespective of the state of the fundi. Dyschromatopsia, contracted visual field, and scotomata were never noted. Objectively there is a severe conjunctivitis of the dry type with slight chemosis and at times swelling of the lids. The pupil as a rule is sluggish. There are evidences in the worst cases of neuroretinitis. The outline of the papilla is partly effaced. Vision may be reduced even as high as 80 per cent. Nevertheless the outlook in these cases is favorable.—*La Presse Médicale.*

Military Medicine.

THE SOLDIER'S HEART AND CIGARETTE SMOKING.

DURING the past two years there has been much discussion and a great deal of writing concerning that condition known as the irritable heart of soldiers. More than one theory as to its causation has been brought forward. Sir James Barr, dealing with the question in *American Medicine* for September, 1916, attributed the condition mainly to hyperthyroidism, a conclusion which has been accepted by a good many observers. Barr claimed that he had cured several cases of irritable heart by treating the condition as one of hyperthyroidism. Recently, Drs. John Parkinson of London and Hilmar Koefod of Harvard have been making investigations as to the effect of cigarette smoking on healthy men and in cases of "soldiers' heart."

The results of these investigations, published in *The Lancet* of August 18, 1917, are summarized as follows: (1) The immediate effect of cigarette smoking upon the circulatory system and upon the breathlessness of exertion was observed in 30 smokers, of whom 20 were subjects of "soldiers' heart" and 10 were healthy soldiers. Each subject smoked four or five cigarettes during a period of 40 minutes. (2) A demonstrable effect was recorded in 17 of the 20 patients, the 3 unaffected being non-inhalers. Nine of the controls, all inhalers, were influenced in the same fashion, though not to the same degree. (3) The average pulse rate among the patients during smoking was nine beats higher than before smoking; in the healthy controls it was six higher. Initial slowing of the heart was never observed, nor was any irregularity referable to smoking. (4) The rate of respiration in the patients was unaffected; in the controls it was slightly reduced. (5) The average systolic blood pressure was raised 5 to 10 mm. Hg. and the diastolic 5 mm., in both patients and controls. (6) These effects appeared within five minutes; with the first cigarette they almost reached the maximum, and this was maintained throughout the smoking period. (7) A simple exertion test was performed before smoking and repeated on its cessation. In the patients the pulse rate maintained a higher level throughout the test after smoking and half of them were more breathless both subjectively and objectively. In two patients precordial pain was induced by smoking, apart from exertion. But in the controls the pulse rate curve during exertion was much the same after smoking as before, and breathlessness was induced in two only. (8) These observations show that in health the smoking of a single cigarette by an habitual smoker usually raises the pulse rate and blood pressure perceptibly; and these effects are a little more pronounced in cases of "soldiers' heart." Moreover, the smoking of a few cigarettes can render healthy men more breathless on exertion, and manifestly does so in a large proportion of these patients. (9) Excessive cigarette smoking is not the essential cause in most cases of "soldiers' heart," but, in the opinion of the writers, is an important contributory factor to the breathlessness and precordial pain in many of them. The truth seems to be that the large majority of cigarette smokers are inhalers, and it is the inhaling of the smoke that is harmful. A man who inhales tobacco smoke to a large extent is unable to keep himself in hard condition, in the condition, in fact, in which a soldier at the front ought to keep himself. A man who is not in the highest state of physical efficiency is obviously not so good a fighting man as he who is in such state, and if excessive cigarette smoking is a contributing factor to physical inefficiency, it is the duty to curb the desire in this direction. Moreover, it must be borne in mind that some individuals are more susceptible to the effects of tobacco smoke than others. For these reasons it is a pity that so much is said now in the papers about the soldiers' smokes. *The Sun* of this city is contributing largely to the comfort of tobacco addicts in the army by its campaign to supply the tobacco and cigarettes that the Government does not give. One possible untoward effect of its zeal, however, is the spreading abroad of the idea that smoking is soldierly, that it is a part of the game; and doubtless many non-smokers are tempted to take up the habit, induced thereto by a sort of crowd contagion. On the contrary, the fact should be emphasized that the tobacco is for those who have already acquired the habit, this not being the time and somewhere in France not the place for the men to be made to suffer the great discomfort caused by withdrawal of their solace; but that this is not the time nor is anywhere the place for the new men to take up the habit deliberately. It will not add to their efficiency, but will rather expose them to the danger of becoming less efficient if they smoke too much or if for any reason their supply of the dope is temporarily cut off.

Surgical Efficiency in the British Navy.—In the *British Journal of Surgery* for July, 1917, Arthur W. May, Surgeon General of the British Navy, describes the advances made in recent years in the efficiency of that service. He states that the growth of surgical efficiency in the British Navy has been very marked during the past twelve or fifteen years. Up to that time major surgical operations were rarely undertaken and there was a great loss to the service of men invalided for such disabilities, as hernia, varicose veins, etc. Coincident with the more general employment of surgical means elsewhere, the spirit of surgical enterprise arose in British naval hospitals. It did not originate, as might be supposed, from the influx of new blood, or from suggestions by the administration. It arose from the enterprise of a few pioneers, men of several years' seniority, who, developing a latent ability, with courage and determination fought down prejudice and laid the foundation for that confidence in the surgical work of their hospitals that is now shown by all ranks of the service. This growth of efficiency was fostered by the Administration. The hospitals were provided with every surgical necessity. Old operating rooms were reconstructed and new rooms added. X-ray departments were instituted. The new hospital at Chatham, built during this period, was furnished with the latest surgical apparatus. Officers were selected and appointed to all the large hospitals as anesthetists

and radiographers. As many medical officers as arrangements permitted received post-graduate instruction at recognized schools. These courses included special instruction in operative surgery. No difficulty was found in obtaining a succession of senior medical officers capable of taking up the surgical work. There seems to be no doubt that a close association with the strenuous activity that exists in the fighting branch of the navy develops the qualities of handiness and adaptibility, and in such practical subjects as surgery, radiography, and bacteriology the seasoned naval medical officer quickly becomes efficient.

While the practice of surgery was being encouraged in the hospitals by the provision of all requirements, the surgical equipment of the ships was greatly improved. Special stations for the treatment of wounded during action were considered in the design of the vessels and not left to be extemporized as had been the custom. These stations were fitted with a supply of hot and and cold water, special ventilation, lighting, and equipment generally. Formerly the surgeon had to provide himself at his own expense with a regulation set of surgical instruments, a stomach pump, splints, and a few other necessary articles. For some years past all the larger ships have been supplied by the Admiralty with a liberal outfit of instruments, including microscopic and sterilizing, *x*-ray, and bacteriological apparatus, and recently a medical library of reference has been added. These stores are supplied from the naval hospitals, where they are kept ready packed to be issued at a moment's notice.

In addition to being hospitals proper, and centers for distribution of stores, these establishments are training schools for male nurses. In peace time courses of lectures are given by the staff to medical officers attached to or in the vicinity of the port. For over thirty years the Royal Naval Hospital at Haslar has been a training center for newly entered surgeons. Within recent years the newly entered have been required to pass an examination at the end of a period of probation before receiving their commissions. During the war, however, all regular courses of instruction at Haslar and Greenwich have been suspended. At the outbreak of hostilities, fighting ships in commission and those newly commissioned received their war complement of medical officers and medical stores. The hospitals were brought up to their full war accommodation and staff, and the prearranged scheme for overflow to the subsidiary naval infirmaries and temporary hospitals was put into force. This scheme has been considerably expanded, especially in Scotland, to meet the growing necessities of the fleet. Hospital ships have been equipped and staffed and private yachts fitted out by their owners, have been taken over by the Admiralty as hospital ships for the transport of the sick and wounded over short distances. A great deal of surgical work has been undertaken in hospital ships, both while acting as mobile base hospitals to the fleets and while carrying naval and military wounded. A share of this operative work has been borne by temporary surgeons. The employment of hospital ships as mobile base hospitals enables the fleet to use suitable bases without regard to considerations as to the disposal of the sick and wounded, and as these bases or rendezvous may be a considerable distance from the naval establishments ashore, the transport of the acutely sick and wounded is reduced to a minimum. During the military operations in the Gallipoli Peninsula naval hospital ships in the Mediterranean were employed chiefly in receiving the wounded direct from the dressing stations and transporting them to base hospitals in Egypt, Malta, and elsewhere. Although the number of casualties coming under treatment after naval actions afloat have been comparatively few, the naval home hospitals have been very full at times, since accommodation has been given to the British and Belgian military as well as to the sick and wounded from the men of the Naval Division fighting ashore. Afloat, the organization for the immediate treatment of the wounded varies with the class of fighting ship. In all ships the sick berth is situated in too exposed a position to be used during action. Two main stations are selected, one forward and the other aft, in the best protected and most accessible situations. Here the wounded are brought together by collecting stretcher parties during pauses in the fighting. After treatment they are passed on by distributing stretcher parties to disposal stations. Many of the cases receive first aid treatment at the hands of their comrades before they arrive at the receiving stations, for dressings, tourniquets, etc., are provided in all turrets and isolated positions.

The experiences gained in the present war have proved the value of the instruction in first aid given to the ship's company; this is especially noted in unarmored ships, where it is practically impossible for the wounded to be collected or for the surgeon to reach the wounded during action. In the work of attending the injured the surgeons and staff are assisted by officers and men of the non-combatant branches. All details of the organization are rehearsed frequently in a realistic manner.

Before going into action the men are required to change into clean clothing in order to lessen the liability to septic infection, but sepsis from the presence of virulent microorganisms rarely occurs afloat. This freedom has permitted the complete closure of severe shell wounds to be made after excision of damaged tissues, with results that are most encouraging. The large proportion of burns on uncovered parts of the body have called for special measures for the protection of the face and hands. The treatment of burns by recent and improved methods is securing careful attention.

Syndrome of Acroparesthesia a Frigore.—Although much has been written on the results of exposure of the extremities to the cold and damp of the trenches, the subject of extensive and permanent alterations of sensibility from the same causes has received comparatively little attention. Cottet discusses it at length in *La Presse Médicale* for September 8. These occur alike in the frost bitten and intact soldier. Sensation is seldom abolished outright but is diminished in all of its expressions—tactile, thermal, etc.—but analgesia is especially marked. The soldier is

quite unaware of a pin prick or a pinch. Hence by means of a pin it is possible to delimitize the affected area. The contrast is marked between the indifference on one hand and the defence reactions on the other. The examination is, of course, made in perfect silence in order to avoid suggestion.

In the lower extremities the hypoesthesia begins at the ankle and extends upwards along the leg and even to the thigh. It is only exceptionally that the entire foot is involved. Several types of diminished sensation are described. The sole of the foot is invariably involved, but in the anterior dorsum sensibility may not only be preserved but even increased. The plantar reflex may be abolished when hypoesthesia appears to stop sharply at the knee, it may be found that in the skin of the thigh, sensibility is sensibly diminished.

In the upper extremity the entire forearm is involved and in some cases there is more or less alteration of sensibility in the skin of the upper arm. The back of the hand is hypoesthetic, while in the palm sensation is normal or even slightly hyperesthetic. There is often diminished sensibility in the nose and ears. In a schematic arrangement in three zones, denoting marked hypoesthesia, slight hypoesthesia and normal sensation, the legs and upper dorsa of feet, forearms and backs of hands, nose and ears (and soles of feet) are colored black to denote the more pronounced diminution of sensibility, while the thighs and upper arms are represented as moderately or slightly involved. The head and face (with exceptions noted), neck, trunk, buttocks, palms of hands, and most of the dorsa of the feet are represented as quite intact. This distribution resembles nothing else in pathology unless hysteria, and hence may be assumed to be a distinct entity. There is, however, something besides hypoesthesia here, at least, in certain cases: further disturbance of sensation, such as vague pain, dead or heavy feeling of legs, formieation, cryesthesia, etc. Even in bed the legs feel cold, are goose-skinned. On inspection some vasomotor disorder is evident, as shown by a violaceous, marbled coloration. In fact, acroasphyxia in both the livid and pallid forms is sometimes beheld. Finally a trophic element is seen in certain deformities of the nails.

As for the nature of this affection it stands in some relationship with the well known group of affections of the extremities of which Raynaud's disease is the most prominent member. On the other hand, it is also related to other affections of the parts due to exposure, as chilblains and frost bites. But in all of these allied affections the digits bear the brunt of the exposure and present the most characteristic lesions. Acroparesthesia, in which the digits are not seriously or characteristically involved, must have a special mechanism, but none such is yet in evidence. The resemblance to hysterical analgesia is considerable and for all we know there may be a psychogenic factor underlying these cases. But the rapid response to warm applications of all kinds suggests that mere refrigeration is the essential factor.

Certain Military Aspects of Hookworm.—Charles Wardell Stiles in Public Health Report No. 418 relates that a newly formed militia unit was quartered temporarily at a Government reservation where he was conducting some experiments. Within less than two days after reaching their quarters one of the recruits was suspected of trying to shirk his duty and the commanding officer planned to place him in confinement for discipline. The man claimed that he was not feeling well and he (Dr. Stiles) was requested to pass upon the case medically. The diagnosis of light hookworm infection was made upon the symptoms and soon confirmed by microscopical examination. On the third day after reaching quarters a second recruit was brought for examination. Again the diagnosis of hookworm infection was made and confirmed. Later it was found that in a total of 75 militia recruits 47, or 63 per cent., showed hookworm infection. Treatment of these infected men was instituted with the result that the gain in weight and efficiency were so marked as to produce comment even from the nonmedical men. Dr. Stiles points out that this experience has its lessons in the present war. These recruits represent an unselected instance of what may be expected in certain portions of the country among average enlistments. Two volunteers were rejected because of remediable conditions clearly due to hookworm infection, and these men represent instances of a very large number of cases that will probably soon be noticed both in the Gulf Atlantic and the southern Pacific regions. Several recruits were rejected because of underweight. If such recruits are the victims of hookworm they might justifiably be accepted provisionally if the regulations permit. A failure to treat the hookworm cases and to eliminate at least the severe infections of *Strongyloides* will undoubtedly result in unjust and preventable punishment for offenses due to remediable conditions, considerable physical and mental inefficiency, an unnecessarily high daily "sick call," and premature and preventable pensions. If even light cases of infection with hookworm are sent to the trenches in Europe the danger is present of causing a widespread epidemic not only among military forces but also among the civil population of France and Belgium. All these dangers may be prevented to a very great extent if all the recruits, or at least those from certain states, are systematically examined for intestinal parasites and either treated in American camps or discharged, as necessity indicates. The examination can best be a three-slide (10-cover glass) test, preferably by the centrifuge method. If an examination for hookworm only is made the work will be considerably lessened. This examination could be made more economically, more efficiently and more rapidly at a central laboratory than in separate concentration camps. Dr. Stiles suggests that it would be wise to begin promptly with all units at present organized and to combine the examination with a newspaper campaign to induce prospective recruits to take the initiative to have themselves examined and treated.

Prophylaxis and Treatment of Frostbites with Tar.—Aside from trench foot congelations occur as a result of fighting in the snow, especially in

high altitudes. This occurs in the most marked degree on the Italian front, and naturally some familiar, permanent, inexpensive substance which could serve both for prophylaxis and treatment would be a great desideratum. As a rule, the management of congelations has involved the use of asepsis and stimulation of the circulation, and many individual applications and procedures have been tested, beginning with protective coverings. Massage and frictions with vaseline, camphor and alcohol, progressive warm baths, and various antiseptic and aseptic dressings, have been employed to fill indications. But while members are saved, the men are incapacitated for a long time. In the deeper degrees of congelation sloughs must come away. Hence prophylactic measures must be tried out. Rabbi, a captain surgeon in the Italian army, thinks he has discovered a very superior remedy in Norwegian tar, which is hostile to fungi, saprophytes, and disease parasites, which protects against humidity and is itself practically stable. Tar contains many substances of antiseptic powers (phenol, creosol, naphthalin, toluol, benzol, etc.). As used by the author, no local or general phenomena have been set up, and renal irritation from elimination has never been seen. Cases cited by the author include both trench foot and mountain congelation. In an example of the latter we note that the soldier was admitted for congelation of the first and second degree, involving both feet. These were edematous, livid, and the seat of bullæ. Sensibility was lowered, movements difficult and painful. The prognosis was that the process would reach the third degree. The feet were at once tarred. Four days later lividity had disappeared and swelling was much reduced, while pain was less and the feet felt warm. In two more days patient was able to walk without pain. Epidermis came away, leaving normal skin beneath. The patient was pronounced cured 14 days after admission. The number of cases treated was small, and dry gangrene alone was encountered. Whether the remedy would be equally valuable on moist gangrene remains to be seen.—*Giormale di Medicina Militaire*, February 28.

System of Red Cross Warehouses in France.—The Red Cross authorizes the statement that it has established a system of thirteen large warehouses throughout France for the purpose of distributing supplies to the numerous war hospitals behind the French firing line. Six of these warehouses have been located in Paris, which serves as the center of the system. The supplies are distributed to the hospitals by motor trucks and wagons. Approximately fifteen tons of materials are being distributed monthly from these warehouses, most of the supplies coming from the United States. Plans are now under way to increase the warehouse facilities at French seaports, as at present these are very limited. The stock of supplies carried includes not only those required for hospitals, but also food stuffs, clothing, building materials, farming implements, etc., needed in the work of reestablishing the French refugees. The Paris warehouses alone can care for 60,000 tons of supplies at a time.

Commissions in the Medical Reserve Corps.—The announcement is made from Washington that the issue of commissions in all Staff Corps of the Army, including the Medical Department, have been suspended temporarily pending the preparation of a report by the Adjutant General showing the number of officers in each corps and comparing the number now commissioned with the prospective needs of the different services. At the same time officers of the Medical Reserve Corps, inactive list, are informed that assignment to active duty may be delayed and they are therefore advised not to discontinue their civil practice pending receipt of orders. They will be given a fortnight's notice when their services are required.

American Fund for French Wounded.—This organization has made an agreement with the American Red Cross whereby the two organizations can work in harmony without the American Fund for French Wounded losing its identity. The American Fund is to maintain its present status, to collect funds in its own name, and to continue the manufacture of supplies. The Red Cross will transport to France standardized supplies furnished by the American Fund for French Wounded. A satisfactory understanding has also been arrived at whereby the two organizations will work in cooperation in the distribution of supplies in France.

Base Hospital Fire.—The base hospital at Camp Wheeler, near Macon, Ga., caught fire on the night of October 23. It became necessary to call out the Macon Fire Department in order to get the fire under control.

Moss as a Surgical Dressing.—A correspondent of the *New York Times* calls attention to the possibility of using sphagnum or peat moss as a surgical dressing. Owing to the very limited supply of cotton that the blockade permits to get into the Central Empires, the Germans have been using this substitute on fresh wounds and claim that it absorbs from seven to ten times its own weight in liquid while cotton absorbs only six times its weight. The moss also dries more quickly than cotton. Although the Allies have not yet had to contend with a shortage of cotton, attention is called to the fact that this moss grows in large quantities in the State of Washington, and Prof. John W. Hotson of the botanical department of the University of Washington has been supervising the collection, cleaning, and drying of this moss for Red Cross use. The dried moss weighs almost nothing and can be easily shipped.

Dispensary Unit for French Relief.—The Chicago Committee of the American Fund for French Wounded is forming a dispensary unit for relief work among the civil population of France. The unit will sail soon and expects to join the first babies' relief group sent from Milwaukee two weeks ago. Dr. Clara M. Davis has charge of the unit.

Louis J. Horowitz, President of the Thompson-Starrett Company of New York, has been appointed director of Foreign Relief of the American Red Cross. He will serve without compensation.

Defects in Spartanburg Base Hospital Remedied.—Complaints widely published some days ago as to the unsatisfactory construction of the base hospital at Spartanburg were brought to the attention of the War Department and as a result orders have been issued to install ceilings, to reinforce the building throughout, and to purchase whatever was deemed necessary for the comfort of the soldiers.

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STATE HOSPITALS AND THE WAR.

MANY, if not most of us, are accustomed to think of the vast numbers of insane persons populating our State hospitals as a dead loss to the nation. Even the most ardent advocate of the conservation of national resources is apt to turn away from this problem to others which offer more promise. And yet, in this time of war, we have no right to assume hastily that there is no economic gain to be had here; if these half-million or so dependents can help the nation in any way—if they can even lessen to some extent the burden of caring for them—let us see how.

A few pregnant suggestions are given by Dr. White in an article in *Mental Hygiene* for July, 1917. He calls attention to the great strides which occupational therapy has made in recent years and suggests that the proficiency to which patients and attendants have attained be turned to account in winning the war. Every inch of available land should be cultivated. He says, "There should be no hesitation in plowing up lawns, no matter how beautiful, provided the land is such that a worthwhile crop may be expected." Even women patients can tend small plots of ground. Aside from the economic advantage there is a stimulating effect on the patients themselves. White calls attention to the various industries which have sprung up in State hospitals—brushmaking, broommaking, matmaking, chaircaning, shoemaking, tailoring, cement work, and so on. Because of the fact that the chief desideratum has been the good of the patient, the output from these industries has been kept down to a minimum. But now each hospital might well concentrate on one line of work and over-produce as much as possible, the excess being used to help the country. For example, all the hospitals of one State could make shoes, and turn their products into the State for equipping the militia, or to the Federal Government for equipping the army.

In fact, nearly any form of State hospital activity can be turned to use. The women patients can knit and sew for the soldiers and sailors. Hospitals in rural districts which have a large number of patients accustomed to farm labor can send out squads of patients to help neighboring farmers gather in crops which otherwise, owing to the shortage of help, might be spoiled. How much better is such occupation for diseased minds than purposeless labor like that described in Charles Reade's "It's Never Too Late to Mend," whose convict, it will be remembered, had to turn a crank all day long, the aim being simply the recording of so many revolutions; or the old custom of having prisoners dip sea-water on one side of an island, carry it across and pour it into the ocean on the other! Even the custom in some hospitals of encouraging the women patients to do fancy work will not bear scrutiny. For it is easy for such "work" to become mere automatism—the flying fingers turn out yard after yard of intricate and useless embroidery while the brain, the personality itself, is busy with a world of fantasy. Exactly what we want to avoid in the average mental case.

Last, but not least, the psychiatric units which the National Committee for Mental Hygiene is undertaking to equip and furnish must look to the staffs of such State hospitals for their own personnels. Where else can be found doctors and nurses with training in the care of mental cases? Then, too, with an army of a million or more, St. Elizabeth's Hospital at Washington will hardly accommodate the mental cases which will undoubtedly eventuate and various State hospitals will probably be called upon to take care of many such patients.

In all these ways, then, the inmates of State insane asylums are assets rather than liabilities. Perhaps the time will come when a central committee will take under its care all State hospitals and collate their resources so that each hospital or group of hospitals can specialize in one particular product to the benefit of the whole. And who shall say that the thought that one is doing his bit for his country, the thrill that comes from patriotic effort, will not permeate the most deteriorated mind and raise it a step or two toward the light?

THE MICROPHONE AS AN AID IN REMOVING FRAGMENTS OF NEEDLES FROM THE TISSUES.

ALL surgeons who have had the unpleasant experience (and who has not?) of failing to locate a fragment of needle in the hand after careful dissection and a long and tedious search, will appreciate the value of the method to which attention is called by Kenneth Bulkley in the *Annals of Surgery* for July, 1917. In a previous article Bulkley described the theory of the apparatus and also its method of application. In his latest communication he quotes statistics of 72 cases of needles in the hand or foot met with in the four surgical services at Bellevue Hospital, and 33 of his own cases operated upon with the aid of the microphone.

Of the Bellevue cases 54 had fragments of needles in the hand and 18 in the foot. The distribution in the hand was: Thumb or finger, 20 per cent.; thenar eminence, 44 per cent.; hypothenar eminence, 10 per cent.; front of wrist, 10 per cent.; remainder

of palm, 10 per cent.; and dorsum of hand, 4 per cent. These were not dispensary cases, but all the patients had been admitted to the wards of the hospital. In 8 cases, for one reason or another, no attempt was made to remove the needle. The difficulty of finding these needle fragments by ordinary dissection methods is well shown by the results of Bulkley's study of the remaining cases of this group. The needle was found on the first attempt in only 47 per cent. of the cases, 17 with local and 30 with general anesthesia. The results in the remaining 53 per cent. were as follows: In 13 per cent. one attempt only was made and the needle was not found; in 10 per cent. the needle was searched for twice and not found; in 24 per cent. the second attempt was successful; in 5 per cent. the needle was found on the third attempt; and in one case the needle was not found until the fifth attempt had been made.

Making use of the microphone, Bulkley's results in 33 cases of embedded metallic foreign body furnish a startling contrast to those quoted above. In 25 of these cases the foreign body consisted of part of a needle, the distribution being 20 in the hand, 1 in the foot, 2 in the capsule of the knee joint, and 2 in the back. There were but two cases in which he had much trouble, in spite of the fact that in over one-third of the cases one or more previous attempts at removal had been made. In one case the fragment was free in one of the tendon sheaths and had moved several inches down the sheath after the *x*-ray plate had been taken. Another plate showed its new location and the fragment was readily removed. In the one case in which Bulkley failed to get the needle fragment there was a powerful dynamo in the next room, invalidating the microphone. One must, therefore, agree with the author when he says that he feels very strongly that a method capable of reducing primary operative failure in the removal of needles from 53 per cent. to 3 per cent. is worthy of more extended trial.

IS ARTHRITIS DEFORMANS INFECTIOUS?

It is hardly necessary, before an audience of physicians, even to allude to the obscurity of chronic joint diseases. The universal familiarity with the clinical condition in these affections contrasts sharply with the lack of understanding of the morbid findings post mortem, or rather with the variety of interpretations of such findings. Even where we know that the joint disease must be due to a definite organism, as, for example, when we have tuberculous or syphilitic arthritis, we have not as yet been able to find a specific reaction in the joint tissues in correspondence with specific morbid factors. The etiology of arthritis deformans, for example, brings out marked differences of opinion. Presenting, as it does, many of the ear-marks of an infectious disease we still lack the indispensable proof of this.

Some time ago Dr. P. W. Nathan (*Journal of Medical Research*, May, 1917) conducted a series of experiments and studies of cases with the theory that arthritis deformans is infectious. He concluded from what is known of the histology and pathology of the joints that all the morbid changes to be found in joint disease can be ascribed to variations of an inflammatory process; these changes are not specific, nor do they correspond to definite clinical entities. The hypertrophic and so-called metaplastic changes are due to the reaction of the quasi-embryonic cells in the joint structure.

Having made these deductions, Dr. Nathan proceeded to verify them by experiments on dogs, after the example of J. Koch, who inoculated dogs with hemolytic streptococci to determine the localization of microorganisms in the bone marrow. Dr. Nathan used twelve dogs, killing ten of them at intervals from the third to the ninetieth day; two of them died marantic, one at two and one at twenty-eight days.

It is impossible, of course, to repeat here his extensive findings, which should be read by those who are interested in the original. Suffice it to say that he found that, in spite of the apparent variations, the principal gross and microscopical findings in both acute and chronic joint disease, whether of known or unknown origin, are fundamentally simply phenomena of an inflammatory reaction. All forms of arthritis, he says, are due to inflammations of infectious origin. The pathological lesions correspond exactly with those of known infections and the variations in phenomena can all be ascribed to differences in the location and virulence of central or peripheral nerve involvement.

We must then look for the original focus of infection, perhaps an ulcerated tooth, perhaps a tonsillitis. Dr. Nathan has found that, in treating the local condition, where the joint is not destroyed or ankylosed, thymus extract nearly always leads to more or less complete recovery. Omit, he says, the routine and the mechanical treatment which are both so harmful.

A PSYCHOLOGIST ON THE "APACHES."

To regard the so-called "Apaches" as peculiar to Paris is to ignore the fact that all great modern cities have a race of antisocials of the lowest substratum whose sole occupation is mischief—for whatever purpose. These people are savages in the midst of civilization. In *El Siglo Medico* for September 22, Sanchez-Herrero attempts to show that this species of mankind is actuated by a complete absence of sense of correct values. They "have to be shown," for they believe only what they can see and feel, and thus undervalue all other methods of assurance. They have no sense of brotherhood, even though banded together for self-interest. Neither affection nor indifference, but only hatred represents their sentiments toward mankind, as expressed in the twofold way of robbery and assassination. The Apache has neither the ethical nor the esthetic feeling which distinguishes civilized from savage man. He is extremely vain, and really regards himself as superior to his prey. This egotism makes it impossible for him to recognize authority, and he re-

bels at the idea of work of any kind. It is constant toil which saves the ordinary man from his own disposition to evil. The Apache, without this discipline, must live from those who do work. His only idea of acquisitions is necessarily material, for he can have no conception of the value of character or other immaterial riches. His sexual standards are of the lowest, for he maltreats his women, practises unnatural vice, and attacks children. Of family life or faithfulness to one woman he has, of course, no conception. He is likewise devoid of all religious sentiments, but in their place are degrading superstitions—beliefs in amulets, etc. The Apache is a complete atheist, for he has no thought of a Supreme Being. This attitude toward religion makes it easy for him to butcher his victims without warning. He attacks in the dark and from behind. We have only to consider the sense of values of the educated, conscientious subject to obtain an idea of the Apache mind. The first-named believes that he was put in the world for a purpose—for many purposes—to think, feel, seek out, understand, progress. But these are all abstractions which mean nothing to an untaught man who can believe only in material things. The Apache simply has no internal existence of any kind. It is hardly necessary to add that he is not merely ignorant and raised in a poor environment, for he is also a complete moral degenerate.

Marked Tolerance of a Subject of Addison's Disease to Adrenalin.

It is commonly admitted that suprarenal extracts can do little or nothing for the relief of victims of Addison's disease. The latter is a chronic process in which the suprarenal bodies are doomed to destruction and the action of adrenalin is only transitory. That it is not entirely indifferent, however, is well shown in an article by Nolf and Fredericq in the *Archives Médicales Belges* for August. A patient with Addison's disease who suffered notably from hypoadrenalinemia was seen to enjoy a sort of immunity to the toxic action of the drug. The diagnosis was confirmed by autopsy for the tuberculous subject showed caseation of both adrenals. The drug had been given for the low blood pressure. On a single occasion 10.5 mg. of the pure substance was injected during a period of 4½ hours. If, as Josue claims, the maximum permissible dose is 2 mg. in 24 hours by the subcutaneous route the authors exceeded this many fold and moreover 8.5 of the 10.5 mg. were given intravenously. The fear is of causing acute edema of the lungs. However interesting this episode may be, it loses, perhaps, some of its force through the fact that large quantities of adrenalin taken with suicidal intent have been well borne. On the other hand, the innocuousness of such a large amount injected into a vein shows that remarkable tolerance was undoubtedly present in this particular individual.

Bacteriology of Hodgkin's Disease.

The nosological status of Hodgkin's disease and its congeners has been far from clear, and all attempts to group it, either with chronic infections, neoplasms, or hematoses, have come to grief. Bacteria described as peculiar to the disease have not been lacking, and Dias of the Oswaldo Cruz Institute at Rio has recently described a new one (*Brazil Medico*, August 25). The high scientific reputation of the staff of this institute, with the possibility that the affection as seen in South America may differ in some respects from that in the Northern Hemisphere, make this claim of no little interest. The newly discovered organisms appear to comprise both bacilli and fungi, or rather certain of the elements resemble bacilli; the fungi resemble yeast cells, and are smaller than blastomycetes. These are also oblong formations, and rarely true hyphæ have been seen in smears. Finally, there are indeterminate formations. These bodies can all be seen in smears from cut glands. Cultures are obtained by direct and indirect methods. Despite the variety of pleomorphism the author evidently regards the basic organism as a fungus, which to some extent—in sporulation, for example—behaves like the ray fungus. The author has been at work on this subject for years, and feels so well satisfied that the cause of Hodgkin's disease has been discovered that he terms the latter "adenomycosis."

News of the Week.

Decrease in Birth and Marriage Rates in Germany.—A special correspondent of the New York *Sun* quotes statistics from an article in a prominent German Socialistic organ which show that since 1915 the number of deaths in Germany has exceeded that of births. In 1914 this decrease was 18,500; in 1915 it reached 423,000, or an increase of deaths over births of 23 per cent.; in 1916 it reached 40 per cent. The low birth rate, however, has been partially counterbalanced by a decrease in the infant mortality rate of about 40 per cent. It is pointed out that this decrease in the birth rate is based on peace-time figures and that it should have fallen off to a much greater extent than the birth rate. During the first month of the war there was a marked increase in the number of marriages, but this was followed by a sharp diminution which has continued to the present time. In Saxony there were 26,300 marriages in 1915 as against 40,300 in 1913; in Hamburg the corresponding decrease amounted to 2,300; in Berlin to 5,000, and in Bremen to 1,000. The writer points out that this decrease in the birth and marriage rates will work greater injury to the future of the German Empire than its losses on the numerous battlefields.

Prenatal Instruction to Mothers.—The *Weekly Bulletin* of the Department of Health of New York City, for October 13, quotes statistics to show that if we are to make further progress in reducing the infant mortality rate it must come through concerted effort directed against deaths from congenital diseases, and during the first month of life. Feeling that this is the work of the future, the Health Department has organized a special group of nurses to instruct mothers during the period of pregnancy in all matters pertaining to home and personal hygiene, diet, and all matters which make for healthier mothers and more vigorous children, and for a reduction in the number of stillbirths. These nurses are at

present assigned to a limited number of Baby Health Stations. In addition to this the nurses in charge of the fifty-nine Baby Health Stations throughout the Greater City are prepared to give similar instruction to prospective mothers. General practitioners are urged to notify the Baby Health Station nurse of those cases, which, in their opinion, would profit by prenatal instruction. The nurses will thereupon visit such mothers and advise and instruct them without encroaching upon the authority of the family physician. At the request of the attending physician or with his permission, a urinary test for albumin will be made and positive findings reported.

Public Health Committee of New York Academy of Medicine.—The report of the Public Health Committee of the New York Academy of Medicine, from May to September, inclusive, shows that it has been active in many fields. In addition to giving its advice and cooperation in the solution of local problems, it has adopted and forwarded resolutions to the several members of Congress who were particularly interested, urging that Congress take such means as seemed fitting and proper to enable this country to supply salvarsan or its equivalent to the medical profession. It has cooperated with the New York County Chapter of the Red Cross in securing free medical services for civilian relief work among the families of soldiers and sailors who find themselves without means of securing adequate medical attention. It has made a protest against the bill depriving the health departments of New York State of the power to exercise control over overcrowding in public conveyances. The committee has also protested against any change in the vaccination laws and disapproving the bill to amend the tenement house law allowing three-story private houses to be converted into three family tenements. It has cooperated actively in the campaign for securing a change in the ruling of the War Department concerning the drafting of medical students and internes. Dr. John S. Billings, Dr. Walter I. Niles, and Dr. Herbert B. Wilcox have been added to the membership of the Public Health Committee.

Law Fails to Protect Women in New Employments.—Owing to the difficulty of securing male elevator operators, the agents of many apartment houses in New York City have employed women to act as elevator operators. In response to a complaint to the Department of Health that many of these women were employed under conditions fraught with danger to health and morals an investigation has been made which shows that in some instances the complaints are well founded. The fact has been brought out that under the present laws regulating the conditions of employment for women the State Labor Law only provides for the regulation of conditions of employment of women in factories, shops, and stores. The Department of Health will keep these apartment houses in which the conditions of employment are not what they should be under observation and will endeavor to find some way to safeguard the health of these women.

New Venereal Clinic.—The Health Department of New York City announces that in order to provide dispensary service in venereal diseases to the residents of Jamaica and Flushing, a venereal clinic has been established in the Queensboro Hospital of the Department of Health. At present the clinic is conducted three days a week, Mondays and Fridays from, 3 to 4.30 P.M., and Wednesday evenings from 6 to 9 P.M.

Microscopical Exhibit.—The Annual Exhibition of the New York Microscopical Society will be held at the American Museum of Natural History on the evening of Saturday, November 3, to which the public has been invited. In addition the slides representing the use of the microscope in the arts, sciences, and industries, there will be a demonstration by the Department of Health of the practical use of the microscope in safeguarding public health.

Combined Meeting of Pediatric Societies.—The annual meeting of the New England Pediatric Society, the Philadelphia Pediatric Society, and the Section on Pediatrics of the New York Academy of Medicine will be held in New York City on November 8, and will include a clinical day, a dinner at the Harvard Club, and after-dinner addresses on the "Pediatricians' Part in the War," by Dr. Alonzo E. Taylor, Dr. Hermann Biggs, Dr. Richard M. Pearce, and Dr. Samuel McC. Hammil.

The Simon Baruch Public Baths.—A tablet in honor of Dr. Simon Baruch, commemorating his connection with the campaign for public baths, was unveiled at the Rivington Street Baths, New York City, on October 29, and these baths were renamed "The Simon Baruch Public Baths." Borough President Marcus M. Marks made an address of acceptance on behalf of the city. The tablet was donated by Mrs. Belle Baruch through the Association for the Promotion of Hygiene and Public Baths.

The Return or Exchange of Laboratory Products.—The New York Department of Health has recently adopted rules governing the exchange or return of laboratory products. Provided the seals of the original containers have not been broken the Department of Health will, at its discretion, exchange laboratory products at its stations where they have been purchased, provided the time of exchange is not later than two weeks after the date of expiration as noted on the label. The Department of Health will accept the return of products of a value of over $1 and give full credit therefor, if returned within ten days of purchase. It will accept the return of products and allow a refund provided the products are returned not later than five days after the purchase. Rules have also been adopted governing the return of products which have been purchased by health boards outside of New York City, by institutions, municipalities, health officers, etc.

High Cost of Drinking Empties Hospital.—The City Hospital of St. Louis is said to be without a patient in the alcoholic ward and no patient was sent in for treatment during a period of over forty-eight hours. The daily average number of patients in the ward during the last year has been about fifteen, with a high record of forty-five. This shortage of patients is attributed solely to the high cost of liquor.

The Robert Dawson Evans Memorial for Clinical Research and Preventive Medicine of the Massachusetts Homeopathic Hospital will receive about $1,000,000, as residuary legatee of the estate of Maria Antoinette Evans.

The Seventh District Medical Society of the State of Georgia, at its annual meeting in Cedartown, Ga., elected the following officers: *President*, Dr. George B. Smith of Rome; *Vice-President*, Dr. M. S. Richardson of Cedartown; *Secretary-Treasurer*, Dr. M. M. McCord of Rome.

National Dental Association.—This organization held its annual meeting at the Hotel Astor, New York City, during the week of October 22, under the presidency of Lafayette Barber of Toledo, Ohio. The dentists now congratulate themselves on having established their profession on a plane with that of medicine and surgery. The National Dental Society is organized along lines somewhat similar to those of the American Medical Association. Among the speakers at the General Sessions were Dr. E. C. Rosenow of Rochester, Minn.; Dr. Alexis Carrel, and Dr. Victor C. Vaughan of Ann Arbor, Mich. The relation of dentistry to the war formed a conspicuous part of the program. The association voted to subscribe $20,000 for Liberty Bonds.

American Association of Electrotherapeutics and Radiology.—At the annual meeting of this association, formerly called the American Electro-Therapeutic Association, held in Atlantic City, September 11-13, the following officers were elected: *President*, Dr. Frank B. Granger, Boston; *Vice-Presidents*, Drs. V. C. Kinney, Wellsville, N. Y.; William L. Clark, Philadelphia; William Martin, Atlantic City; Alfred T. Livingston, Jamestown, N. Y.; M. G. Campbell, Atlanta; *Treasurer*, Emil Heuel, New York; *Secretary and Registrar*, Byron S. Price, 65 Central Park, West, New York City.

New York and New England Association Railway Surgeons.—This association will hold its twenty-seventh annual session at the Hotel McAlpin, New York City, on November 8, 1917, under the presidency of Dr. H. G. Stetson, Greenfield, Mass. An interesting program is being arranged, information regarding which can be obtained from the corresponding secretary, Dr. Geo. Chaffee, Little Meadows, Pa.

Obituary Notes.—Dr. WILLIAM F. GUTHERSON, a graduate of the College of Physicians and Surgeons, New York, in 1904, and a member of the medical staff of St. Joseph's Hospital, Paterson, N. J., died of pneumonia, on Oct. 24, aged 39 years.

Dr. CARL O. BERNHARDI, a graduate of Rush Medical College, Chicago, in 1901, and a practising physician of Rock Island, Ill., died of pneumonia in the Presbyterian Hospital, Chicago, on Oct. 8, aged 37 years.

Dr. THOMAS J. MCCORMICK, a graduate of Harvard Medical School, in 1900, died at his home in Roxbury, Mass., Oct. 12.

Dr. GEORGE WILLIAM BRUCE died at his home in Moundsville, W. Va., on Oct. 6, at the age of 90 years. He was a graduate of the University of Pennsylvania, in 1848, and for some years Mayor of Moundsville.

Dr. EDWARD MANNING BROWN, a graduate of the College of Physicians and Surgeons, New York, in 1898. a practitioner of Springfield, Mass., died in the Springfield Hospital, on Oct. 22, at the age of 45 years.

Dr. JAMES HOMER DARLING, one of the oldest practising physicians in Connecticut, died at his home in Thompsonville, Conn., on Oct. 8, aged 80 years. He was a graduate of the Burlington (Vt.) Medical College, in 1859, and a surgeon in the Navy during the Civil War.

Dr. GEORGE L. TODD, a graduate of the University of Virginia Medical Department, in 1910, died suddenly in Jackson, Miss., on Oct. 10, at the age of 33 years.

Dr. THOMAS E. ELLISTON, a graduate of the Vanderbilt University Medical Department, in 1880, died after a long illness at his home in Nashville, Tenn., on Oct. 17.

Dr. J. R. EDWARDS, of Denton, Tex., died after a brief illness, on Oct. 10, aged 77 years. He was a graduate of the University of Nashville Medical Department and a surgeon in the Confederate Army during the Civil War.

Dr. PITT H. JONES, a graduate of the College of Physicians and Surgeons, New York, in 1883, a practising physician of Springfield, Me., died suddenly on Oct. 17, aged 55 years.

Dr. LINNAEUS V. GIBBS, a graduate of the Burlington (Vt.) Medical College, in 1880, died at his home in Huntington, Mass., on Oct. 16.

Dr. WILLIAM W. WRIGHT died, after a brief illness, at his home in Huntington, Tenn., on Oct. 6, aged 78 years. He was a graduate of the Washington University Medical Department, St. Louis, in 1869, a surgeon in the Confederate Army during the Civil War, and later superintendent and physician of the State Prison and trustee of the Middle Tennessee Insane Asylum and of the West Tennessee Hospital for the Insane.

Dr. WILLIAM A. MCCALLIE of Knoxville, Tenn., a graduate of Vanderbilt University Medical Department, Nashville, Tenn., in 1875, died on Oct. 18, aged 65 years.

Correspondence.

ALCOHOLIC REMEDIES IN ACUTE SEPTIC DISEASES.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Dr. Abraham Jacobi will have many supporters among the older clinicians in his recent vigorous defence of alcoholic remedies—whisky and brandy—in acute septic diseases. I well remember the extreme use of these remedies in desperate cases of diphtheria by my brother, Dr. J. Lewis Smith, and the happy results which generally followed.

I had an interesting experience when a member of the resident staff of Bellevue Hospital during the great epidemic of typhus fever in 1850-52. Irish immigration was at its flood-tide after a season of failure of the crops and the consequent sufferings from want of food of the laboring classes. Every vessel arriving from Irish ports brought a large number of cases of the fever and as a result not only were the hospitals of the city filled to their utmost capacity with cases of fever, but an immense number were treated in tents at Quarantine. The mortality was enormous in all of the hospitals, largely owing to the enfeebled condition of the immigrants. Eight of our resident staff had the fever, and two of them died. The fever was of

a low typhoid type. After a few days of mild delirium the patient passed into a comatose state which terminated in death at variable periods of one or two days. The treatment pursued was in general sustaining by foods and remedies, but the mortality was so great that death seemed inevitable, especially when the patient became comatose.

Professor Alonzo Clark, a member of the visiting staff of Bellevue Hospital, was giving a course of lectures at the Pittsfield Medical College during the first months of the appearance of the fever. On assuming service he entirely changed the method of treatment. During the first period of the fever he simply corrected any discoverable defects in the patient's physical condition, which generally required little active medication. It was not until the coma made its appearance, indicating profound septic conditions, that he began active treatment, and that treatment was the unstinted administration of whisky or brandy. The directions were to be governed by the symptoms—pulse and respiration—not by the quantity of liquid given. From the adoption of this treatment to the close of the epidemic typhus fever took rank with the most curable diseases of the hospital. Indeed, Prof. Clark once remarked that he was always gratified when a patient passed into the stage of coma, for he was then sure that he had a remedy that would secure recovery.

An interesting incident occurred which put his treatment to a decisive test. On one of his visits he was accompanied by a professor in one of the Medical Colleges of St. Louis, who had heard of Clark's success in the treatment of typhus fever and he came to New York to satisfy himself of the method and its result. He was in charge of a large hospital which received cases of typhus and he was disturbed by the excessive mortality. After a visit to the wards and an examination of cases of coma that he regarded as moribund, Prof. Clark requested him to select such cases as he believed would die before the next morning and visit with him the next day to learn the results of treatment. He selected thirteen patients who he said would die with any kind of treatment that he ever employed.

These patients were removed to a vacant ward and nurses selected to attend them. They were all insensible, but could be partially awakened; pulse small and rapid; respiration spasmodic; eyes slightly closed; tongue dry and with the lips covered with sordes. Prof. Clark directed me to superintend the nurses and give each patient teaspoonfuls of brandy at short intervals and not to be governed by the quantity administered, but entirely by the pulse and respiration. I sat at the bedside of one patient, who seemed to be dying, and gave her teaspoonfuls of brandy every few minutes during the night.

In the morning all of the patients had recovered consciousness with greatly improved pulse and respiration and subsequently made rapid recoveries. The St. Louis professor visited the hospital and examined each patient, expressing the greatest surprise at the remarkable improvement they had made. Still doubtful as to the reality of the test he privately inquired if these were really the patients he had selected, intimating that other more hopeful cases might have been substituted by the attendants.

An amusing incident occurred many years ago at the annual meeting of the American Temperance Union in the Broadway Tabernacle. William E. Dodge, Senior, was the presiding officer and large numbers of the prominent advocates of "teetotalism" were present. The speeches excited great enthusiasm and the climax was reached when the President introduced Dr. Alfred C. Post as a teetotaler and the exponent of the opinion of the medical profesion that alcohol has no value as a remedy in disease. Dr. Post stepped to the front of the platform and in his usual curt speech said, "Yes, sir, I am a teetotaler. I never use alcoholic beverages and never shall while I have my senses, but sir, I could not practise surgery successfully if I were deprived of the use of whisky and brandy."

STEPHEN SMITH, M.D., LL.D.
1000 PARK AVENUE.

OUR LETTER FROM PARIS.

(From Our Regular Correspondent.)

HEART WOUNDS—THE BREAD PROBLEM—AMERICAN FIELD AMBULANCE SERVICE—AMERICAN HOSPITAL AT PASSY.

PARIS, September 26, 1917.

INSPECTOR GENERAL DELORME has made an exhaustive analysis, in a report to the Academy of Medicine, of fourteen operations upon the heart for the extraction of war missiles, found either in the body of the muscle or in one of the cavities. In his report of the fourteen cases dating from February, 1915, he described the radiographic aspect, showing the movement of shell fragments, the indications for operative intervention, the choice of route, the accessories necessary and the splendid result of 11 successes out of the 14 operated upon. The general question and consideration of operative procedures for wounds of the heart has arisen during the present war and thanks to French initiative has met with that degree of success which establishes the operation as a fixed addition to surgery, at the same meeting the Academy adopted by unanimous vote the project of Dr. Delorme for a light cuirass to protect the chest and abdomen of the soldier with orders that their action be reported to the Minister of War.

The quality of bread has given rise to universal complaint and has really been the cause of a considerable increase in bowel troubles. The Academy has been examining the question of mixing rice with wheat. It is shown that a kilo of bread costing 70 centimes furnishes 2,500 calories, while a kilo of rice furnishes 3,500 and costs only 50 centimes at most. It is believed that 20 per cent. of rice can be added to wheat in the making of bread without altering its character or diminishing its value. Rice flour is also recommended for thickening gravies, ragouts, and general cooking purposes; the only precaution that should be taken if rice be consumed in considerable quantity is to vary the diet with those aliments rich in cellulose to avoid the constipation which sometimes accompanies a diet of rice.

The American Field Ambulance Corps numbering some 500 men and 250 ambulances which began through private enterprise at the beginning of the war and has been gradually augmented to its present proportions has been absorbed by the U. S.

Army. The men are given opportunity to enlist and continue in the service or retire. This step has been taken following the established policy that all the war activities under American control in France shall come under the direction of the Army or Red Cross as the case may be. So far between 300 and 400 of the men of the Field Ambulance Corps have enlisted to continue service under the American flag.

The historic and picturesque Château de Passy (Passy-sur-Yonne) was the scene of elaborate ceremonies recently on the occasion of the visit of M. Justin Godart, Under-Secretary of State for the Service de Santé, and other officials of the French Government, to the French Hospital of New York, No. 32 bis, which has occupied the château since early in 1915. M. Godart made the trip from Paris to the Passy Hospital to convey his own appreciation and that of the French Government for the splendid work that the administrators and the American personnel have accomplished so quietly and so efficiently for the wounded soldiers of France, and to express that appreciation by the awards of medals to those who have contributed to make it one of the model hospitals of France. The French Minister arrived at Passy-sur-Yonne by automobile at noon, in company with several medical and military officials. He was met at the gate of the spacious grounds by the hospital administrators, M. Henri Chapal and M. André Massénat, the médecin-chef, Major M. C. Culler, of the United States Army, and a delegation of citizens of Passy and officials of the Department of the Yonne. As the members of the party entered the hospital and while they were meeting the hospital personnel an orchestra of soldiers from Sens struck up the "Marseillaise" and followed with the American national anthem.

The concluding ceremony of the day was the presentation of medals. M. Godart began with the announcement that were it not for the diplomatic conventions he would have bestowed upon Major Culler the Legion d'Honneur. As Major Culler is a member of the American Army it would be impossible for him to accept the honor from the French Government. As a result the medal which the major had so well earned would be kept in reserve until such a time as it could be awarded. Dr. John Irwin and Dr. Thomas M. Savage were awarded the Medaille de l'Instruction Publique; Miss Ruby Rodgers, superintendent of nurses, who for twenty-seven months has given devoted and skilled service to the hospital, and Sister Leonore received the silver-gilt Medaille d'Honneur de Dévouement Public, and Miss O'Reilly, Miss O'Connor, Sister Michell, Miss Isabel Adams, Miss Flora Dickson, Miss Anna Crowley, Miss Elizabeth Crowley, Miss Terese Gourley, and Mrs. Grace Wright the same medal in silver or bronze.

Mr. Henri Chapal the Hospital Administrator then told of the origin of the hospital at Passy, its original benefactress, Mrs. William Fitzgerald, and its present supporter, Mr. Henry Walters, of Baltimore. He spoke of the faithful, devoted work of the hospital corps and ended by presenting M. Godart with a bronze plaque, a memorial of the day's visit at the hospital.

146, Avenue des Champs Elysées.

Progress of Medical Science.

Boston Medical and Surgical Journal.

October 18, 1917.

1. Progress in Tuberculosis. John B. Hawes, 2d, and P. Challis Bartlett.
2. The Rationale of Neurasthenia. George Edward Barnes
3. Intestinal Stasis. Mark H. Wentworth.
4. Dislocations of the Shoulder. F. F. Henderson.
5. The Etiology and Pathology of Perforating Gastric and Duodenal Ulcers. Franklin W. White.
6. On the Use of the Emanuel-Cutting Mastiche Test. Curtis E. Smith.

4. Dislocations of the Shoulder. — F. F. Henderson states that on examining thirty-two cases of fresh and old dislocations of the shoulder joint with their *x*-ray plates at the Out-Patient Department, Boston City Hospital, it was obvious that the most common complication of the injury is a fracture or a stripping off of the greater tuberosity. Out of these cases examined nineteen showed a fracture of the greater tuberosity three showed fractures through the anatomical neck while the remaining ten showed apparently nothing by *x*-ray. The treatment of these cases is not always an easy one because of the marked inability and obstruction to anything near normal motion. They require a long, tedious course of treatment, the end of which is not always pleasing to the operator. The *x*-ray is of the utmost importance in determining between simple dislocation or dislocation with fracture. The operative cases are those in which a large fragment is torn off and displaced so that the normal position of the arm will not reduce the fragment to a point near that from which it was detached. In such a case the fragment is reduced by open operation held in place by ordinary wire nails. Smaller fragments which are torn off and carried into the joint, where they offer obstruction to motion, are removed by open operation. Exostoses which form as a result of stripping of the periosteum are also removed as above. In all cases where an operation has been performed for removal of obstruction to the outward and upward motion the arm is put up as high as possible and retained in this position by a plaster cast, which should be cut at the end of two and one-half to three weeks, when the patient should receive a slight amount of passive motion, this treatment to be continued from four to five weeks. Fractures without any marked displacement may be treated satisfactorily by the ordinary method of placing the arm to the side, applying a shoulder cap and double sling. The dressing is allowed to remain in this position from two to three weeks when apparatus is removed, and they receive gentle passive motion every third day until the end of the fourth week, when all apparatus is omitted. The operative and nonoperative cases all receive massage and electricity, with passive motion, every other day and are instructed to attempt ladder climbing or slight pulling on a rope above the head. There is still another class in which there is seen no fracture by *x*-ray at the time of injury. Many of these cases are treated as uncomplicated dislocations, but later, in the course of weeks or months, return to the clinic with inability to get anywhere near perfect upward and outward motion. The *x*-ray of such cases usually shows a great deal of thickening about the joint surfaces, with marked proliferation about the greater tuberosity and also an acromion process. Another noticeable change is general thinning of all bones in this region. The treatment of such cases is very difficult because of the long duration and marked proliferation causing obstruction. Such cases should receive a fair trial on ordinary treatment, such as massage, electricity, and extreme passive motion. If satisfactory result is not obtained the arm should be manipulated under ether and put up in extreme extension and plaster and allowed to remain from two to three weeks, then treated as any ordinary operative case, as stated above. In the above cases, by the description of the *x*-ray, it will be seen that there is considerable arthritic change which has taken place, apparently stimulated by trauma. Musculospiral injury in these cases is rather rare, but does occur, and when it does is usually quite promptly relieved by massage and electricity. The nailing of fragments in or near joint surfaces has apparently been followed by no ill effects as regards the motion of the joint.

New York Medical Journal.

October 20, 1917.

1. Mental Condition of Female Juvenile Delinquents. John H. W. Rhein.
2. An Etiological Factor in Gastroenteroptosis and Its Clinical Significance. E. Jay Clemons.
3. Venereal Prophylaxis. Henry J. Millstone.
4. Further Clinical Experience with Corpus Luteum Organotherapy. Walter T. Dannreuther.
5. The Surgical Treatment of Gastric Ulcer. W. Frank Fowler.
6. The Treatment of Pulmonary Hemorrhage. Dwight Clifford Martin.
7. The Wight Fracture Clamp. J. Sherman Wight.
8. The Relation of Hemorrhoidal Disease to the Health Balance. William M. Beach.
9. Colon Bacillus Pyelitis. Joseph Kaufman.

3. Venereal Prophylaxis.—Henry J. Millstone states that some time ago he pointed out the value of yellow oxide of mercury ointment in the treatment of acute gonorrhea. If there is any reliability in clinical results and laboratory and test tube findings this drug has won a place in the treatment of this disease. The same can be said as to its prophylactic properties. He further states that in the present conflict there is probably no other condition which is lowering the efficiency of men more than the venereal diseases. It is therefore the duty of everyone who has worked along these lines to submit to the government such information and suggestions which might be of some help in controlling, if not in completely eradicating, this scourge. He does not claim originality for the suggestions submitted here, but merely plea for a fuller recognition of the facts presented. The value of mercury in the prophylaxis and treatment of syphilis is familiar to all. While teaching soldiers of the dangers and detrimental effects of immoral indulgence is of great value still it must be admitted that this point only appeals to the minority. Regardless of how strongly we may impress the fact that the sexual act is not a necessity for the maintenance of life and good health it will take more than weeks and months to prove that it is not a necessary evil. In approaching these men we have the same problem to contend with that we have with drug addicts: most of them do not want to be cured. Most of our soldiers do not want to stop "partaking of the bitters." It will take a war greater than the present conflict to eradicate this evil for it is not a war of man for man, but a war within himself—that is, will power against passion. We may pitch these men's minds to a point where they will swear by all that is holy, "Never again!" but no sooner are they thrown into temptation than they again enact the role of a "fool there was." We who are devoting our time to genitourinary work have the facts at hand. One would think after a man had been burnt once that he would know enough to keep his hands out of the fire, and all of us can recall offhand many a patient who has taken upon himself more than one infection. It is reasonable to suppose that while issuing pamphlets denouncing sexual abuses and preaching these lessons is going to do some good, yet we will fall far short of meeting the problem if we stop at this point. There is no need to shield the naked truth or clothe these facts in mystery. There has not been enough preliminary work to hope to solve this problem. It will require a greater enlightenment of the subject, aided by sex hygiene and eugenic laws—a greater education along these lines not handed down by experience but begun in the lower grades of school. It will require the abolition of house and street prostitution. It will be the duty of every father and mother to present to their sons and daughters these very important essentials and not to keep this information from them as they would a hidden treasure. Millstone considers that while many of these ideas have been launched still they have not been in existence long enough to have any bearing on the present situation. At present there is much controversy among the various factions as to whether or not a deck of cards and smoking tobacco should be put into the soldier's kit. Millstone suggests that each man should be equipped with a tube of 2 per cent. of yellow oxide of mercury ointment, and he considers that there will be nothing that the soldier will carry that will be of greater benefit not only to himself but indirectly to his country. Along with this he should be given a booklet the contents of which should picture to him the aftermath of these abuses in all their hideousness. Herein at least lies a part of the solution for the control of this great plague. And still it must be remembered that "a man's a man for a' that."

Journal of the American Medical Association.

October 20, 1917.

1. Graduate Education in the Clinical Branches, and the Minnesota Experiment. E. P. Lyon.
2. The Menace of Mouth Infections. Oliver T. Osborne.
3. Migraine and Chronic Intestinal Stasis: Their Relationship and Treatment. Max Einhorn.
4. The Industrial Dispensary in Preventive Medicine. S. M McCurdy.
5. The Role of the Transverse Mesocolon Following Gastroenterostomy. C. A. Roeder.
6. Bladder Disturbances Due to Nerve Lesions. Gilbert Smith.
7. Diarrheas Accompanying Gastric Achylia. Martin E. Rehfuss.
8. Vesical Diverticulum: Report of Two Cases, with Remarks on Operative Technique. Bransford Lewis and Neil S. Moore.
9. The Results of Treatment of Bladder Tumors. John T. Geraghty.
10. A Case of Cystitis Caused by Bacillus Coli Hemolyticus M. W. Lyon.

2. The Menace of Mouth Infections.—Oliver T. Osborne considers that there is not a greater menace to health today than crowned and bridged teeth, to say nothing of imperfectly filled and dead teeth and of pyorrhea alveolaris. Infection of the tonsils and the sinuses adjacent to the nose must never be overlooked, and eradication is the only safety. From infected areas in the mouth many pathogenic organisms have been isolated, probably the most dangerous being the pneumococcus and the *Streptococcus viridans*. In a reference to the treatment of pyorrhea alveolaris Osborne emphasizes the fact that dentists use iodine too freely on the gums. A little pain here or a little infection there and the gum is injured by repeated applications of iodine. He further states that one of the saddest things that can happen to a person is infection of the blood with the *Streptococcus viridans*. In the vast majority of cases the only hope for the patient with this infection is to eradicate it from the mouth before it infects the blood and causes malignant endocarditis. Cooperation between physician and dentist is necessary in the handling of these cases. The relation of mouth germs to arthritis deformans seems proved, hence eradication of the source of infection before the joints are affected should be the preventive treatment of today. Osborne draws the following conclusions from the results of study and work with cases of mouth infections: (1) Most unexpected tolerance to pyorrhea alveolaris and to tooth infection is found. (2) Chronic invalidism may be caused by mouth infections. (3) The blood pressure may be raised or lowered by mouth infections. (4) The thyroid gland is frequently enlarged, and may hypersecrete or hyposecrete in these infections. (5) Serious disturbances of the blood, heart, kidneys, stomach, intestines, and joints are frequent from mouth infections. (6) Glycosuria can be, and perhaps true diabetes mellitus may be, caused by mouth infections. (7) Serious distant focal infections may occur from mouth infection. (8) Serious brain and nerve disturbances, as well as neuritis, may occur from mouth infection. (9) Ulcer of the stomach, pyelitis, appendicitis, and chronic colitis may be caused by pyorrhea alveolaris and mouth infection. (10) Pneumonia, especially that which follows influenza, may frequently be caused by pneumococci long carried in the patient's mouth. (11) No treatment of these conditions will be of any avail until the mouth is made clean. (12) Stock or autogenous vaccines are not very promising as to their therapeutic value, but in obstinate cases they should be tried. Therefore it is generally well to grow a culture from the infection in the mouths of these patients, that autogenous vaccines may be made and used, if desired. (13) One should be very careful not to promise a cure of a distant condition, although that condition was caused by the mouth infection. However, many brilliant cures are caused by surgical eradication of infected areas. The patient should always be told that the surgical removal of the infected area in the mouth does not remove the germ localized in distant parts of the body, nor does it immediately cure an inflammation caused by these germs in a distant part, nor will it restore degenerated tissue, but it will remove the primary source of infection. (14) It should be urged that any

fresh lesion of the mucous membranes of the mouth is a source of danger, much as is a lesion of the skin. The efficiency of the integument in warding off disease germs has long been recognized. It should be recognized that fresh cuts, abrasions, and blistering of the mucous membrane of the mouth with iodine or other strong escharotics offer the opportunity for the absorption of germs that may be freshly received into the mouth, and more especially of germs already in the mouth.

British Medical Journal.

September 29, 1917.

1. Observations on the Etiology and Treatment of war Neuroses. Arthur F. Hurst.
2. An Investigation of Trench Nephritis by Means of Phenolsulphonephthalein. A. G. Auld.
3. The Occurrence of Spirochætes in the Urine. James L. Stoddard.
4. Spirochætes Occurring in the Urine of Cases of "Pyrexia of Unknown Origin." S. W. Patterson.
5. Acute Syphilitic Meningitis. S. A. Kinnier Wilson and A. Charles E. Gray.
6. The Treatment of Wounds Infected with Bacillus Pyocyaneus. Philip Turner and Captain G. Richardson.
7. Notes on Ionic Medication and the Method of Administration. Leighton Kesteven.
8. A Case of Acholuric Jaundice Treated by Splenectomy. Rowland Hill.

3. The Occurrence of Spirochætes in the Urine.—James L. Stoddard says that a widespread interest in the increasingly numerous group of diseases known to be caused by spirochætes, and the consequent desire for a rapid and sure means of diagnosis, have brought forward the possibility of recognizing such cases by finding the spirochætes in the urine. He further states that by investigation he has found that (1) spirochætes are not uncommon organisms in the urethra of men without history or symptoms of relapsing fever. (2) Many different varieties are found. (3) Some of the varieties seen are morphologically closely similar to pathogenic varieties. (4) The spirochætes occur so definitely within the urethra that they are an obvious source of contamination in uncatheterized specimens of urine. (5) They are a sufficiently dangerous source of error, even in catheterized specimens, to deserve attention in careful work. (6) It is possible that a staining reaction or some other morphological character may be discovered to differentiate microscopically the common and harmless from the pathogenic spirochætes. Since the pathogenic spirochtæes are still in the process of discovery, such methods are not universally applicable. The facts summarized above are possibly known to a few workers, but they are not to be found in the publications at our disposal. They are new to us, and probably to a majority of those who are likely to make use of them. That a source of error in diagnosis may be pointed out, and possibly time saved for prospective workers in these diseases, the observations made are given herewith. He summarizes the results of his investigations as follows: A series of 100 men without history or symptoms of relapsing fever showed intraurethral spirochætes in 33 per cent. of the cases. If spirochætes of the *refringens* type are included, the incidence rises to 44 per cent. The spirochætes occurred in about one in two and one-quarter men sick of miscellaneous medical and surgical conditions, and in one in five of healthy men. This difference is probably to be ascribed to differences in hygiene, and to the variations in amount of flora of mucous surfaces familiar in other regions, in conditions of varying vigor. The variety of organisms makes it improbable that the mere finding of spirochætes in the unine can have any diagnostic value in relation to the relapsing fevers until definite morphological or other differences are established between the various normal and pathogenic varieties.

4. Spirochætes Occurring in the Urine of Cases of "Pyrexia of Unknown Origin."—S. W. Patterson states that during the past few months he has examined the urine of cases of P. U. O. (pyrexia of unknown origin) for spirochætes, using a modification of Renaux and Wilmaers' technique. The results are so suggestive that he offers this preliminary note to call attention to the necessity for the systematic examination in certain clinical types of P. U. O. which may ultimately turn out to have a common etiological origin. Since in March, 1917, Garnier and Reilly suggested that in certain cases of icterohemorrhagic spirochætosis the chief incidence of the disease may be upon the kidney, he has examined a number of cases of trench nephritis and found a spirochæte in a fairly large proportion. Further, in what he regards as a definite clinical type of P. U. O. (appendicular, or abdominal—described below), which is probably a mild form of icterohemorrhagic spirochætosis, he has found a spirochæte almost constantly present in the urine. Again, in the relapsing type of P. U. O. (trench fever) a spirochæte can frequently be found in the urine during and immediately after the exacerbations of temperature. Upon examination of the urine by the above-named method the spirochætes are shown to have the following characters: They are about one to one and a half times the diameter of a red blood corpuscle, and are very thin, the ends tapering. They show five to eight more or less regular turns, and may be straight, bowed, or lying in a semicircle. The spirals are not so fine as in *Spirochæta pallida*, nor so coarse as in the spirochæte of Obermeier. The organisms are very resistant to staining, being uncolored by Leishman, Romanowsky, or Giemsa's stains, and requiring a mordant method, but may be demonstrated by India ink methods. They occur in the urine, often abundantly, during and immediately after the rise of temperature, but in the intervals may be so scarce as to be practically absent. Like McNee and others, he has been unable to find any organism by direct examination of the blood of these patients, and he has not had an opportunity of determining post mortem at what part of the urinary tract the spirochætes originate. These observations suggest that at least two clinical types of P. U. O. may be brought into line. (1) a disease with acute onset with chills and vomiting, pain in the abdomen, usually more marked in the right upper quadrant, with continued fever for several days, often with enlargement of the spleen and herpes of the lips. The pulse-rate is not increased, and is usually slowed to 50 or 60 beats a minute in convalescence. There is a leucocytosis of 12,000 to 25,000 with relative increase in the large mononuclears. The cases, if an attempt is made at diagnosis, come to the base as "? appendicitis," or "N.Y.D. abdominal"—the initials "N.Y.D." standing for "not yet diagnosed." He recognizes that these are the cases which presented nothing but abnormal temperature, malaise, and slow pulse, and were evacuated to England. French authors have suggested that cases of icterohemorrhagic spirochætosis may have almost their whole incidence upon the kidney, and so one finds spirochætes in cases which cannot be distinguished from acute (trench) nephritis, except perhaps by the long continuance of much albumin and kidney débris in the urine. (2) The relapsing type of P. U. O. (trench fever) with the characteristic periodic rises of temperature, myalgic and periosteal pains, and leucocytosis with or without enlargement of the spleen, in which an improving technique has enabled him more and more frequently to find a spirochæte in the urine during and immediately after the exacerbations of temperature.

7. Notes on Ionic Medication and the Method of Administration.—Leighton Kesteven states that from the incontestably satisfactory results obtained by ionization as compared with simple electrolysis, he thinks it is impossible to doubt that ionic penetraton takes place. His experience in the treatment of ear disease has given him results that he could hardly have obtained by any other method. Resolution of inflammation, release of adhesions, and general bactericidal action are the things to be aimed at in dealing with the ear. Galvanism has done some good, but the great value of ionization lies in its sclerolytic effect. The absence of satisfactory results is somewhat due to the insufficiency of the technique employed. The proper method for treating the tympanum is to lay the patient's head sideways on the table, and to fill the external meatus with the solution employed, then the current is passed through it, thus ensuring a constant supply of the required ions. A small probe insulated to its tip will carry the current into the solution. Great relief may be obtained in classes of middle-ear catarrh in this way by the use of a solution of zinc iodide (30 per cent.) with 3 to 4 milliampères of current. Zinc iodide is a colorless and stable compound made by boiling zinc and iodine together in water in the proper proportions. It is nonirritative and soothing in action. Iodine being an

anion and zinc a cation the current must occasionally be reversed to get the benefit of both the elements, removing the anode during reversal to avoid the shock. In acute cases the current may be kept on for five to ten minutes, in chronic for twenty. The relief of pain in the acute cases is very marked after the current has run for a few minutes. In more recent cases relief comes speedily, a half dozen applications may suffice; in those of long duration weeks, and even months, are called for, and it is never justifiable to call off treatment without prolonged trial. In the functional deafness caused often by nerve exhaustion, the result of mental trouble, ionization gives much relief, often acting like magic. Many mastoid cases, if taken at a reasonably early stage, can be arrested and operation avoided by ionization with an absorbefacient bactericide. Mercuric iodide presents such a compound, and can be administered in 1 to 500 solution for periods of half an hour morning and evening with 5 milliampère current. Ionization with a 2 per cent. solution of alum is useful in relaxation of the tympanum. Kesteven has used arsenic ions in two cases of tuberculous middle-ear disease; in one case without result, in the other with very marked benefit. Aural vertigo so often indicative of labyrinthine loss of couple, is generally, but slowly, relieved by the mixed continuous ionization and mild faradic current. Labyrinthine tinnitus can also be greatly relieved and often removed by iodine ionization. The positive pad should be placed behind the mastoid, and the current (5 milliampères) sustained for half an hour on alternate days for a week or so. If pain is at any time urgent immediate relief can be given by ionization with cocaine. Morphine will act similarly, but more slowly. Goiter has been tackled with varying success by radium and *x*-ray therapy. It yields to ionization in a satisfactory manner, but the treatment is long and tedious. Kesteven employs this method of treatment for acute tonsillitis, using a curved aluminum probe insulated to within half an inch of its end, round which cotton-wool is wound and dipped frequently in 5 per cent. zinc iodide solution, and a 15 to 20 milliampère current is passed through the tonsil for five to ten minutes. Relief from pain is speedy, and the tumefaction subsides so rapidly after the applications that the tonsil will be nearly its normal size within forty-eight hours after the first application. Two or three applications are usually sufficient. In chronic indurated cases longer treatment is called for, say eight or ten times on alternate days with a 10 per cent. solution. The negative current should be passed through the probe, as iodine is an anion, and a padded cathode placed at the back of the neck. Enlargement of the turbinates can be reduced by the zinc iodide, but only 2 per cent. solution should be used, and about three minutes at a time is all that should be given, and a carbolic powder should be blown in afterwards to allay any smarting. The Eustachian tube can be ionized with a Eustachian catheter perforated at the sides for the last quarter-inch, and closed at the end. This is connected to a fine tube holding the ionizing fluid, with a fine wire in it to carry the requisite 3 milliampère current. It is best to use potassium iodide, as the zinc might do harm if swallowed. Five minutes at a time is ample and will often relieve middle-ear tinnitus. Enlarged prostrate can be treated with success by this method. Either aluminum or copper wire an eighth of an inch thick can be used for the probe electrodes, and an easy way to insulate them is to dip them into a saturated solution of celluloid in acetone. The points can then be scraped bare with the knife for the cotton-wool at the ends. The celluloid will not bear boiling, but can be sterilized with 30 per cent. carbolic solution.

Archives Médicales Belges.

August, 1917.

Functioning of the Adrenals in Infections Conditions.—Goormaghtigh contributes a preliminary note on this subject. He has studied 70 autopsy specimens obtained from a quarter hour to an hour after death from hospital patients dead of infections. Those who inspect the adrenals systematically during autopsies are familiar with two general types, normal and pathological. The latter presents a much smoother surface, of a frankly red color and sometimes brownish and even sepia. The consistence and weight are both increased. On section the medulla shows little or no change, but the cortex is profoundly altered. It is much thicker, and is uniform in texture, the yellow layer having disappeared. This type is present in all infections. The histological appearances are described in great detail and tend to show that in infectious states adrenaline is produced in excess, and that this excess of labor sometimes ends in exhaustion. Does the injection of adrenaline tend to activate the adrenals or does it only add to the blood a substance which is deficient? The examinations show that in those patients who received adrenaline injections during their illness the functional activity of these bodies was augmented. To obtain this result the drug must be injected subcutaneously in frequent (daily) doses. The material studied by the author consisted of surgical infections such as complicate war wounds. The author purposely avoids touching upon degenerative processes in the glands. The functional activity is alone considered. While the medulla activates the production of adrenaline, the cortex exerts an antitoxic power in infections through the production of certain lipoids. The adrenals and ovaries represent the chief sources of cholesterine, and indeed these two sets of organs resemble each other remarkably in several ways. The changes described by the author are purely functional and not to be confounded with any form of organic disease.

Le Progrès Médical.

September 1, 1917.

Traumatic Asthma.—Loeper and Codet refer to the dyspnea which so frequently follows traumatisms of the chest. This may persist for a long time and be either continuous or paroxysmal. It may have a mechanical, nervous or reflex mechanism, may be spontaneous or determined by an effort. It may simulate asthma closely, and this is the clinical expression to be considered here. This is rare in comparison with dyspnea proper, and it has been recorded but 5 times after 200 cases of traumatism of the thorax. Two cases are related, one of which is as follows: A sergeant received a penetrating wound of the thorax, in which a shrapnel bullet entered at the right clavicular region and emerged on the left side, at the scapulo-vertebral region, fourth intercostal space. The patient suffered from hemorrhages, frequent cough, fever and purulent expectoration, which symptoms lasted 5 or 6 weeks. Then when he seemed to be well he was seized with a paroxysm of asthma which necessitated his removal to a hospital. The paroxysm consisted of a short inspiration and a prolonged and difficult expiration with thorax distended. This crisis lasted 18 or 20 hours, during which patient sat up in bed with lips cyanotic and eyes overflowing with tears. He was constantly nauseated, vomited on occasion, and was also bothered with hiccough. The pulse was between 66 and 80, and compression of the eyeball lowered this rate to 30. As soon as the patient was able to expectorate freely the attack was evidently over. The crises appeared every 2 or 3 days, and after a crisis ocular compression lowered the pulse to 12. Radioscopy did not discover any sclerotic process, and sputum examination was negative. The second case closely resembled the first.

Syndromes Due to Gas Intoxication.—Voivenel and Martin, as a result of analysis of a number of cases of gassing, classify the material as follows, leaving out cases that perish at once as if drowned. Cases in which there is survival may be grouped as follows: Very severe, severe, and moderate or mild. In the very grave type we have a dominant and an exceptional form. In the former patient is cyanotic, with intense dyspnea and foamy saliva. The condition is one of subacute pulmonary edema. Despite the alarming condition, remarkable results are obtained from ipecac, venesection, and oxygen. In the exceptional form the patient is livid. The condition appears to be one of disturbed function (so-called form *sine materia*). In all very severe cases suprarenal insufficiency is in evidence. The patients are comatose, half comatose, torpid, mentally confused. The severe type, as distinguished from the very severe, suffers from marked

dyspnea, incessant cough, occasional vomiting; it differs from the very severe form in degree only. Finally the mild and moderate cases exhibit three clinical forms, viz.: pulmonary, gastroenteric, and nervous. The latter alone requires mention. It appears in the predisposed, and is expressed chiefly as pain and nervous and muscular asthenia, the pains comprising chiefly headache and backache.

La Presse Médicale.

September 6, 1917.

Is There a Closed Type of Tuberculosis in Evolution?—Richet Junior believes that pulmonary tuberculosis in evolution is always "open," from the very outset, and that the sputum always contains bacilli, and is contagious. The general belief is that in a large fraction of cases of clinical tuberculosis the sputum is bacillus-free, because the foci are "closed." Opponents of this belief have not been numerous, but of late some notable authorities have reached the opposite conclusion—Bezançon and de Jong and Rist for examples. This does not mean, perhaps, that the sputum is never free from bacilli, and in any case it is often necessary to use technical refinements to reveal their presence. One-slide tests are utterly untrustworthy. When a number of smears are made some of them will be negative. With physical signs of apex tuberculosis the first question relates to age. Is the focus old and stationary or recent and progressive? If the latter is the case, bacilli will practically always be found in the sputum. On the other hand, physical exploration may be negative throughout and yet there may be sputum containing the bacillus. A case is cited of a man who exhibited all the phenomena of healed tuberculosis, including absence of bacilli in the sputum. A week later a second sputum test made with all refinements of technique proved positive, much to the surprise of the medical staff. In another case the same sequence was present, with a single bacillus in the smear. Further tests, however, were negative, coinciding with disappearance of expectoration. Cases of this type are not uncommon and tend to show the limited value of negative finds. If, however, the latter persist, we may feel sure that the patient is improving. A certain number of negative finds has the same value as a single positive find. The fetish of a closed progressive tuberculosis of the lungs has come about perhaps from our knowledge of lymph node and bone tuberculosis, for here the surgeon, speaking surgically, can properly speak of open and closed lesions. There is no warrant at all to transfer this dichotomy to pulmonary lesions.

Intranervous Injections of Alcohol in the Treatment of Causalgia.—Pitres and Marchand describe three cases of atrocious suffering due to injuries of nerve trunks in which alcohol was injected above the lesion. In one case reported at length not only was the pain cured but motor and trophic disorders as well. The subjective sensations were those which attend upon severe burns. Neurolysis of the median had been without relief when the alcohol (60°) injected into the exposed trunk gave instantaneous relief. In another case due to injury of the medius a negative, and in a case of causalgia associated with paresis in the sciatic nerve area a positive results were forthcoming. The chief fear that interrupting the efferent nerve impulses can cause or increase motor paralysis is shown to be unwarranted.

Correspondenz-Blatt für Schweizer Aerzte.

September 1, 1917.

Frequency of Miliary Tuberculosis in Old Age.—Braun gives figures from the Pathological Department of the Basle University which show that over 14 per cent. of all cases of miliary tuberculosis were present in cadavers of subjects above the age of 60 years. This refers only to acute general miliary tuberculosis which must necessarily have developed late in life and have been the essential cause of death. The lungs were involved in practically every case, a fact previously noted in connection with this affection, and due to the fact that the bacillus enters the circulation through the venous system and encounters the lungs immediately through the lesser circulation. In old age it is even more apt to be arrested here than in earlier years. Next to the lungs in frequency the kidneys, spleen and liver are involved to a greater or less degree, and in a good majority of cases. The meninges are but rarely attacked—in about 10 per cent.—in direct contrast with the frequency of this participation in youth. The choroid shows an even greater degree of immunity; in fact, save for the lungs and other viscera first mentioned, all the tissues show more or less immunity. The mechanism of the infection is not readily apparent. Old foci were found in lymph nodes, lung tissue and other localities, and in about one-half of the cases a solitary focus of old tuberculosis could be held responsible. In the remainder there was more than one focus involved in the process. Vascular lesions, usually occurred in these cases as responsible for general infection, are not mentioned (save for a certain number of cases in which the thoracic duct was primarily involved). In explanation it should be stated that the autopsy material goes back to 1872, so that for many years vascular tuberculosis was not looked for. In its absence we can only attribute the majority of the cases to old lesions in the lungs and lymph nodes. The diagnosis of acute general miliary tuberculosis in old age is very difficult to make. Paradoxical cases of bronchitis and bronchopneumonia with signs of heart failure doubtless usually conceal its presence.

Glas's Symptom in Acute and Chronic Suppuration of the Nasal Sinuses.—Oppikofer refers to Glas's announcement in 1911 of a new diagnostic procedure in which a tuning fork was applied (as in Weber's method for otitis) with the presumption that the patient's hearing was normal. The method was to be of use to the general practitioner, in the absence of a rhinological examination. It should furnish a means of controlling the condition throughout, informing us as to progress of the case under treatment. But in using Glas's method we have to take the patient's word in arriving at a conclusion, and, further, no information is given as to the exact source of the pus (perhaps one of the other sinuses). Two men have in a way corroborated Glas's findings, but an authority like Hajek does not even mention the test in his edition of 1915. The author and his chief, Siebenmann, have examined 69 cases in the Basle nose clinic by Glas's method. All were adult patients with intact hearing apparatus. There were 21 cases of acute and 41 of chronic unilateral empyema of the antrum. In the latter class other sinuses were in part involved. The other 7 case were bilateral. In but 4 cases was a positive result forthcoming. The test is then worthless, and the only point of interest is the manner in which it imposed itself on three trained specialists. The underlying law is the superior conductivity of liquids and solids over air. Hence a tuning fork on the median line of the skull would have a superior conduction on the side in which the antrum contained fluid and thickened mucosa, and the patient would lateralize the sensation, as in Weber's test for inflamed middle ear. To obtain such results as he did Glas must have powerfully influenced the patients' answers by his mode of questioning.

The New Edema Disease.—Lange describes this new and peculiar affection which occurs chiefly in women in West Germany. Polyuria and nycturia are marked but bradycardia is not mentioned, nor is there any allusion to cachexia and a fatal outcome. Apparently there is more than one species of edema disease. In Lange's material there was no apparent physical cause. The organs seemed quite sound. The victims lived almost wholly on carbohydrates, the diet being calcium poor. This may have brought about a state of hydremia.—*Nederlandsch Tijdschrift voor Geneeskunde.*

Results of Continuous Low Neck Wear in Women.—Brocq states that as the result of going bare chested for 3 years women have developed an integument of very peculiar texture, with diffuse and lenticular pigmentation, telangiectasis, coarsening of the skin, keratosis of the follicles and acne. This does not include sunburn and its sequelæ. The resistance of the skin to disease is also much lowered as shown by the frequent development of eczematoid eruptions.—*Annales de dermatologie et de syphiligraphie.*

Book Reviews.

HANDBOOK OF GYNECOLOGY FOR STUDENTS AND PRACTITIONERS. By HENRY FOSTER LEWIS, A.B., M.D., Professor and Head of Department of Obstetrics and Gynecology in Loyola University School of Medicine; Chief of Obstetric Staff of Cook County Hospital; Fellow and Ex-President of the Chicago Gynecological Society; Late Assistant Professor of Obstetrics and Gynecology in Rush Medical College (in Affiliation with the University of Chicago), and ALFRED DE ROULET, B.Sc., M.S., M.D., Professor of Gynecology in Loyola University School of Medicine; Attending Gynecologist to the House of the Good Shepherd, and to St. Bernard's Hospital; Obstetrician and Chief of Staff of St. Margaret's Home and Hospital. Octavo of 452 pages, with 177 illustrations. Price, $4.00. St. Louis: C. V. Mosby Company, 1917.

THIS book is designed primarily for the third and fourth year medical student and the young practitioner. The authors say that they have tried to appreciate that gynecology is a lesser subject than medicine, surgery or obstetrics, and have tried to prepare a book which will recognize, in its demands upon the time and energies of the student and reader, the proper rank of the specialty. Long descriptions of major operations and their technique have been omitted, and the authors have endeavored to formulate principles of surgery adaptable to the special work without elaborating minor details. As they say, one cannot learn technique by reading descriptions and studying illustrations. In their opinion the primary requisite is a good foundaton in pathology, anatomy and physiology; next, practice in assisting good operators at the bedside and at the table.

The authors' method of handling their subject is somewhat unusual since they have followed, as far as possible, the lines of pathology rather than the usual anatomic method, which consists in taking up the lesions of individual portions of the genital tract from vulva to Fallopian tubes. Thus, in this book gonorrhea, in all its aspects, is discussed in one chapter in which is covered both the immediate and remote results of gonorrheal infection in all the various parts of the genital tract. From the initial chapter on the anatomy and physiology of the female genitals to the last, covering neuroses and psychoses, the book is full of meat. The chapters covering what might be called general considerations, such as those on diagnostic methods, asepsis, care of the patient before and after operation, and anesthesia are excellent, and filled with what might be termed in the vernacular "good horse sense"; while the authors have covered all the special fields on the same preëminently rational basis.

A MANUAL OF ANATOMY. By HENRY ERDMANN RADASCH, M.Sc., M.D., Assistant Professor of Histology and Embryology in Jefferson Medical College; Instructor in Anatomy in the Pennsylvania Academy of Fine Arts, Philadelphia. With 329 Illustrations. Price, $3.50 net. Philadelphia and London: W. B. Saunders Company, 1917.

THE author of this volume is to be congratulated on his courage in breaking away from the tradition that a book on anatomy must be the largest volume on a student's bookshelves. It has long been evident that a work intermediate in size between the present textbooks and the compends might supply all that the average medical student requires. The present volume attempts to supply this want, and should be welcomed by beginners, premedical students and nurses. The main facts of anatomy are well presented, and most of the comparatively unimportant details are omitted. The book is well printed and illustrated, most of the illustrations being taken from standard works. It is an excellent short textbook on the subject, and should soon become popular with the class of readers for whom it is intended.

SANITATION FOR MEDICAL OFFICERS. By EDWARD B. VEDDER, M.D., Lieut. Col., Medical Corps, U. S. A. Illustrated. Price, $1.50. Philadelphia and New York: Lea & Febiger, 1917.

THIS is the first of the medical war annuals, authorized by the Secretary of War, and brought out under the supervision of the Surgeon General and the Council of National Defense. It is peculiarly appropriate that the first of the national medical war annuals should be devoted to sanitation. In no war has preventive medicine played so great a part as in the present war, and it is mainly due to effective sanitation that epidemic disease on a large scale has been prevented among the armies in the field. Col. Vedder has produced a manual worthy of his reputation as a sanitarian, and this little work should prove of the greatest value to medical officers.

PRINCIPLES OF PHARMACY. By HENRY V. ARNY, Ph.G., Ph.D., F.C.S., Professor of Chemistry in the College of Pharmacy of Columbia University; Sometime Dean and Professor of Pharmacy in the School of Pharmacy of Western Reserve University; Member of the Committee of Revision of the United States Pharmacopœia, Ninth Revision; Member of the Committee of Revision of the National Formulary, Fourth Edition. Second Edition, Revised; with 267 Illustrations. Price, $5.50 net. Philadelphia and London: W. B. Saunders Company, 1917.

THE first edition of this book appeared some eight years ago; in the meantime considerable advances have been made in chemistry and pharmacy, and new editions of the United States Pharmacopœia and the National Formulary have been issued. As a result, a large number of changes will be found in this new edition. The general plan of the book remains as before, and the author is to be congratulated on having reduced the bulk of the volume. The book consists of seven parts; the first deals with pharmaceutical processes; the second, with galenical preparations; the third and fourth, with the inorganic chemicals used in pharmacy, with chemical theories and chemical arithmetic; the fifth, with chemical testing; the sixth, with the prescription; while the seventh gives an outline of laboratory work, with exercises in equation writing and in chemical arithmetic. An important feature in this new edition is the insertion of a carefully selected bibliography at the end of several of the more important chapters. The book will prove an interesting and valuable addition to the working library of every physician.

DREAM PSYCHOLOGY. By MAURICE NICOLL, B.A., M.B., B.C. (Camb.), Capt. (Temp.) R.A.M.C. Price, $2 net. London: Henry Frowde, Hodges & Stoughton, Oxford University Press, 1917.

TEN years ago we doubt if such a book as this would have been taken seriously even. Freud and his followers have endeavored to dignify the dream by labeling it a significant product of the unconscious, and even their detractors are forced to give attention to its possibilities. The present volume is Jung rather than Freud, and in some instances it does not appear that Jung is accurately interpreted, particularly where emphasis is laid on the process of the dream over-compensating or under-compensating conscious ones. Introversion and extroversion are competently expounded. As a whole, Dr. Nicoll's book is a well-written, extremely suggestive treatise on the dream.

CLINICAL CARDIOLOGY. By SELIAN NEUHOF, B.S., M.D., Visiting Physician, Central and Neurological Hospital; Adjunct Attending Physician, Lebanon Hospital. Price, $4. New York: The Macmillan Company, 1917.

IN this work Dr. Neuhoff has paid especial attention to graphic methods in the study of heart disease rather than to instrumental and technical considerations. Moreover, he writes more from the clinician's than from the cardiologist's standpoint. The author is somewhat inclined to deprecate the fact that so great importance is given in recent books on cardiac disease to instrumental methods, for while recognizing their importance, he is yet of the opinion that these are not infrequently subsidiary. Consequently, a considerable part of the book has been devoted to the clinical side of cardiology, and the subjects of pathology, etiology, diagnosis, prognosis, and of the therapy of endocarditis, myocarditis, and cardiosclerosis are accorded full consideration. The work is well illustrated and will be found to be an exceedingly useful book of reference.

Society Reports.

AMERICAN PUBLIC HEALTH ASSOCIATION.

Annual Meeting Held in Washington, D. C., October 17-20, 1917.

THE meeting of the American Public Health Association, held in Washington, D. C., from October 17 to 20, was a war meeting and most of the discussions and papers referred to topics directly or indirectly connected with the prosecution of the war. The outstanding feature of the meeting was the mutual desire for cooperation on the part of the military and civilian medical public health workers. The old-time self-satisfied attitude of the army medical men has given way to a whole-hearted appreciation of the advice and help from outside agencies. This keynote was voiced in all of the addresses and speeches made on behalf of the Army and Navy.

Triumphs of Sanitation.—Invariably, also, the triumphs of sanitation over the previous scourges of war were emphasized. In 1898, during the Spanish-American War, the American army had approximately 22,000 cases of typhoid fever with about 2100 deaths, most of the infections occurring in the United States; in 1916, when a similar number of soldiers were encamped on the Mexican border, there were only 46 cases of typhoid with one fatality, this single death being the case of an officer in the Medical Reserve Corps who claimed to have had typhoid fever and consequently did not take the anti-typhoid vaccination.

Likewise, scurvy in the naval forces has been almost exterminated. Surgeon General BRAISTED of the Navy gave an account of the decrease of scurvy in the last one hundred and twenty-five years. He stated that in 1797, prior to the introduction of anti-scorbutic measures in the British Navy, the death rate was approximately 120 out of every 1000 per annum. Fifty years later the rate in the British Navy was 30 per 1000 and last year in the American Navy the loss was but 4.48 per 1000 of personnel. This is one of the conspicuous examples of sanitary achievement in the Navy. The provision of cold storage facilities on the ships for preserving fresh vegetables, fruits and meats, the installation of good ventilation, lighting, and plumbing, the establishment of hospitals and the general care of the health and comfort of the mariners has made the American Navy unexcelled in general health standards and sanitation. The healthfulness of the navy is remarkably good.

Venereal Diseases.—One of the most seriously debilitating influences in the Army, as well as in the Navy, is venereal disease. The prevalence of venereal infection, as is well known, has been very large in the regular army, over 90 per 1000 men suffering from these diseases. It is most astonishing that the recently drafted citizen army contains more than twice as large a percentage of venereally infected. The rate is something like 212 per each 1000 men. Venereal diseases, for obvious reasons, were not a cause for exemption from military service. Dr. R. C. HOLCOMB, medical inspector of the Navy, spoke at length about venereal prophylaxis. It failed to a large extent because of the ignorance and indifference of the men and the indulgence in alcohol. In spite of the efforts made through education leaflets and talks to inculcate into the minds of the men the dangers of venereal disease and the importance of early application of prophylactic measures, the results have been discouraging. A study of 32,852 cases revealed the fact that a monthly percentage of men who took prophylactic treatment varied all the way from 2.06 per cent. to 59.9 per cent. On one ship where the prophylactic tubes were carried in the canteen for sale, just 7 tubes were sold from September 10 of one year until February 4 of the next. In view of such ineffective use of the packet, a law of punitive prophylaxis went into effect on August 29, 1916, which provides for the stoppage of pay because of absence due to sickness caused by venereal diseases, and this measure is considered by Dr. Holcomb as one of the most effective methods of meeting indifference. The following are the statistics to bear out his conclusions: For chancroid the daily sickness admission rate for the first three-quarters of 1916 was 6.68 and for the last quarter of the year (after the law had gone into effect) it was 6.45. The average time lost during the first three-quarters was 35.91, and for the last quarter it was 33.58 days. For gonorrhoea, the daily admission rate showed a decrease for the same period from 16.17 to 14.11 and the time loss from 132.89 to 84.11 days. For syphilis, the daily sickness admission rate increased from 4.15 to 4.38, but the time lost decreased from 217.46 to 172.64 days. It has been suggested that punitive prophylaxis may have the result of making men avoid going to the medical officer for fear of losing their pay and that in the long run more harm will come from it than good. Dr. Holcomb, however, argues that the figures showing the decrease in time lost do not bear out this fear.

Dr. Gorgas may have presented the case a little too strongly when he stated that disabilities from wounds in war time do not exceed the disabilities from venereal diseases, but this statement drove home to his listeners the magnitude of the problem.

Military Statistics.—The amount of time lost because of sickness and injuries in the army in ordinary times may be gauged from the statistics given by Col. WESTON P. CHAMBERLAIN of the Medical Corps of the Army, The total number of admissions to sick report is ordinarily very high. It was 726.19 per 1000 men for the year 1915. For the year 1914 the average was 660.45. The annual death rate per 1000 men in the Army for the decade from 1905 to 1915 was 5.17 and the discharge rate per 1000 for the same period was 16.81. The average rate of constant sickness or the so-called constant non-effective rate was 23.78, and the average number of days lost per year by each soldier because of sickness was 8.77. This rate includes disabilities from injuries as well as from sickness. Both Dr. Chamberlain of the Army and Dr. J. R. Phelps of the Navy gave detailed descriptions of the health and hospital records kept in the two branches of the military establishment of the United States. The Army records enable us to obtain the extent of sickness and injury by days and weeks and also to get full knowledge of each specific disease and injury according to age and length of military service, rank, branch of service, race and color, geographical divisions, and climate. The importance of carefully kept sickness statistics of the Army and Navy cannot be overemphasized.

Mental Disorders.—Systematic and well planned care of mental and nervous disorders occurring in the Army is a new feature of the medical organization of our military service, devised under the enlightened leadership of Dr. Gorgas. Major PEARCE BAILEY discussed this phase of the medical problem and called attention to the large number of cases of nervous and mental diseases developing under the strain of modern welfare. The first statistics ever accumulated concerning this phenomenon were collected during the Russo-Japanese war, and from this source we learned that 1700 cases of these disorders resulted from the siege of Port Arthur. When the present war started neither France nor England had made any provision for the care of the large number of nervous and mental cases and they soon began to realize the need for reconstruction of their medical organization. As a result a large number of psychiatrists and neurologists were called into the army. The English statistics were reported to show that one-seventh of all discharges are due to nervous and mental disability, while wounds produce only one-third of all the discharges. The medical organization of our army has, from the outset, taken cognizance of the existence of these conditions. Provisions have been made for the elimination of the unfit and all those likely to break down from nervous causes under war strain and for facilities to care for those who, in spite of all precautions and selection, might become afflicted. The men suffering from mental and nervous defects such as epilepsy, psychoses, and syphilis of the central nervous system, are exempted from service in our army. The records already available show that from 1.5 to 5.0 per cent. of the troops examined have been discharged for these causes. The fighting morale of our army will be greatly strengthened by the elimination of this type of cases and the special hospital provisions which are being devised for taking care of nervous and mental

cases will prove of inestimable value to our troops.

The Food Problem.—The question of food and its relation to the war was under consideration. Mr. HERBERT C. HOOVER presented a statement of the magnitude of the problem of supplying four principal staples to our Allies on the firing line. The foods selected for shipping abroad are those which contain the most food in concentrated form, such as meat, sugar, grain, and dairy products. He stated that sixty million bushels of grain every month are required for export. Our wheat crop this year is below par, but other cereal crops are above normal and with wise economy we should have no difficulty in supplying both our needs and the requirements of our Allies. He said that in spite of all the pleadings with the people of the country the consumption of sugar during the last four months has not decreased and the consumption of fat has increased since the opening of the war by 10 per cent. According to the calculations made, the average consumption of fat *per capita per diem* in this country is 150 grams. Mr. Hoover said that during his two years' experience in Belgium the ration allowed contained 40 grams of fat, 60 grams of protein, and 300 grams of carbohydrates. The 40 grams of fat were entirely sufficient for the population except for adolescent children. For them the ration was increased by special lunches in the schools, consisting chiefly of fatty foods. He made a plea for help on the part of the health agencies of the country, which can be best accomplished by the education of the people to the importance of moderate eating and to the multifarious ailments which follow over-indulgence. He also stated that in 70 per cent. of the homes of this country no food is being wasted, and that in 30 per cent. of the households so much is being wasted that if these households would save the unnecessary waste two-thirds of the national problem would be met.

Pellagra.—An interesting side-light on the relation of food and disease was presented by Dr. LOUIS I. DUBLIN in his paper on pellagra. The conclusions of the paper were based on the study of 2000 deaths which occurred among the policyholders of the Metropolitan Life Insurance Company in the southern states. The records were studied with a great deal of care and covered the period from 1911 to 1916. The year 1915 was a very heavy year for pellagra which exacted more deaths in the region than scarlet fever. The reason for this high mortality was ascribed to the bad financial conditions of 1914 following the opening of the war, with its disastrous effects on the cotton growers of the South. In 1916 the pellagra death rate uniformly dropped over 50 per cent. It went down to the rate of 1911 in every district. In the discussion it was pointed out that next year, following the present food shortage, may again show an increase in the incidence of pellagra. It may also be of interest to note that on the basis of the study, the death rate from pellagra was found to be much higher for the negroes than for the white race, it was higher for females than for males, and it was higher for adults than for children. It is very rare as a cause of deaths in infants and children. At the age of fifteen years it begins to appear and goes up rapidly with advancing years.

Poliomyelitis Serum.—Dr. E. C. ROSENOW of Rochester, Minn., presented a short report on the effects of the horse serum treatment of poliomyelitis as established in the experiments at Davenport, Iowa. As his report has already been published (see MEDICAL RECORD, Oct. 13, 1917, page 649), it is not necessary to go over it in detail again. Excluding 7 moribund cases from a group of 56 patients treated, he had a fatality of only 5.3 per cent. and in all other cases the treatment has been carried out with strikingly good effects. His results are probably the best thus far reported. He has on hand serum sufficient to treat a considerable number of patients and it can be obtained from him free of charge for trial in localities afflicted with an epidemic of poliomyelitis.

Hospital Statistics.—The medical and social value of uniform hospital statistics was discussed in the report of a special committee headed by Dr. F. L. HOFFMAN of the Prudential Life Insurance Company's Statistical Department. The report advocates a simple but uniform classification of patients by principal groups of disease, sex of patients, length of stay in hospital with subdivisions of condition on discharge. The plan advocated is along the lines of the splendid report recently published by Johns Hopkins Hospital. Comparability of hospital statistics is necessarily predicated on uniformity of classification of diseases, but the report does not definitely suggest what this classification should be. "Whenever classification is ultimately adopted it should, as far as practicable, be in conformity to the classifications of industrial accidents by causes or contributory circumstances in use in workmen's compensation or industrial accident boards." The report pointed out that our hospital statistics are in the most neglected branch of medicine and their application to vital questions such as health insurance and others belongs to the future rather than the present or the past. We have been and are spending great amounts of money for the publication of unscientific hospital reports without any reference to other reports and without any particular value. In England the hospitals make reports to the Metropolitan Asylums Board of London or to the Medical Officer of the Local Government Board and the amount of available data from the collective investigation of hospital experience is of great medical and social value. The committee which drew up the report is of the opinion that it would be advisable to arouse public interest in the possibilities of a collective hospital statistics compilation under the immediate direction of the United States Public Health Service. It would not involve, in the opinion of the committee, very material expense on the part of the large hospitals to send a weekly report to the office of the Surgeon General of the United States Public Health Service for tabulation and analysis. At the beginning the reports would be limited to a small number of important items and gradually could be enlarged as occasion demanded.

Dr. CHARLES SCOTT MILLER gave an account of the attempt made in Philadelphia to bring about the uniform registration of hospital statistics for the aid it affords in public health administration. The plan seems to be working out very well but the time it has been in operation is not long enough to warrant definite conclusions.

In the City of New York the need of hospital statistics was first emphasized by Dr. Charles F. Bolduan of the New York City Health Department, in which the form of a tabulation chart was worked out. The Metropolitan Life Insurance Company has recently authorized its statistical department to undertake the tabulation of statistics of several of the larger representative hospitals along the lines suggested, but because of some minor difficulties the report and collection of the statistics has not yet been begun.

In this connection the adoption by the Public Health Association of the report of the Committees on the Revision of the International List of the Causes of Death may be mentioned. This painstaking report, the preparation of which took two years' time and a great deal of energy and effort, will be of great service to all the registrars of vital statistics all over the country. It presents to them a summary of our present knowledge of pathology and indicates which causes of death may be accepted without supplementary evidence, such as laboratory tests or autopsy findings. It is one of the most useful aids in improving our vital statistics and will prove to be of inestimable value to all statistical workers. The idea of the plan was conceived by Dr. Haven Emerson, present Health Commissioner of New York City, who was aided in the endeavor especially by William R. Williams, M.D.; Warfield T. Longcope, M.D.; Charles Norris, M.D., and Mr. George H. Van Buren of the Statistical Department of the Metropolitan Life Insurance Company.

Public Health Education.—This constituted one of the topics of lively discussion. Dr. JOHN W. TRASK, Assistant Surgeon General of the United States Public Health Service, gave an able survey of the chief avenues of public health education. In his estimation the day is not far distant when in the newspapers the health column will be as indispensable as the joke column. He urged that the family magazines and educational periodicals increase their usefulness by maintaining well edited departments for the discussion of matters relating to personal and community hygiene and pleaded that the public be made to realize that instruction in the principles of hygiene and how to live successfully is as important as instruction in the three R's.

Dr. Ira S. Wile of New York gave an outline of a plan for health education of school children, suggesting that health education be established in all grades and be taught all the time. He believes that much of the material now prepared for health education among adults is wasted. This view, however, was disputed for according to one speaker the commercial auvertisers certainly knew what they were doing and were undoubtedly getting results.

Dr. W. S. Rankin of Raleigh, North Carolina, pleaded for some sort of a gauge of the usefulness of certain media of education, such as moving pictures for example. His claim was that people going to moving pictures go to be entertained and not to be instructed, and he ended by saying: "How many of you remember two days after seeing a screen play the plot or even the name of the play?"

Dr. Charles F. Bolduan of New York was of the opinion that moving pictures are a great help in educational work and he considered the movies as one of the best avenues of bringing to the people the message of health. In his judgment effort should be made to induce the moving picture theatres to include a health real in every regular program.

Industrial Hygiene.—The conservation of the health of workers, which has been a matter of discussion and consideration for many years, has assumed acute importance in the present crisis when additional strain is being put upon industrial classes. Mr. D. D. Kimball of New York emphasized the need of revision of our ventilation standards in conformity with the recent researches made by the New York Ventilation Commission and other modern studies based on physical rather than quantitative standards. Correct temperature, prevention of excess of humidity and air movement are the essential features of good ventilation. He gave an outline of the contributions to this subject in the past year.

Starting from the same premise of the paramount importance of conserving energy and health, Prof. Frederic S. Lee of New York read a paper on the "Bearings of Physiological Science on Industrial Efficiency." One of the greatest problems of the day is the solution of the problem of "how the human machine can be used so as to obtain from it the greatest advantages." To this problem the Health of Munition Workers Committee in Great Britain and our own Committee on Industrial Fatigue of the Advisory Commission of the Council of National Defense have dedicated their energies and efforts. A large number of studies have been made, and they all point to the fact that the old view of employers of labor that long hours necessarily mean a greater output is absolutely erroneous and saps the energy of the nation's workers. All the physiologic evidence points to the need of introducing recess periods into long spells of labor, to omitting Sunday work, and against the imposition of overtime on already fatigued workers except in rare emergencies and only when compensation can be given by free hours later. He advised against keeping the same workers continually on night shift, and pointed out that each worker has a rhythm which is best adopted to his neuromuscular mechanism, and that it is advantageous to place in a squad of workers doing a specific task only those possessing similar rhythm.

The special sub-committees appointed by the President of the American Medical Association at the request of the Labor Section of the Council of National Defense made their reports at the meeting. They were charged with the task of formulating standards for industrial establishments which shall be accurate and simple. Various ingenious apparatus have been devised for measuring and testing conditions. Mr. L. B. Marks of New York has been able to obtain accurate results in testing lighting with a small photoscope which requires only a simple adjustment to record candlepower of any intensity. Dr. Hills of Chicago has devised an apparatus for counting dust particles in the air by means of which a measured quantity of air is forced over a half-inch plate with a sticky surface and the particles counted under the microscope. To guard against errors he has arranged a sequence of nozzles similarly loaded with adhesive glass plates so that the dust particles, if not caught on the first, will become attached to the second, third, or fourth plate. The intensity of odors can also be measured by a special instrument. Probably the most valuable contribution made was a chart for plotting the condition of the atmosphere as to temperature, moisture, motion, odor, dust, bacteria, and chemical composition. This chart is graded between a zero point at which life would be impossible and a 100 per cent. ideal condition. Dr. Hills did not claim for this chart perfection, but thought it would be valuable as a basis for measuring and comparing existing conditions and of basing on them the necessary improvements.

Dr. George M. Price offered a report on shop and industrial sanitation. Representatives of industrial plants met with the scientific workers and discussed various standards of industrial sanitation. There was an active debate regarding the frequency of medical examination of persons employed in hazardous processes, and a great deal of difference of opinion developed on this point, some favoring examination every 30 days. No final conclusions have as yet been reached concerning the various topics involved.

That the adoption of such standards at the earliest time is necessary was strikingly brought out by Dr. Emery R. Hayhurst of Ohio. He pointed to the fact of the increasing number of industrial accidents and diseases, and also to the special need of protection because of the large number of women and juveniles that are being taken into industry to make up for the shortage of man power.

Scarlet Fever.—A statistical study of scarlet fever was presented by Frederic S. Crum, Assistant Statistician of the Prudential Life Insurance Company. The study is based on data drawn from various countries, and the most important conclusions which can be derived from it are as follows: Scarlet fever has been decreasing in prevalence and fatality in recent years everywhere. It seems to be gradually disappearing under the concerted and intelligent efforts of modern medicine and sanitation. It is less prevalent in tropical and semi-tropical climates than in temperate zones, and the negro race seems to be less susceptible to its ravages than the white race. Mortality from scarlet fever is higher in urban than in rural areas. The world-wide decline in scarlet fever, as noted above, has effected the United States also, and during the period from 1900 to 1915 there was a considerable decline, but the urban still averages twice the rate of the rural areas. It is 10 in the urban centers and 5.8 in the rural areas per 100,000 of population. Both sexes appear to be almost equally susceptible to the attacks of scarlet fever in the United States. At the ages under five years of life the mortality among males is slightly higher than the mortality among females; but in England and Wales sex differences are most negligible. In this respect scarlet fever differs from the other three communicable diseases of childhood. It is most frequently fatal in the third year of life; it is also comparatively dangerous in the second and fourth years of life. Up to the third year it is less important as a mortality factor. At no age does it approach diphtheria. During and subsequent to the fourth year of life it is a more important mortality factor than either measles or pertussis. Scarlet fever is very frequently accompanied by secondary complications which either run a fatal course or result in serious permanent disabilities. The experience of the Prudential Life Insurance Company for the years 1914-1916, embracing 1485 deaths, shows that the largest number of complications (130) were with acute Bright's disease; next was chronic Bright's disease, 93; next in numerical importance was pneumonia, 59 cases; acute endocarditis in 56 cases; bronchopneumonia in 54 cases; diphtheria in 39 cases; and meningitis in 39 cases. The statistics of the Metropolitan Asylums Board of London during 1910-1914 show that out of a total of 63,085 cases of scarlet fever 27,190, or 43.1 per cent., were accompanied by complications. Otitis was present in 5981 cases, albuminuria in 4711 cases, adenitis in 3835 cases, nephritis in 1889 cases, rheumatism in 1855 cases, chicken pox in 1117 cases, diphtheria in 1041 cases and tonsilitis in 1012 cases.

Puerperal Diseases.—A report on the deaths from puerperal causes in the State of New York outside of New York City was given by Dr. William J. V. Deacon. The study made covers a 10-year period from 1907 to

1916. The average death rate from puerperal causes in New York State has been lower than for the entire registration area; in 1916 it was 12.2 per 100,000 population, while the registration area rate was 14.9 in 1915. Despite the fact that the New York rate is lower than that of the registration area, it is much higher than that of foreign countries, Sweden, for example, showing a death rate of 6.0, Norway 8.1, Italy 8.9, France 10.3, Prussia 10.4 and England 11.1. Of all the puerperal diseases, puerperal septicemia claimed the largest percentage of victims, 38.1 per cent. of all the deaths from puerperal diseases being due to this cause; the second was puerperal albuminuria, which claimed 27.4 per cent. of all the fatalities. It is almost inexplicable why the death rate from puerperal conditions should be so much higher in this country than abroad, particularly when we consider that a large percentage of foreign-born women are included in our population. It is estimated that 41 per cent. of the women included in the study were of foreign birth and 59 per cent. were native born. Surprising was the statement in Dr. Deacon's paper that the mortality from puerperal causes is larger in urban communities than in rural, which seems contrary to all the usual statements and assumptions. In 1916 the figures showed that the percentage of deaths from all puerperal causes was 59.1 in cities and 40.9 in country districts. From puerperal septicemia alone there were 66 per cent. of all the deaths from puerperal causes in cities and 44 per cent. in country districts. The reasons for this condition are far from being well understood, and it would seem that a careful study of the problem, either on the part of private health agencies or the public, is strongly indicated.

The Importance of Public Health Laboratories.—In a series of papers the importance of laboratories was emphasized. Prof. HENRY ALBERT of Iowa presented a summary of the services of the several State public health laboratories with reference to wartime activities. The summary is based on a questionnaire which he sent to all the State laboratories, and indicates the extent to which the laboratories are being utilized for military purposes, and of what extension they are capable in the future. Some laboratories reported that they are handicapped by the drafting of their trained workers, and a plea was made for the exemption of men in laboratory work because of the need of their services to the military establishment, as well as for the welfare of the civilian population.

Dr. WILLIAM H. PARK of New York presented a most instructive report on immunization against typhoid fever and on the spread and prevention of cerebrospinal meningitis in the English and French armies. The troops have suffered several outbreaks of this latter disease. The rôle of carriers in the spread of epidemics of meningitis was discussed at length, as was also the effect of vaccines in checking its spread.

Both Dr. Park and Major Edouard Rist of the French Army discussed the effects of immunization against typhoid and paratyphoid fever, and showed how, by the gradual introduction of the vaccine, the two diseases have been practically eliminated from the army. At first a large percentage of the troops had not been vaccinated against either typhoid or paratyphoid. Gradually the typhoid vaccine has been extended, and, while there has been a decrease in the incidence of typhoid, the prevalence of paratyphoid remained unchecked. The paramount importance of a triple vaccination has been fully demonstrated.

Resolutions.—The sessions of the conference ended on the afternoon of Saturday, Oct. 20, 1917, and a number of resolutions were adopted, among which were the following:

Resolved, That the American Public Health Association urges upon all Federal, State and local health authorities; upon physicians, hygienists, and sanitarians; and upon all organizations interested in or dealing with the public health, the importance of unusual solicitude and activity in conserving and promoting the health of the citizen population during and after the present war.

Resolved, That the Council of National Defense be requested to have established immediately under the U. S. Public Health Service a bureau of information that shall promote the installation of medical supervision in all plants employing 1000 or more employees; and that all industries engaged in governmental work be required to institute such medical supervision.

Resolved, That the thanks of the American Public Health Association be extended to the American Red Cross for its establishment of a bureau of sanitary service for the purpose of assisting the various health authorities in the maintenance of effective sanitary control of the communities adjacent to cantonments and other important military establishments, and that the American Public Health Association pledges itself to cooperate fully and heartily, whenever desired, with said bureau, and all other activities of the Red Cross, for the conservation and promotion of the public health.

Whereas, Mr. Herbert C. Hoover, Federal Food Administrator, in addressing the American Public Health Association on Oct. 19, 1917, stated that the food conservation problem was largely and primarily an educational problem; and

Whereas, Mr. Hoover, in the same address, made the practical suggestion to the health officers assembled that they could be of most service in his work by directing public attention to the hygienic aspects of food conservation; and

Whereas, Public health agencies, State and municipal boards of health, are well equipped with educational means, such as bulletins, special educational pamphlets, press service, and exhibits for reaching the public; and

Whereas, Most public health agencies do not have in their personnel persons who can prepare suitable educational material for the aforementioned means of publicity; and

Whereas, Such deficiencies in the personnel of the various State and municipal boards of health would be supplied and the ends of efficiency and economy met by some provision in the office of the Federal Food Administrator for furnishing suitable bulletins and press material to public health agencies; therefore, be it

Resolved, That the American Public Health Association appoint a committee of three to respectfully suggest to the Federal Food Administrator the creation of such agency as suggested in the preamble; and be it further

Resolved, That this Association pledges to the Federal Food Administrator its sympathetic and full support, and its earnest cooperation in aligning of public health agencies, whether or not they be affiliated with this body, in carrying into effect the plan herein suggested.

Dr. CHARLES J. HASTINGS of Toronto, Canada, was elected President.

E. H. L.-C.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held October 4, 1917.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

Principles of the Treatment of Wounds. — Dr. ALEXIS CARREL delivered this address. He stated that the principles for the treatment of wounds which he would describe had been developed in the course of two years by a group of men with which he had had the privilege of being associated. The methods found were of such kind that it required the team work of men trained along different lines. This group was composed of five surgeons or medical men, Drs. Dehelly, Guillot, Woimant, Dumas and Audigane; of a mathematician and physicist, Captain Lecomte du Nouy; of two chemists, Dr. Dakin and Dr. Daufresne, and of a bacteriologist, Dr. Vincent. The purpose of the method was to prevent or to stop suppuration, to sterilize the wound and close it. These results they had succeeded in obtaining, but the method involved no new principles. It was derived directly from Pasteur and Lister. No new surgical procedures were invented. The techniques they used are known to every surgeon. Neither was the method characterized by the use of any new chemical substance, the antiseptic power of hypochlorite of sodium having long been recognized. The results had been obtained by systematizing these old procedures in a new way. This new systematization had been brought about by the application of two quantitative methods. Accurate measurements are the neeessary condition of

scientific progress. The use of the scale caused the wonderful growth of chemistry. Medicine was so slow because of the failure to use quantitative methods. The two methods which they had employed were simple ones. The first was that of measuring the volume of infection and of following its increase or decrease; the second was that of measuring the progress of healing by means of a technique based on the discovery of some of the laws of cicatrization. Thus the volume of infection and the rate of healing were accurately measured and it became possible to handle the infection without interfering with the cicatrization. It was only after thousands of observations and clinical experiments that the method was considered as established. This method might be defined as a combination of procedures consisting of four parts: (1) Mechanical sterilization. (2) Chemical sterilization. (3) Bacteriological control. (4) Closure of the wound. None of these parts could be separated from the others; all were essential to the successful treatment of wounds by this method.

1. One could not sterilize a wound properly by chemical methods unless it was first sterilized mechanically, and one could not close the wound until it was shown by the bacteriological control to be aseptic. The problem of mechanical sterilization of a fresh wound was a very simple one as they had worked it out in their hospital at Compiègne, especially by Dr. Dehelly. The surgical cleansing of a wound must be made not at the first aid dressing station, but at the casualty clearing station. The casualty stations are usually situated from five to seven miles from the front lines, and when the patients were brought to these stations the mechanical cleansing could be effected by large incisions opening to the deepest parts of the wound. After the wound was laid open and explored for shell fragments, pieces of clothing, or other foreign bodies, every particle of foreign matter was removed. This was easy to do if one received the patient a few hours after he had been wounded. The bacteria were usually carried by particles of clothing or other foreign bodies and were easily removed from the surface of the tissues by the mechanical sterilization of the fresh wound. Dr. Carrel emphasized very strongly the necessity of thoroughness in the removal of all foreign bodies, since it was from these that gas bacillus infection usually started, and pieces of clothing were likely to carry the spores of the Welch bacilli. Blood clots must also be carefully removed and hemostasis made, because bacteria were located in the blood clots and the hypochlorite could not rapidly dissolve the blood clots. If the patient was received a few hours after being wounded, in many instances the wound could be mechanically cleansed and closed. But immediate closing of a wound was not a scientific method. One was justified in using this method only when he was absolutely sure that the patient could not be evacuated for ten days; otherwise a primitive suture should never be made. The treatment of old suppurating wounds was different. In many instances of suppurating surface wounds this mechanical cleansing and washing with neutral sodium oleate and water brought about a surprising degree of sterilization, though it might not last long. When one was dealing with old suppurating wounds with fractures, the problem was very much more complicated. In this class of cases a surgical operation should not be attempted until at least ten days after the infection was decreased by chemical sterilization. Only such surgery as was absolutely imperative should be made at this stage of infection. The suppurating wound was treated by chemical means, and when the infection was reduced as much as possible, the necessary surgical cleansing was performed. It was then completed by a new and thorough chemical treatment.

2. The chemical sterilization in itself was a comparatively simple procedure and could be defined as a combination of processes by which chemical substances were used under specific conditions of contact, concentration, and time, for the purpose of securing surgical asepsis. The antiseptic substance was an instrument. It played the same role as a scalpel in a surgical operation. One should be selected which best fitted the purpose for which it was to be used. Surgeons used different kinds of antiseptics just as they used different kinds of surgical instruments. We must have an antiseptic which killed the bacteria but did not destroy the tissues. In order to know the practical value of an antiseptic, we must have a measure of its action on the bacteria and on the tissues. This was made by measuring the volume of infection and by the proper use of the algebraic formula of Captain du Nouy. Among the excellent substances studied by Dr. Dakin at the beginning of the war, Dr. Carrel selected two, sodium hypochlorite and chloramine-T. He gave the name of Dakin's solution to sodium hypochlorite, deprived of its alkalinity, in order to distinguish it from Lebarraque's solution which contained a great deal of alkali. Chloramine-T, which was soluble in water and had a high antiseptic power, differed from sodium hypochlorite in that it did not dissolve necrotic tissues and was less irritating, and might be used on skins which were more than ordinarily sensitive. Almost the same results might be obtained with magnesium hypochlorite, but it was less satisfactory than sodium hypochlorite because the magnesium dissolved very little of the necrotic tissue. Flavine and dichloramine-T dissolved in oil and several other substances had been experimented with and found far inferior to hypochlorite and chloramine-T. Comparison of the curves of sterilization and of cicatrization showed that the neutral hypochlorite of soda in 0.45 per cent. solution, used twelve times in twenty-four hours, sterilized a wound without producing any destruction of the tissues. Extensive experimental work was made by Daufresne in the properties of sodium hypochlorite. The action of hypochlorite on bacteria was rapid. Most of the microorganisms were destroyed in one or two minutes by sodium hypochlorite and in five or ten minutes the hypochlorite was then destroyed by the tissues. Sodium hypochlorite destroyed plasma, clots, necrotic tissues, and blood clots, while chloramine-T and dichloramine-T in oil did not. The methods of making hypochlorite had been very much simplified. Daufresne found that potassium permanganate stabilized hypochlorite. Then electrolytic hypochlorite could be used. Afterwards in this country it was found that a very simple method of preparation was to bubble liquid chlorine through sodium carbonate. Daufresne mixed in a certain way Dakin's chloramine-T with sodium stearate and obtained a paste which gave up slowly the antiseptic substance and was very much more severe than dichloramine-T in oil.

It should be remembered that the efficiency of an antiseptic was due chiefly to the way in which it was used. In the treatment of wounds the three important conditions in connection with its use were contact, concentration, and time. Contact was highly important. It was plain that the solution could sterilize only the tissues with which it came into contact, and that was why the surgical and mechanical cleansing were so important. The mechanical cleansing had to be so thoroughly done that every part of the wound could be reached by the chemical substance. Then small rubber tubes with a number of perforations were used to carry the solution to every part of the wound. The second condition was concentration. When the antiseptic solution came into contact with the surface of the wound it was destroyed, and it was diluted by the secretions from the wound, with the result that in a very short time, fifteen or twenty minutes, no active substance remained. Proper concentration could be kept up only by bringing the antiseptic constantly to the wound. It was found that a wound flushed every two hours became sterile. In mildly infected wounds the Daufresne paste kept at the surface of the wound a sufficient concentration of chloramine-T. When this paste was applied to the surface of a wound the sodium stearate disappeared and chloramine was brought to the tissues. But this technique was successful only when the amount of suppuration was small. It would be useless to attempt to sterilize an abundantly suppurating fracture with a small amount of chloramine-T such as could be contained in the cavity of the wound. Antiseptic flushing should be used. The third condition to be considered was that of time. It was not possible to sterilize a wound in a few hours. A surface wound might be sterilized in twenty-four hours, but generally in war wounds it took a longer time. The treatment could be stopped only when the bacteria had disappeared or almost disappeared from the smears taken from the wound, and then the wound could be safely closed.

3. The third factor in the treatment was the bacteriological control. Without knowing the degree of infection and without following the progressive decrease in the number of bacteria it would be impossible to know whether the technique was carried out in the proper way or when the wound should be closed. When a large number of wounds had to be watched it was found impossible to use the ordinary bacteriological methods. The only way that seemed practical was to take smears and count the bacteria on the surface of the smear. This method was inaccurate but had been found to be very good from a practical standpoint. The smears were taken every two days from the back parts of the wound and the recesses in which infection would be most likely to lurk. It was important to know, not the average bacterial count, but the condition of the more badly infected part of the wounds, because it does not matter if nine-tenths of a wound be sterile if one-tenth remained still infected. The work of counting the bacteria could be done by mere technicians. It was possible to examine thirty or forty slides per hour, and as the examinations were made every other day a large number of wounds could be examined bacteriologically. The bacteriological chart of every wound was plotted and gave to the surgeon the necessary information about the condition of each wound. It told when the antiseptic was properly applied and when the wound could be closed. When the time was reached that only one bacterium was found in five or ten fields, the wound was said to be surgically sterile and might be stitched with safety. Some bacteriological charts were as characteristic as were the temperature charts in typhoid fever. In suppurating surface wounds where there was no necrotic tissue there would be a sudden drop in the number of bacteria, from a large number to one in five or one in ten fields, after twenty-four to forty-eight hours, but where there was necrotic tissue the count would remain high for two or three days. In cases of deep wounds the drop in the bacterial count was generally slower. The curve was especially characteristic in cases of suppurating fractures, if the wound contained some foreign body. The count would be very high and would then drop to about ten per field. If one operated on these cases and removed the foreign body the count would go up to 100 or more, and after two or three days would drop to one per five or ten fields. After a few weeks' experience one might diagnose the case at first sight of the curve, determine the character of the complication, and tell the process to be followed in the treatment. When the bacteria had disappeared it did not mean that the wound was bacteriologically aseptic. Dr. Vincent found that only about thirty per cent. of the surgically aseptic wounds were bacteriologically aseptic. But when the count had dropped to one in five or ten fields, the wounds could be closed. When one was dealing with a surface wound or a wound of the soft parts the wound could frequently be closed after two days of asepsis; but in cases of fracture, one had to be very careful and study the clinical symptoms as well as the bacteriological curves. When both clinical symptoms and bacteriological chart agreed, a fracture, say of the thigh, might be closed after five or six days after the wound was found surgically aseptic.

4. For the closing of the wound, which was the fourth step in the method, there was no special procedure to be used. The wounds were closed by strapping with adhesive plaster in the cases in which the wounds were sterilized in less than ten days. When there was a loss of skin the elastic traction method was used. In most of the cases the wounds were stitched. No drainage was made. When the patients were brought with already suppurating wounds, especially with fractures, the closing had to be done by following the rules studied especially by Dr. Guillot and Dr. Woimant in Compiègne. About sixty per cent. of the old suppurating fractures of the thigh could be sterilized and closed.

Dr. Carrel said he could best illustrate the results of the application of the principles which he had described by means of lantern slides. He then showed characteristic bacteriological curves, and demonstrated the manner in which the curve of cicatrization should follow the calculated curve in a properly treated wound, the manner of arranging the perforated tubes and the dressings, emphasizing the point that the dressing should be loosely packed about the tubes and that in changing dressings one should never touch the granulating surfaces. He showed the results obtained in fractures and stated that a great many suppurating fractures could be sterilized and closed thus avoiding amputation in many instances and saving much suffering. Their conclusion after three years' experience was that suppuration could be suppressed and that no patient should be allowed to suppurate for more than three or four days after his coming to the hospital. Septicemia could almost always be prevented and a great many limbs could be saved. At least fifty per cent. of the amputations performed for infection could have been avoided if sterilization of the wounds had been effected. The time required for treatment was greatly reduced. As an average it was only thirty-three per cent. of the ordinary time. It should be remembered that a precise method required more care than the old methods. But more systematized work in the hospitals, by the surgeons and their assistants would most certainly yield an immense improvement in results.

Dr. ABRAHAM JACOBI made a few remarks in which he expressed the gratitude and the sense of obligation which he said all must feel toward Dr. Carrel for having come there to teach them. This was not the first time the French had come to our aid, since the time of Lafayette they had helped us, not only by fighting for us but by teaching us. We had learned much from France as well as from other countries. He therefore moved that the New York Academy of Medicine express its sense of obligation to Dr. Carrel for what he had done in France and for the teaching he had brought to them this evening.

A unanimous vote of thanks was given to Dr. Carrel.

Essential Giant Cells in the Hypophysis.—Simmons has found among 2,000 cases of histologically studied hypophyses 4 cases of giant cell formations in which tubercle, syphilis, and foreign bodies could be excluded as causes.—*Virchow's Archiv.*

Morphinomania and Nephritis.—According to Pron and Guelpa a healthy man began to waste away without apparent cause and was found to have albuminuria which failed to respond to the milk regimen, although no evidences of nephritis were then obtained. At this juncture patient began to receive morphine for sphincteralgia. A diagnosis was eventually made of syphilitic albuminuria and nephritis, refractory to specific treatment. The return of the anal fissure led to the morphine habit. Despite these vicious circles the patient actually recovered his health completely after some years—during which he must have had minor uremic crises—save for the persistence of albuminuria.—*Journal de médecine de Paris.*

Trees and Lightning.—In various parts of the world and in various ages certain kinds of trees have been popularly believed to be immune to lightning and such have been sought for shelter in thunder storms. In Ancient Rome these trees comprised the laurel, mulberry, peach, boxwood, etc. Today in Europe this series is represented by the beech (also in America), birch, linden, and resinous trees. Statistics have shown that over half of the lightning strokes have occurred under poplar trees. The beech stands low in the scale, but the elm, pine, and oak do not show a high per cent. of victims. The analysis will show that other factors aside from mere species determine the relative frequency, as shape and height of trees, isolated position, etc.—*Bulletin générale de thèrapeutique.*

Adrenalin Content of the Adrenals in Various Fatal Diseases.—Lucksch has examined 350 cadavers by the Jolin method to determine this content. In the newly born the latter is very low and still lower proportionally to mass in yearlings. There is a general increase from 1 to 10 years, while from 10 to 90 years the values are nearly constant, with a maximum at 50. The average autopsy weight of the adrenals in hospital material is 4.3 mgm. On the other hand the average weight for individuals suddenly deceased in the prime of life and health is nearly twofold the preceding—7.25 mgm. Values are low in anomalies of constitution and infectious diseases, and after burns. In organic diseases and in tumors a depression of values is not marked—in fact the content is extremely high in nephritis.—*Correspondenz-Blatt für Schweizer Aerzte.*

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ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE OF THE UNITED STATES FOR THE FISCAL YEAR 1916. Published by the Government Printing Office, Washington.

RADIUM THERAPY IN CANCER AT THE MEMORIAL HOSPITAL. By HENRY H. JANEWAY. 242 pages, illustrated. Published by Paul B. Hoeber, New York. Price, $2.25.

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ST. LUKE'S HOSPITAL MEDICAL AND SURGICAL REPORTS. Vol. 4. 403 pages, illustrated. Published by The Press Publishing Co., East Stroudsburg, Pa., 1917.

AN INTRODUCTION TO THEORETICAL AND APPLIED COLLOID CHEMISTRY. By Dr. WOLFGANG OSTWALD. First Edition. 232 pages, illustrated. Published by John Wiley & Sons, Inc., New York; Chapman & Hall, Ltd., London. Price, $2.50.

REFERENCE HANDBOOK OF THE MEDICAL SCIENCES. Vol. 8. By Various Writers. Edited by THOMAS L. STEDMAN, M.D. 782 pages, illustrated. Published by William Wood & Co., New York. Price, $8.00; sold only by subscription.

Therapeutic Hints.

Tinnitus Aurium.—

℞ Tinct. cimicifugæ.....3iij.
Aquæ .....3ij.
M. Sig.: Teaspoonful three times a day.

Pyrosis.—

℞ Quin. sulphatis.....gr. xij.
Ac. sulphurici dil.....
Spts. chloroformi.....āā 3ij.
Tr. aurantii cort.....q.s. ad. 3ij.
M. Sig.: Teaspoonful in water three times a day.

℞ Tr. nucis vomicæ.....3iij.
Acidi nitrici dil.....3v.
Syr. zingiberis.....q.s. ad. 3iij.
M. Sig.: Teaspoonful in water three times a day.

Nausea of Pregnancy.—

℞ Tr. cantharidis.....
Tr. ferri chloridi.....āā 3j.
Aquæ .....3ij.
M. Sig.: Teaspoonful in water three times a day.

Relief of Chronic Laryngitis.—Boulai has employed the following for the treatment of laryngitis of the chronic type:

℞ Tincture of eucalyptus.....50 g.
Tincture of benzoin.....25 g.
Tincture of iodine.....1 to 2 g.
Menthol .....2 g.
Beech tar.....5 g.

One teaspoonful is added to boiling water in an inhaler and inhaled.—*Jour. de Med. et de Chir. prat.*, July 10, 1917.

Antiseptic Gargle and Mouth-Wash.—The following may be used to check fetidity of the mouth, caused by the presence of decayed teeth:

℞ Thymol .....0.50 g.
Borax .....1.0 g.
Alcohol .....2.0 g.
Distilled water.....1 litre.

A few drops are added to a glass of water and the mouth and throat thoroughly rinsed.—*Jour. de Med. et de Chir. prat.*, July 10, 1917.

Hydrotherapy for Pruritus.—From a Dutch medical journal comes a report of the cure of a severe case of essential pruritus by the use of cold water. The patient was instructed to sponge his whole body with cold water every morning on rising, then to return to bed without drying himself and to remain there until thoroughly warm. A week effected the cure. The explanation offered of the result obtained was that the vasoconstriction from the cold water, followed by the dilatation from the warmth in bed, modified the vasomotor nerves and possibly aided in the expulsion of irritating substances in the sweat glands.—*The American Journal of Nursing.*

Cathartics Contraindicated After Childbirth.—Cathartics were not given to 322 patients after childbirth. If no movement occurred within three days a saline enema was given, which was again given in three days if there had been no natural stool. Of the number thus treated but three had fever, one of these having a mammary abscess. No coated tongues, no foul breaths or headaches, nor breast complications followed. This treatment discourages routine drugging.—*Bulletin of the New York Lying-in Hospital.*

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Original Articles.

BREAST FEEDING.

BY MARK S. REUBEN, M.D.,

NEW YORK.

ASSISTANT IN DISEASES OF CHILDREN, COLUMBIA UNIVERSITY; IN CHARGE OF THE INFANT FEEDING STATION.

IN medicine, as in every other field, action and reaction are equal and contrary. While the campaign for the encouragement of breast feeding and for the conservation of human milk, has accomplished much good, it has also left some damage in its wake; the pendulum seems to have swung the other way, and many infants are now kept on the breast indefinitely, when everything points to ultimate failure and in not a few cases to untimely death. It seems that the time is nigh for a note of warning to be sounded in regard to the limitations of breast feeding.

In regard to breast feeding several facts stand out pre-eminently:

1. To obtain a successful result, the breast feeding must be carried out in a scientific way and not in a haphazard way as it is usually practised. Many physicians believe that when breast milk is available, the mother should nurse the infant as frequently and for as long a period as the infant desires; this is due to the general belief that all breast milk is good milk. Few physicians realize that there are limitations even to breast milk. Breast feeding should always be advised and maintained in every case where it is of benefit to the infant, but in cases where it does not make the infant thrive, one should not hesitate to put such an infant on the bottle. This is no plea for artificial feeding, but we have often seen infants kept for so long a time on the breast without gain in weight and with resultant indigestion, that we find it of benefit not to wait too long before resorting to artificial feeding. Good breast milk is better than good artificial food, but good artificial food is better than poor breast milk.

2. If physicians devoted one-tenth as much time and attention to the study of the art and the science of breast feeding which they do to artificial feeding it is certain that the number of infants fed artificially would be reduced 100 per cent. When carried out properly, breast feeding presents very few difficulties; but when not so carried out it may present far greater difficulties than one encounters in feeding infants artificially. In the latter group of cases we can modify the milk in accordance with any symptoms which may be present; in breast-fed babies the composition of the milk can be modified but slightly (only the fat, and this not constantly), although the quantity can often be augmented by appropriate measures.

While ten years ago the worst feeding cases we saw were infants fed on proprietary foods, in the last few years, however, the number of infants suffering from marasmus as a result of improper breast feeding runs a close second to the above group of cases. To persist on the breast for weeks and months when everything points to ultimate failure makes artificial feeding in these cases difficult, and in many cases unsuccessful.

It sounds paradoxical, but it is true, that the hardest task we have before us is to persuade mothers not to institute artificial feeding when the milk supply is sufficient in early infancy, and to induce mothers to begin artificial feeding in later infancy, when the breast milk is very scanty and the infants are practically starving. In many instances this is due to the false impression the mothers have that they cannot become pregnant as long as they nurse.

Breast milk has a fairly uniform composition throughout the period of active lactation. The milk of the first few days (colostrum) differs from later milk in its higher caloric value, higher protein (mostly globulin) and salt content, and by the presence of transformed leucocytes, the so-called "colostrum bodies." The value of colostrum as a food for the new-born infant, is a question of great interest; it appears that the albumin of the blood and the albumin of the milk are biologically identical; the whey proteins of the milk are derived directly from the blood by filtration. Caseinogen, however, must be formed by the gland, either by a modification of the blood protein or derived from the gland cells; it seems that the colostral period is the transition stage for the infant from the period when it is nourished directly by the blood of its mother to the subsequent period when it depends on its own alimentary tract for nourishment. In this transition period (4 to 5 days) a different mechanism of absorption appears to be employed by nature; this method has for its object the tiding over of the infant from the intrauterine period to the period when it is dependent upon its own digestive juices; it seems that the proteins of the colostrum can be absorbed by the infant from its alimentary canal without undergoing any marked changes, whereas after the colostral periods the proteins must be broken down before they can be absorbed by the infant.

There is proof at hand that the mechanism which is concerned with the production of immunity appears to be intimately connected with the protein constituents of the blood; these properties are (in

milk) presumably attached to the proteins, and during the early days they can be transferred to the infant and can be found in the infant's circulation. Had the proteins been subjected to digestion along ordinary lines, the properties connected with immunity would almost certainly have been destroyed. This absorption, however, does not take place after the first few days of life; after the colostral periods the amount of protective substance found in the milk is generally greatly reduced. Our knowledge upon the transference of immunity by suckling demonstrates the possible value to the young of the colostrum of its mother.

The amount of immune bodies absorbed by nurslings appears to depend upon whether the immune properties are attached to a foreign protein or to the protein of the same species. It seems that foreign protein can be absorbed by the suckling in the early days of life, but that the absorption proceeds on a very much smaller scale than in the case of natural protein. The blood of the young of a mother who has been immunized does not at birth contain the immune substances of its mother; these are found after suckling has been established, although it has been shown that only a portion of the total amount present in the milk has been absorbed by the young animal as a result of suckling.

Breast milk contains from 1 to 1.5 per cent. protein. The most important proteins present are lactalbumin and casein. There are also present traces of globulin, opalasin, nuclein, and other nitrogenous extractives and vitamines (N-bodies). In breast milk, two-thirds of the protein is in the form of lactalbumin; in cow's milk, casein constitutes three-quarters of the protein in the milk. The casein of cow's milk has about three and one-half times as much phosphorus as breast-milk casein; the two caseins also differ in their way of precipitation with the acids: breast-milk casein separates into fine flocculi, whereas cow's-milk casein forms a heavy precipitate of large masses. This difference of precipitate is not due to differences in amino-acids, as they both contain the same amino-acids and in nearly the same amounts; when casein is not digested it passes into the stool, where it gives rise to hard, tough curds. These curds are not as tough in breast-fed infants as those found in stools of the artificially fed. The fat in breast milk varies from 1 to 8 per cent.; it is higher in the afternoon milk than in the morning milk, and it is highest at the end of every nursing (strippings). The foremilk is poorest in fat; it varies inversely with the quantity of the breast milk, the greater the quantity the less the fat percentage, and vice versa. Breast-milk fat has only 1.5 per cent. of volatile fatty acids, whereas cow's-milk fat has from 6 to 12 per cent. The glyceride of butyric acid is only found in traces in breast milk, and it is present up to 6 per cent. in cow's milk; breast milk contains more oleic acid. The sugar in breast as well as in cow's milk is lactose; it varies less in percentage than any of the other elements. The salts are less abundant in woman's than in cow's milk; with the exception of calcium phosphate they are dissolved in the whey. The calcium content is greatest in amount at the beginning of nursing, and diminishes toward the end of nursing; thus it acts in the reverse manner to the fat; as lactation proceeds, the calcium content of the milk diminishes. Rickets may develop in breast-fed infants despite the presence of a high calcium content in the milk. In fact, it has been found that the milk of mothers with rachitic infants has a higher percentage of salts than of those whose infants show no evidence of rickets. It has also been found that it is not possible to increase the amount of calcium in the milk by adding calcium to the mother's diet.

The chemical composition of breast milk is subject to certain variations. The chief characteristics of the milk of the colostrum period are the high protein and the high total ash. In the transition period (12-30 days) there is noted a striking reduction both in protein and in total ash, and a considerable rise in the fat. It appears that breast milk is richer in fat, protein, salts, and total solids, in the early weeks of lactation than at a later period. This corresponds to the needs of the infant during the period of his most rapid growth. In mature milk there is noted a fall in the total solids, which affects all the elements except the sugar, but is most noteworthy in the protein and ash.

Of all the ash constituents, the percentage of CaO continues most nearly constant throughout (except toward end of lactation); MgO shows wider variations; it is highest in the colostrum period and lowest in the transitional period; P_2O_5 does not show wide variations (somewhat higher in the colostrum and transition periods); Na_2O is highest in the colostrum period; in mature milk it falls to less than one-third of the amount; like Na_2O, K_2O is highest in the colostrum period; Cl runs parallel with Na_2O and K_2O. The high ash of the colostrum period is chiefly due to the higher values of Na_2O and K_2O. The only striking feature of late milk is a decline in quantity, though there is noted a slight fall in all the solid constituents except the sugar. The largest constituent of the ash of breast milk is K_2O; this and the CaO together make up more than half of the total ash.

Percentage Composition of Woman's Milk By Periods (Holt)

	Total Solids	Fat	Sugar	Proteins	Salts
Colostrum .... 1-12 days..	13.42	2.83	7.59	2.25	0.3077
Transition ....12-30 days..	13.39	4.37	7.74	1.56	0.2407
Mature .... 1- 9 months..	12.16	3.26	7.50	1 15	0.2062
Late .....10-20 months..	12.18	3.16	7.47	1.07	0.1978

Breast milk is the natural and the best food for the infant. One should never take an infant from the breast without sufficient and adequate reasons. In the first few days the quantity of milk secreted is very small, and the supply usually becomes more plentiful after the fourth day. However, the milk secretion may be insufficient for from two to three weeks and still under proper regime may become plentiful.

The milk secretion is excited by a reflex; the stimulus of the reflex is the nursing act. The more energetic and the more frequent is the nursing the greater is the quantity and the richer is the secretion. This amount can be enriched if the breasts are completely emptied artificially after nursing. In certain cases the milk secretion can be maintained for months through the artificial emptying of the breasts with a breast pump, even when there is no infant nursing. Thus, in acute illness of the mother, when it is advisable to take

the infant from the breast, the milk secretion may be kept up for a considerable time, and after the illness has subsided the infant may be put back to the breast.

If breast milk is allowed to stagnate in the breasts, as happens in cases of women who have abundant milk supply, but whose infants are weak and cannot empty their breasts, the milk supply is apt to diminish in quantity and the composition of the milk will revert to that of colostrum. Under these circumstances it is advisable to empty the breasts with the pump after the infant has nursed; or, what is still better, is to apply a healthy, robust infant to the breast after the first infant has nursed.

It is sometimes possible to renew the secretion of milk in a breast which has not secreted any milk for as long as eight weeks. Infants are often weaned without sufficient reason, and if there be any milk in the breast at all one should attempt to restore the supply of milk by instituting proper hygienic and dietetic measures for the mother and by applying the infant to the breast at regular and frequent intervals.

The amount secreted by the breasts is from 10 to 16 ounces in the 24 hours, at the end of the first week; it rapidly increases in amount, so that at the end of six to eight weeks there may be as much as one quart secreted; from the sixth to the ninth month the amount varies from 30 to 40 ounces; after this period the supply usually begins to diminish.

There is evidence at hand that as long as the nursing act is carried out so long the secretion of milk usually keeps up. Wet nurses, who nurse several infants during the day, and whose breasts are emptied with the breast pump immediately after nursing, usually secrete much more milk than the figures quoted above. A good wet nurse secretes from 1 2/3 to 2 2/3 quarts of milk a day. There are cases on record of wet nurses from whom as much as 5 or 6 quarts of milk were obtained in 24 hours. It has been shown that the mother's milk may be maintained for a considerable period by the mechanical emptying of the breasts; except in a few cases, the amount of milk obtained in this manner may be as plentiful as when the breasts are emptied by the infant. In early lactation, when the breast milk is insufficient, the artificial emptying of the breasts with a pump leads to an increased secretion of milk.

There are certain contraindications to nursing: (1) Tuberculosis. Any mother who has active tuberculosis of the lungs should not nurse her infant; moreover, the infant should not come in close contact with the mother, for fear of contracting the disease. Tubercle bacilli are not excreted through the milk unless there is tuberculous involvement of the breast. The danger to the infant is the tuberculous mother, and not her milk. Wherever possible, the infant should live apart from its tuberculous mother. (2) If the mother suffers from any chronic disease which affects her general condition the infant should be weaned (diabetes, uncompensated valvular disease, chronic nephritis, epilepsy, insanity, etc.). (3) If the mother has a severe, acute illness: in such a case the milk supply can be maintained for weeks by the regular emptying of the breasts. The infant should be only temporarily weaned, and after subsidence of the acute illness should be nursed again.

Erosions of the nipple are no indication for weaning; they usually respond to treatment with silver nitrate or compound tincture of benzoin. In cases of abscess of the breast, the infant should not nurse from the breast as long as pus is there; after the pus has been evacuated and, and granulations form, the infant should be put back on the breast.

The diet of a nursing woman should not be too limited. The woman should be allowed to eat everything she is accustomed to, provided it is not apt to disturb her digestion. A nursing woman should drink about 3 quarts of fluid every day, of which 1 to 1½ quarts should be milk. She should eat plenty of cereals, cooked fruits, meat and vegetables. There is no reason for not permitting sour flavors—fruits and salads. There is no reason, also, for not allowing a glass or two of beer a day or a little wine, if she is accustomed to it. Weak tea and weak coffee are also permissible. Generally speaking, unless you know that a food or beverage has a deleterious effect, it is permissible, if there be a craving for it, for under the circumstances abstinence is apt to do more harm than indulgence. Plenty of rest, sleep, exercise, and avoidance of all mental strain, are also indispensable adjuvants of successful maternal nursing. She should lead a regular mode of life, which should be simple and natural.

The quantity and the quality of breast milk are more dependent upon the amount of food ingested than upon the kind of food. When the total amount of food taken falls below the minimal daily requirements of the organism, either as a whole or in any of the necessary constituents, the milk tends rather to decrease in total amount than to show a deficiency of that particular constituent which is supplied in insufficient quantity in the diet. It has been shown that no appreciable increase in any one constituent can be attained by its addition to the food, even in large quantities. It has been found that the differences in composition of human milk are due to the individual women, and do not arise from the secretion of varying amounts of milk. If the amount of fat in the food is below the amount required for the usual metabolism, the amount of fat in the milk is reduced. The same is true of all elements. In other words, in underfed mothers the composition of milk depends on the nature of the diet, but in mothers who receive sufficient nourishment differences of composition in the milk are due to the individuality of the mothers.

It is certain that most mothers are underfed. If they only eat as much as they were accustomed to eat before the birth of the infant, and before pregnancy had taken place, they are bound to be underfed. A mother who secretes a quart of milk expends an additional 1,000 calories, which must be compensated by additional food, otherwise the milk is produced at the expense of body weight. It has been found that a nutritive ratio of 1:6 is best adapted to the needs of a nursing mother; that animal protein is more suitable than vegetable protein in supplying nitrogen for milk. A diet composed exclusively of cereals, fruits, and vegetables, does not supply sufficient protein for elaborating

milk protein, and causes a severe drain on the tissues of the mother. Of the various forms of animal protein, that which is derived from cow's milk seems particularly suitable for the production of human milk.

Both the quality and the quantity of milk can be influenced by outside factors; psychic disturbances, in particular, have a very strong influence on both the quantity and the quality of milk; the good effect on the mother of encouragement by the physician is frequently seen in an increase in the milk supply; with such encouragement, and with the institution of a proper regime, one will often succeed in mothers who had not nursed any of their previous infants. There are very few women who have not sufficient mammary gland tissue to nurse their infants at all. Women will often say that they could not nurse any of their eight or more previous infants. Such statements should not influence the physician from trying to institute breast feeding in the particular case. With proper encouragement and proper measures we have been able to institute and to carry out successfully maternal nursing in many women who had not nursed any of their previous infants. In one instance we persuaded a mother who had nursed only the first of her 19 children—18 of whom are dead—to nurse her twentieth infant, and with the institution of a proper regime she succeeded in nursing this infant for 8 months. The twentieth and the first are the only living children she has now. Certain mothers have an obsession that they cannot nurse their infants, and only too frequently and too readily do physicians coincide with these ideas of the mothers. It is the sacred duty of the physician to disillusionize these mothers of their preconceived ideas and to encourage them to nurse their infants. A mother may not have been able to nurse her previous infants for any number of reasons, but this is no excuse for not nursing her present infant.

Menstruation of the mother is no cause for weaning. We have never had to wean infants on this account. Certain infants present slight gastrointestinal symptoms which recur with every menstrual period, and show slight loss of weight, but they do perfectly well, and make up in weight after the first two or three days of the menstrual period. Many infants show not the slightest disturbances during the mother's menstruation; in most cases, the only change observed in the breast milk at this time is a temporary diminution in quantity.

Pregnancy is not an absolute cause for weaning. If the mother is robust, and the infant is puny, we allow nursing in gravid women for three or four months. I have never seen any bad results follow such a procedure; miscarriages have never occurred. Moderate sexual intercourse has no influence on the milk secretion; excessive intercourse undoubtedly has a deleterious influence on the milk supply by affecting the nervous condition of the mother.

Certain drugs taken by the mother may be eliminated in the milk—morphine, belladonna, bromides, iodides, arsenic, saline cathartics, etc.

The immunity of breast-fed infants to certain infections is usually attributed to antibodies and other protective substances supplied to nursing infants through mother's milk. Certain antibodies are found in mother's milk (*e.g.* those of diphtheria and typhoid), but whether immunity of breast-fed infants depends entirely on these and other antibodies, and not on the high state of nutrition of breast-fed infants, is problematical. Artificially-fed infants who have been fed properly from birth show no less resistance. We are inclined to believe that resistance to infection is more dependent on the nutritional condition of the infant than on the mere fact that the infant is breast fed or not. Breast-fed infants with nutritional disturbances have no greater resistance to infection than artificially-fed infants. The formation of antibodies depends more on the state of nutrition of the body, and there is no reason to suppose that an infant who received a properly balanced artificial diet should not have a normal resistance; and, as a matter of fact, they have. This is no reason for not encouraging nursing in every case; breast milk is the natural food, and to bring up an infant properly on the breast is a much simpler task. The resistance of infants depends to a large extent on the nature of combination of the water in the body: if it is a loose combination, the resistance is low; if in more permanent combination, it is greater; but this in turn depends on the state of nutrition. The metabolism of water constitutes one of the most important phases of an infant's metabolism; they can withstand hunger much longer than they can thirst.

Proper technique is most essential for successful breast feeding. The physician must instruct the mother as to proper clothes for herself, as to cleanliness of the breasts, and in what position to hold the infant during nursing. She must be careful to see that the pendant breast does not obstruct the nares and thus make nursing difficult. This is obviated by her pressing the breast back with two fingers of the other hand, open scissors fashion. She must be told to insert part of the areola with the nipple in the case of an infant who sucks up considerable air, and she should be told to express the first few drops of milk with her fingers, because this part is usually contaminated with bacteria. Washing off the breast before and after nursing with plain lukewarm water in which is dissolved some boric acid, should be insisted upon. A pad of sterile gauze should be applied after nursing.

In the first 24 hours after birth the infant should be applied to the breast every six hours. If the infant obtains but little colostrum, plain boiled water, lukewarm, without sugar, should be given immediately after nursing.

We are convinced that no hard and fast rule can be followed as to the intervals observed in the feeding of infants at the breast; a number will thrive on five nursings, others will require more; each infant must be studied separately in regard to the number of nursings. However, we believe that most breast-fed infants will do well on six feedings in the 24 hours (with 3½-hour intervals during the day, and no feeding between 10 P. M. and 6 A. M., after the second month). One should always see that the infant obtains enough fluid during the day; unless he receives sufficient fluid he is apt to have a rise in temperature (thirst fever).

In the next 24 hours the infant should be put on the breast every 4 hours; at the end of the first week it should be put to the breast regularly every

3½ hours; no infant should receive more than 7 feedings in the 24 hours. Robust infants, whose mothers have a large quantity of milk should have longer intervals (4 hours), and fewer feedings (five or six). No nursing infant should receive the breast more often than every 3 hours. The infant, if asleep, should be awakened at its regular feeding time; very soon it develops the habit of waking at the regular feeding time.

No infant should be allowed more than 15 minutes at a breast feeding; the infant receives most of the feeding in the first five minutes; but as the last milk contains the most fat, he should be allowed to express the rich milk. The infant should not nurse from both breasts at one feeding, if the mother has an abundant milk supply; however, if the milk supply is not abundant, the infant should be allowed to nurse from both breasts at each nursing. The more thoroughly and the more frequently a breast is emptied the greater will the milk supply be. In cases in which the milk is abundant the mother should alternate breasts at the different nursings.

On the average, breast-fed infants take at the end of one week 1 1/3 to 1 2/3 ounces at a feeding; at 1 month, 2 2/3 to 3 2/3 ounces; at 3 months, 4 to 4½ ounces; at 4 months, 5 ounces; at 5 months, 5½ ounces; at 6 months, 6 ounces. A very robust infant will not infrequently take as much as 10 ounces at a feeding. At the end of one week, breast-fed infants take about 15 ounces of milk in the 24 hours; at the end of 1 month, about 20 ounces; at 2 months, 26 ounces; at 5 months, about 30 ounces. Only in exceptional cases does the amount taken exceed 1 quart. It thus appears that a breast-fed infant takes about one-fifth of its weight of milk in the first 2 months of life (45 calories to the pound); one-sixth to one-seventh from the second to the sixth month (40 calories to the pound); and about one-eighth its weight in milk from the sixth to the twelfth month (30 to 35 calories to the pound).

Wet Nurses.—When a mother is not able to nurse her own infant, a wet nurse, if available, should be obtained. A certain number of artificially-fed infants with nutritional disturbances can be saved only by wet nurses. In selecting a wet nurse, we must be careful to select one that has no trace of syphilis and tuberculosis. A Wassermann reaction should be carried out on both the wet nurse and the infant to protect the infant to be nursed as well as to be certain that the infant does not infect the nurse and her child. A complete physical examination of the nurse, including the urine and a vaginal smear, should be made. To be sure that the milk supply will be plentiful it is best to select one whose infant is at least one month old; disparity in age between the nurse's infant and the one to be nursed does not matter. The best criterion whether a wet nurse has sufficient breast milk of good quantity is the appearance of her own infant. When her own infant cannot be seen, the wet nurse is to be judged by the appearance of the breast and by the examination of the milk.

A good wet nurse is one whose breasts become soft after nursing, and are full and tense at the next nursing time; the breasts should not be knotty or too fat. The amount of fat and mammary gland tissue do not go hand in hand; a small breast may secrete much milk, and a large breast may secrete little milk. A wet nurse should be between 20 and 30 years of age, and one who has nursed a previous infant is to be preferred. The new surroundings and duties of a wet nurse may lead to a temporary diminution in the quantity of the milk. Nurses who suckle puny or weak infants should empty their breasts after nursing the infants, either by the nursing of another and robust infant, or by means of a breast pump; otherwise, the milk secretion is apt to decline rapidly, for anything which leads to stasis of breast milk will eventually lead to its entire disappearance.

Mixed Feeding.—When breast milk is insufficient, we have to resort to mixed feeding. Every breast-fed baby should be taught to take water from a bottle; this procedure makes weaning, when necessary, a simple matter. If the mother is an intelligent woman, and there is no fear that she will neglect nursing, there is every reason why a breast-fed baby should have one nursing substituted by a bottle feeding; this enables the mother to have at least a six-hour rest, and permits her to attend to whatever social duties she may be called upon to perform. This bottle feeding should be composed of half milk and half water (the sugar to be made 6 per cent.); the quantity to be given depends on the age of the child.

When there is insufficient breast milk, and breast milk must be supplemented by artificial feeding, it is better to prescribe "complementary feeding" (that is, bottle feeding immediately after nursing) than "alternate feeding" (that is, an exclusively breast feeding is followed at the next regular feeding time by an exclusively bottle feeding); the rationale of this procedure has been previously discussed. In cases where the mother has to work during the day, alternate feeding must be instituted. The mother should, however, be advised to empty her breasts with a pump at least twice during the day. Unless this procedure is carried out the milk secretion soon diminishes in amount, and very shortly disappears entirely. In these cases the mother should nurse her infant before she goes to work, at 6 or 7 A. M., and at 7 and 10 P. M., when she returns; during the day the infant should receive bottle feeding at 10 A. M., 1 P. M., and 4 P. M.

Weaning.—In early infancy one must be especially careful not to wean an infant without very definite and very sufficient reasons. The disturbances in the milk secretion, both in quantity and in quality, in the first few weeks after parturition are usually only temporary. However, when we are convinced that the infant must be weaned we must not hesitate to do so at the earliest moment. There are mothers whose milk is of sufficient quantity, and of good quality, but their infants do not thrive on their milk; in these we should not try to keep the infants on the breast any longer than two or three weeks.

Very few mothers of the working class can nurse their infants longer than seven or eight months, and there are no good reasons for prolonging lactation beyond this time in the majority of cases. The milk secretion usually becomes insufficient at this time (at seven or eight months). We have been in the habit of weaning infants at this age, who for

two or three weeks in succession failed to gain in weight or lost in weight, when there was nothing to be found on physical examination to account for this.

When breast milk becomes insufficient at this age we have a choice of weaning entirely or partially, or of adding other food, like cereals, to the breast feeding, without the addition of cow's milk. We have fed a large number of babies in all these ways, and have come to the conclusion that breast-fed infants (in later infancy) who are weaned entirely when the breast milk becomes insufficient do much better and weigh more at the end of the year than when they are fed in either of the other two ways. If these infants are continued on the breast to the end of the year they are usually overfed and fed too frequently; they very often receive the breast at all hours during the day and whenever they cry at night; only in the case of very puny infants do we continue the breast milk to the end of the year (after it has become scanty). In well-nourished infants there is nothing to gain and much to lose by adopting such a procedure.

Weaning should always be carried out gradually. If the infant is under nine months it should receive its food from a bottle; if over nine months, from a cup. When weaning, we begin with a one-third milk and two-thirds water mixture; the percentage of sugar should be 7 (preferably granulated sugar). As breast milk is very sweet, infants often refuse a milk mixture on account of its taste; it is, therefore, never advisable to use dextrinmaltose in weaning infants. The quantity at a feeding is determined by the age and the weight of the infant. There are absolutely no reasons for not weaning infants in the summer time, if indications for it are present and a clean milk can be obtained. We have never seen any bad results follow weaning in the summer time.

We begin to wean by substituting one of the breast feedings with a bottle or cup feeding every third day, until the infant takes six artificial feedings; then the milk formula is strengthened. When the infant takes whole milk, cereals and later broths are added; the broths contain finely mashed vegetables (peas, beans, carrots, potatoes, spinach). Orange juice should be given at five to six months; earlier, if there is a tendency to constipation. No infant is too young for orange juice. At seven months, beef juice (½ to 2 ounces) or the yolk of egg (hard boiled for 30 minutes), crackers (milk, zwieback, arrowroot) should be allowed at six to seven months.

In the majority of cases, weaning is a simple matter; in a few it cannot be accomplished gradually, because as long as the breast is given the child refuses the bottle (some of those who refuse the bottle will often take fluid from a cup or spoon); in these cases, weaning must be sudden, but the formula which is ordered must be weaker than the one prescribed to infants weaned gradually. Certain infants absolutely refuse to take the bottle or cup for a good many hours; in these cases the milk (or water, if they refuse to take the milk) should be offered to the infants regularly every three hours, but never before the next regular feeding time, until it is taken. At times an infant will refuse to take all nourishment for from 24 to 48 hours, but when it does there is no further trouble. In all these cases it is essential to starve them into submission, but plenty of water must be given. In difficult cases the mother cannot be depended upon to carry out the strict starvation which is necessary to curb refractory cases, for they will give them the breast when the crying of the infant is at all excessive. In these cases a trained nurse can accomplish more in twelve hours than a mother can in a week.

Digestive and Nutritional Disturbances in Breast-Fed Infants.—Before condemning the milk of a particular woman, the physician should always be sure that he is dealing with a healthy infant. A complete physical examination should precede any change in the diet; one should always be sure that there is no constitutional disease present to account for the lack of gain in weight or for the presence of gastrointestinal symptoms.

1. Of all the diseases which may keep a breast-fed infant from thriving, even when the milk supply is plentiful, the two most important are pyloric stenosis and the exudative diathesis. One should always suspect the presence of a pyloric stenosis in a breast-fed baby who suffers from projectile vomiting, whose mother has a plentiful supply of milk, and when the technique is faultless. This symptom should always lead the physician to examine the abdomen of the infant for visible peristalsis and pyloric tumor.

In the presence of early symptoms of seborrhea, eczema, intertrigo, frequent attacks of bronchitis, adenitis, exudative inflammation of the mucous membranes of the eyes, nose, throat, pharynx, or intestines, in a breast-fed infant who is not gaining sufficiently, or at all in weight, even when the breast milk is abundant, one should always suspect the presence of the exudative diathesis. These infants are particularly characterized by their low resistance to infection and by their tendency to run temperatures without apparent or for very slight causes. Some of these infants are fat, and others, on the contrary, are thin. The latter fail to gain on sufficient diet, the former put on weight on insufficient diet; many of these infants show evidences of a weak nervous system. The digestive disturbances which these infants show are usually due to a diminished tolerance for fat; the stools are usually loose, and this leads to an increased loss of fat and protein in the stools; the limit of tolerance for sugar seems also to be diminished; chlorides are retained in more than normal quantities, and this leads to increased water retention and diminished resistance to infection. While both these types do not do well on the breast in early infancy, they do worse on artificial feeding, and should, therefore, not be weaned in early infancy unless they are losing in weight. In the fat type, we should attempt to diminish the gain by increasing the intervals, by allowing the infant to nurse only for five minutes at a time, and by removing the strippings (rich milk) with a pump. In the thin type, after sufficient trial on the breast, mixed feeding should be attempted; of special benefit in these cases is fat free milk or eiweiss milk; these cases often do better on artificial feeding than on the breast.

There is a small group of infants who are born with a diminished tolerance for fat, but who do

not necessarily develop any symptoms of exudative diathesis; on the contrary, as they grow older they develop a tolerance for normal amounts of fat. These infants should not be weaned; they should be treated as the infants of the fat type with the exudative diathesis.

Occasionally we meet infants who are born with a very irritable and easily exhausted nervous system; very often these infants do not thrive; even the mere act of nursing seems to exhaust them; frequently they have gastrointestinal symptoms; even when the breast milk is good and the technique is perfect they frequently have loose stools of green color and poor in substance. Peristalsis in these cases is increased, and may be painful; regurgitation and vomiting are usually present. These symptoms are not infrequently associated with symptoms of the exudative diathesis. The diagnosis of these cases is based on the presence of the following symptoms: restlessness, diminished and disturbed sleep, frightfulness, anorexia (marked), vomiting, and diarrhea, without apparent cause, and vasomotor symptoms (sudden pallor or flushing). These symptoms make their appearance in the presence of an abundant milk supply and in the absence of all infections; there is usually a neuropathic family history. These infants should never be weaned; the home life should be regulated, the infant should have absolute quiet, and should be free of all irritation and "showing off"; it should be handled by only one person (preferably a trained nurse), and not much by this one.

The physical examination may reveal the presence of some constitutional disease, as tuberculosis, lues, etc.; these should be treated accordingly. If the infant has tuberculosis, and the mother has not, it should not be weaned; it has a much better chance of surviving if it is breast fed (but in the great majority of cases the infant becomes infected by the mother). An infant with lues should never be weaned. If a new-born infant is syphilitic, its mother is invariably so, too. At times, luetic infants do not thrive even on the breast, on account of insufficient treatment, and they do much worse under these circumstances on the bottle. A luetic infant should receive thorough antiluetic treatment, if success is desired.

2. The breast milk may be of good quality and of sufficient quantity, and yet the infant may not thrive: (*a*) On account of general weakness of the infant (the infant too weak to express the milk); (*b*) on account of undeveloped suction power; (*c*) because the breasts are emptied with difficulty; (*d*) on account of shyness of the breast; (*e*) because of the presence of hare lip or cleft palate; (*f*) because of inverted or otherwise malformed nipples; (*g*) by reason of the presence of adenoids.

When the infant is too weak to obtain the milk, the latter should be expressed with a pump and then given with a spoon, pipette, Berk feeder, or by a tube (through the mouth or nose); the secretion of milk may be maintained for months in this way. It is important that the breast should be completely emptied, otherwise there is a gradual tendency for the milk secretion to diminish in amount. When possible, a healthy, robust infant should be applied to the breasts to empty them, after the milk has been obtained with a pump.

In shyness of the breast the infant must be put to the breast more frequently until he is broken of the habit; at times, a little sugar solution on the nipple will entice it. I have known many mothers to put castor oil on the nipple as an inducement to faltering infants, with good results; most infants love castor oil, and lick every drop of it from the nipple.

Infants with harelip and cleft palate should be operated on at about the third or fourth month of age if their condition is good; when these defects are so marked that the infant cannot create sufficient vacuum which is essential for suction, it should be fed as described above for weak infants.

Marked inversion of the nipples makes nursing impossible, because the infant cannot grasp the nipple; one should not resort to artificial feeding in these cases before trying a nipple shield; very often with the aid of a nipple shield and by expressing the remainder with a breast pump, many of these infants can be partly breast fed for months. In every case of inverted nipples, the breasts should receive attention before the birth of the infant; at times, with proper manipulation, the inversion may be corrected so that the infant can nurse; at least part of the nipple may be made to project, so that the infant by grasping this part and the surrounding areola may carry out the nursing act. In a number of cases I have seen inverted nipples sufficiently corrected by the use of a clay pipe, or small suction cup applied over the nipple, suction being applied at the other end.

The presence of adenoids in the newborn may hinder nursing because when the infants nurse they cannot breathe; I have removed adenoids in infants as young as two weeks (and would not hesitate to do so in the first forty-eight hours of birth if indicated) with excellent results; all symptoms of nasal obstruction, stridor, asthmatic attacks disappeared; in the presence of adenoids, these infants cannot nurse more than 2 or 3 seconds at a time; they become exhausted and lose weight; the difficulty in nursing disappears immediately after adenectomy; the other symptoms subside within 2 or 3 weeks. Under no circumstances should an infant be weaned on account of the presence of adenoids.

3. Very often breast-fed infants do not thrive because the technique is not perfect; thus: (*a*) infants often fed too frequently or infrequently; (*b*) for too long or too short a period at each nursing; (*c*) too many or too few nursings; (*d*) nursed irregularly; (*e*) fed from both breasts at each nursing; (*f*) abuse of pacifiers; (*g*) too much handling.

No infant should be nursed more frequently than every 3 hours; and many do better on 3½ to 4-hour intervals; no infant should be nursed more than 7 times in the 24 hours, and no infant should receive any night feeding after the second month; no longer than 15 minutes should be allowed at a nursing; very often when they nurse longer they expand more energy in obtaining the little milk, which they express, than is the caloric value of the milk expressed; thus, I have seen infants who weigh less after nursing than before (especially in cases of insufficient milk or in cases of breasts which are emptied with difficulty). Irregular nurs-

ing is apt to disturb the secretion and the composition of the milk and usually leads to digestive disturbances. When the milk supply is abundant, the infant should be nursed only from one breast; when the infant is nursed from both breasts neither breast is completely emptied; this leads to stasis and diminished secretion of milk. Pacifiers should never be allowed; they are apt to carry infection, and almost invariably cause colic, vomiting, the swallowing of much air, and all the symptoms associated with this. An infant should be held up immediately after nursing and gently patted on the back or abdomen to facilitate the expulsion of the air; too much handling or bouncing or "showing off" of the infant should be avoided, as it is apt to cause vomiting, and makes the infant irritable and nervous.

4. In cases where the physical examination of the infant reveals no cause for the malnutrition, it should be sought in the mother. (*a*) It may be due to an insufficient amount of milk (quantity sufficient but quality poor—of sufficient caloric value, but water content inadequate—quality good but insufficient quantity); (*b*) milk too rich or too abundant (quantity too great—fat too high); (*c*) milk unsuitable for the infant (improper percentage composition—percentages may be proper and still the milk may not be suitable for the infant.

Before we discuss the various phases of this subject, we must digress to acquaint ourselves with the symptoms of underfeeding and of overfeeding in the infant.

An infant who is underfed does not gain in weight; he is always hungry; his appetite is good; he is restless, cries much, does not sleep sufficiently nor deeply; he very often vomits on account of the constant agitation through hunger; when nursing he hangs on to the breast for ½ hour or longer and then drops the nipple only from mere exhaustion; later, when he has learned that there is not much milk in the breasts, he makes a few attempts at nursing, and then drops the nipple in disgust; the bowels are usually constipated; when the underfeeding is extreme, we have the starvation stools (dark in color, tenacious, sparse); at times when the breast milk is insufficient it is also of inferior quality and this may lead to 4 or 5 green loose stools; in severe cases, the temperature is subnormal and the pulse slow; if the water need of the infant is not covered, the temperature may be very high (104°—105° Fahr.).

An infant who is overfed may for a time be gaining in weight; this may mislead one unless he carefully weighs other symptoms; most physicians attach too much importance to weight and too little to gastrointestinal symptoms. The appetite is poor; the infant nurses for but a few minutes, and is usually not hungry at the next regular feeding time; if it is due to too high fat in the food, vomiting is present; if the vomiting is excessive the bowels are constipated otherwise they are loose, due to excess of fatty acids in the intestines; tympanitis and colic are usually present; the abdomen is distended, whereas in underfed babies it is usually retracted; the temperature is apt to be elevated. Overfed babies are usually fat and are subject to skin eruptions (eczema, intertrigo, furunculosis) and usually have a diminished resistance to infection. When vomiting and loose stools are present there is no gain in weight and they may even lose weight. General symptoms of restlessness, disturbed sleep, excessive crying (colic) are always present; in severe cases, the temperature is elevated and lactosuria is present.

When we suspect that an infant is underfed, the best way to determine this is by observing the child on the breast alone for one week, noting the weight at the first and the second visit; in all these cases we must see that plenty of water is given during this period of observation; weighing the infant before and after nursing is not a reliable method; because the quantity of milk secreted and the amount taken by the infant at different nursings vary greatly; thus one may obtain an entirely erroneous opinion from such a single observation. In these cases, when under observation, we instruct the mothers as to mode of life, diet, and proper technique of nursing; the quantity of milk secreted may be augmented by increasing the amount of fluid taken (especially milk, 1—1½ quarts), by adding cereals to the diet (especially cornmeal), and by the prescribing of certain galactagogues, especially maltine or a glass or two of beer a day; the mother should have a chance to rest every afternoon for two or three hours, and should have plenty of sleep during the night. In most cases the institution of these measures will bring about the desired result; one should never be in too great a hurry to institute complementary or supplementary feeding in these cases; moreover, one should never take a mother's word for the fact that her milk is insufficient. Mothers very often imagine that they have an insufficient supply of breast milk when it is abundant and the infant is thriving and is robust; to a mother an infant's cry invariably means hunger; in these infants the crying is more often due to overfeeding; an infant who receives insufficient breast milk usually cries a good deal, nurses for from one-half to three-quarters of an hour and then must practically be torn away from the breast; it stops nursing only from extreme fatigue; on the other hand, an infant that nurses a breast which has a rich and plentiful supply of milk usually nurses for a very few minutes and then falls asleep.

When we find that by treating the mother we cannot influence the amount of milk we must complement the breast milk with artificial feeding; one should not be in too great a hurry to resort to mixed feeding for it usually means that within two or three months the infant will be entirely weaned; one therefore should try to increase the mother's milk by proper diet and hygiene and should keep the infant for at least two or three weeks on the breast alone, before resorting to mixed feeding. Of course, one must use his judgment in every case; this is not an arbitrary rule which can be followed blindly; in cases where there is hardly any breast milk and no improvement is noticed, one cannot wait too long; in all these cases plenty of water should be given.

When we are finally convinced that mixed feeding is absolutely necessary we have a choice of adding artificial feeding immediately after nursing or alternating nursings and artificial feedings. From our knowledge that the more frequently a breast is stimulated to secretion the more milk will be se-

creted, we are convinced that giving a bottle immediately after every nursing has advantages over alternate breast and bottle feeding. The quantity to be given at each feeding is determined by weighing the infant before and after nursing for two days and taking an average of the quantities which the infant consumes at each feeding. The quantity which should be given in the bottle should be sufficient to make up the necessary quantity which an infant of that age should receive; if an infant 3 months old obtains about 1½ ounces of breast milk at each nursing, we should prescribe about 2½ ounces to be given in the bottle after feeding. One should continue to weigh the infant before and after nursing and if at any time the breast milk becomes sufficient the bottle should be discontinued; there is always a tendency to overfeed infants on mixed feeding by giving them too much in the bottle; the result is they are not very hungry at the next feeding time and they do not take the breast readily; as a result of this there is insufficient emptying of the breast, stagnation of milk, diminished secretion, and finally no more secretion of milk takes places. Infants under these conditions very soon learn that it is easier to obtain the milk from a bottle than from a breast which has a scanty secretion and very often under these circumstances they soon refuse to take the breast at all, and have to be entirely weaned. Infants who take a little breast milk can usually digest stronger mixtures of cow's milk than those who do not take any. We therefore put these babies on half milk and half water mixtures, and make the carbohydrates 7 per cent.; infants who receive breast milk often refuse to take the bottle because the mixture is not sweet enough; breast milk is very sweet; therefore we always use cane sugar under the circumstances, and make the percentage of sugar 7.

In cases where the quantity is sufficient but the quality is poor, the amount of fat in the milk may be increased by increasing the amount of nourishment which the mother takes, by the addition of a glass or two of beer, plenty of cereals with butter, plenty of milk, plenty of rest (day and night), plenty of fresh air, by reducing her exercises, and by prescribing massage of the breasts and tonics if her condition is below par.

When the breast milk is of sufficient caloric value, but is deficient in water content, this deficiency can be compensated by the administration of water from a bottle immediately after every nursing.

Overfeeding may be due to too high fat in the milk or to too great quantity. If due to too high fat, all alcohol should be stopped, the solid food should be reduced; exercises, such as walking, should be increased. The intervals between nursings should be increased, the time allowed at each nursing should be shortened, and the strippings or high fat milk should be removed with the breast pump and discarded. If the symptoms are due to the taking of too great quantities, the infant should be allowed to nurse only for 7 or 8 minutes at a time; but in these cases the fore-milk and not the strippings should be removed (from 1 to 2 ounces, depending on circumstances); the rationale of this is to give the infant the milk of high caloric value, and so that it can empty the breasts, which is essential for continued secretion of milk; the intervals should be lengthened, because the less frequently a breast is nursed, the less is the amount of milk secreted. The prospects of success, when the milk is too rich, are far better than in cases with poor milk.

The breast milk may be of sufficient quantity and yet may be unsuitable for the infant; in some cases this may be due to low total solids in the milk; in others to indigestibility of certain elements of milk brought about by nervous influences working on the mother (shock, worry, fright, moving pictures); and, in still other cases, the quantity and the quality of the milk reveal no deviations from the normal so far as chemical analysis reveals, the technique is perfect, and yet the infants fail to thrive, although they do not suffer from any diathesis or constitutional disease.

When an infant who had been thriving steadily suddenly develops digestive symptoms, we must carefully enter into the history of the mother's diet and mode of life; the diet, the social life, the habits and the mental state all have a tremendous influence on the quantity of milk secreted and on the digestibility of certain of its elements; in certain mothers overwork, worry, anxiety and fright have an immediate effect on the quantity and the digestibility of the milk; the indications for treatment in these cases are apparent; still, there are infants who are not affected to the slightest degree by any worry, fright, anxiety, or overwork on the part of the mother, nor by what the mother eats, nor by the condition of the mother's bowels.

In cases in which the breast milk does not agree with the infant we should make all attempts (for 2 or 3 weeks) to modify the milk by appropriate measures and in accordance with the chemical analysis of the milk; if at the end of this time we are not successful in modifying the milk in the desired direction, we should not hesitate to wean such an infant; to persist too long in keeping it on the breast when all signs point to failure is to court marasmus; some of the worst cases of marasmus seen are the result of improper breast feeding.

In cases due to underfeeding all attempts should be made to increase the milk supply of the mother. In early infancy insufficiency of breast milk is not infrequently met with. In the great majority of cases it is only temporary; the cases which do well under these circumstances are those in which the breast milk, under proper régime, becomes more plentiful. Every ounce of breast milk should be conserved and utilized if it is good. An infant who receives even a little breast milk (if it is good) can digest cow's milk much better than one entirely artificially fed; but as everything that glitters is not gold, so everything that comes from the woman's breast is not good milk. The idea is prevalent that all breast milk is good; this is not a fact. There are mothers whose milk contains the right percentages of its elements and in whom the quantity of milk is abundant and yet their infants do not thrive although they have no constitutional disease or diathesis to account for such lack of progress. This is most apt to occur in cases where the breast milk is insufficient. These infants do not do as well on mixed feeding as on the bottle alone. In every case of insufficient breast milk and in cases where the quantity is abundant and the quality is good,

but the infants do not thrive, we should try to keep the infants on the breast alone for 2 or 3 weeks, if the symptoms are not severe, and observe them frequently. One should never be in too great a hurry to resort to mixed feeding nor to wean an infant without sufficient and adequate reasons; however, when we are convinced that the breast milk is insufficient we should resort to complementary feeding (that is, bottle feeding, immediately after nursing); if the infant's symptoms subside and it begins to gain in weight, we should continue both the breast and the artificial feeding. Very often in cases of insufficient breast milk, when complementary feeding is instituted, one obtains a history that the infant vomits every time it takes the breast but that it retains the bottle feedings; very often these babies also have 3 or 4 green stools a day; in these cases one should not hesitate to wean them entirely; the good effects which are often immediately seen are very striking. In the second group of cases one should not hesitate to wean the infants entirely also, after sufficient trial on the breast, if they do not thrive. In these cases the quantity is plentiful and the percentages are right, but the milk is not the right milk for the babies. In breast-fed as in artificially-fed infants we cannot make the babies fit the milk, but must make the milk fit the infants.

Analysis of mother's milk is often without value in determining why a certain milk does not agree with a particular infant. Our knowledge of breast milk is still rudimentary; at present we possess only a fairly accurate knowledge of its chemical composition; it seems that under certain circumstances, normal elements of milk assume abnormal properties, or that certain substances make their appearance in breast milk, the nature of which is unknown, but which, nevertheless, exert a most important influence on the infant's digestion and nutrition; the presence or absence of these bodies (x-bodies) at times determines whether a certain milk is or is not suitable for a particular infant. In the great majority of cases the milk of its own mother is the best and most suitable food for the infant; however, there are infants whose mother's milk contains the right percentages (as far as chemical examinations can determine), and the quantity is abundant, and yet who fail to thrive, although they suffer from no constitutional disease or diathesis; and on the contrary specimens of breast milk have been examined which showed them to be grossly deficient in certain elements and excessive in others, and yet the infants were thriving properly. That there are differences in breast milk is also proved by the fact that the same infant behaves quite differently on the breast of different women. All infants have not at birth the same power to digest the same percentages of fat, sugar, and proteins, and it is possible that the cause of malnutrition in these cases may be an innate intolerance for certain elements; but these infants with diminished tolerance overcome this intolerance, even when retained on the breast; the cases under consideration here, however, are those in which we cannot influence the mother or her milk in any way, and the infants must inevitably be weaned if success is desired. I have never found any difficulty in feeding these infants artificially.

Examination of the breast milk will at times reveal why the milk does not agree with the infant (high fat or low total solids), but in these cases one can usually arrive at the correct conclusion from a consideration of the clinical symptoms. It appears to us that the chemical examination of milk is but seldom of any real assistance in determining the quality of breast milk; any one who will persist in nursing an infant who is not thriving, because the analysis of the milk shows it to be of normal chemical composition, is bound to meet with dire consequences. After all, the best way of determining the quality of breast milk is clinically; a good breast milk is one which makes the infant thrive; an unsuitable breast milk is one which does not make the infant thrive, no matter what its chemical composition is. It is evident that the infant is more than a test tube, and that biological principles must be considered.

5. A sudden onset of a nutritional disturbance (in a breast-fed child who has been doing well, and in whom the technique has been carried out perfectly) should always lead one to suspect the presence of some infection, to which the nutritional disturbance is secondary; in most of these cases it is due to parenteral infections, as pyelitis, influenza, etc.; in others the infection is enteral. Vomiting is a prominent symptom in these cases; the high temperature is often in marked disproportion to the slight gastrointestinal symptoms; these infants often cannot nurse well owing to catarrhal nasal obstruction; they should never be weaned. The symptoms usually subside after the disappearance of the infection, although anorexia persists for some time afterward. In enteral cases the indications for treatment are, catharsis, starvation, gradual return to full nursing (plenty of water must always be given).

6. The nutrition of breast-fed infants may also be affected by overheating, chilling, lack of fresh air, anemia, improper clothing and bathing; to obtain results one must attend to all these factors.

The symptoms of nutritional disturbances in breast-fed infants, may be very mild at first, but if the causative factors are not corrected early they slowly but surely lead to serious consequence (marasmus, intoxication). One of the first symptoms to be noted is a capricious appetite and later anorexia; general symptoms (fretfulness, restlessness, insufficient and easily disturbed sleep, excessive crying) soon make their appearance; the infant may still be gaining in weight in this stage and this may mislead the physician. Later, symptoms referable to the gastrointestinal tract develop, such as regurgitation, vomiting, colic, tympanitis, constipation, or loose stools; in this stage the weight is stationary or there is loss of weight. If the causative factors are still not corrected, constitutional symptoms make their appearance; these are: disturbance of temperature (with high fever, alimentary fever, or there may be subnormal temperature); lactosuria; vasomotor disturbances; diminished resistance to infection; tendency to inflammations of the skin and mucous membranes; anemia; diminished muscular tone. In brief, we may have a complete picture of marasmus or intoxication, depending on the nature of the disturbance.

Infants with digestive and nutritional disturb-

ances may be divided into 3 groups, depending on the severity of the disturbance:

1. There is gain in weight, but there are present gastric or intestinal symptoms.

2. There is insufficient gain in weight, but (*a*) no symptoms are present; (*b*) with gastric symptoms; (*c*) with intestinal symptoms; (*d*) with gastric and intestinal symptoms.

3. There is stationary or loss in weight, (*a*) with gastric symptoms; (*b*) with intestinal symptoms; (*c*) with gastric and intestinal symptoms; (*d*) with gastric, intestinal, and constitutional symptoms.

The symptoms which the infants in the first group may present are anorexia, regurgitation, vomiting, rumination, colic, tympanitis, constipation, loose stools. While many of these infants continue to gain in weight in spite of these symptoms, it is never advisable to disregard their presence for any length of time; the physician should make every attempt to relieve and mitigate these symptoms as soon as they arise; the aphorism, "A Stitch in Time Saves Nine," has no better application than in infant feeding; neglect or total disregard of these symptoms may often lead to serious complications. In a majority of cases, the symptoms are due to faulty technique, underfeeding, or overfeeding. A consideration of some of these symptoms is important.

Rumination is a neurosis; there is no anatomical basis for it; *x*-ray examination of the stomach in these cases reveals normal position, form, and motor function; it is more common in females; it is influenced by psychic disturbances, intercurrent diseases, and other factors, but very little by drugs. The prognosis in cases without dyspeptic symptoms is good. Semi-solid food is uncertain but should be tried (gruels); usually there is improvement toward the end of the first year.

Regurgitation, "spitting up," is not infrequently met with in healthy infants; in fact, mothers often pride themselves on the fact, as it is universally considered by them as a sign of good health; it is usually due to overfeeding, and should always be corrected; there is no such condition as "healthy vomiting."

Vomiting has already been considered; it may be due to overfeeding, underfeeding, too high fat in the milk, irregular feeding, milk unsuitable for the infant, too much air swallowed, neuropathic child, pyloric stenosis, etc.; the treatment depends on the cause.

Loose stools (watery, green, and poor in substance), passed several times during the day, may take the place of the normal formed yellow homogeneous stool of healthy infants; these stools are most often seen in the first few months; they are at times present in infants who show no other signs of ill health; these stools are usually due to irritable intestines and increased peristalsis. The stools in infants with exudative diathesis and in cases where the milk is unsuitable for the infant have already been considered. The stools in the exudative diathesis are frequent, contain mucus, and may contain pus, blood, and eosenophile leucocytes. In dyspepsia they resemble those of artificially fed infants fed on mixtures high in fat and sugar and low in salts and proteins. The stools often vary in consistence, owing to the varying composition of breast milk.

Anorexia is one of the first and one of the most important symptoms of impending digestive disturbance; it is a warning sign of overfeeding; it is obstinate after infections, and is persistent in neuropathic infants and in infants with exudative diathesis.

Constipation in breast-fed babies is as frequently met with as in artificially fed babies. When there are no general symptoms present, this symptom requires no treatment. It may be due to faulty innervation of the rectum and anus; in these cases passing the little finger into the rectum often produces a movement; at times it is due to insufficient residue or insufficient food; the carbohydrates have the greatest effect on the bowels; no infant is too young for fruit juices if it will take them; drugs by mouth should be the last resort, and only used when urgent; suppositories and enemata are better but should not be used too frequently. The best suppositories to use are those containing glycerine; enemata should be made of soap suds or sweet oil if the fecal matter tends to be very hard. In certain cases where the constipation is due to insufficient response of the sphincter, the sphincter may be trained to response more quickly by passing graduated glass or wooden bougies; this should be repeated twice daily. In cases associated with colic, ℥i milk of magnesia can be given in a little water.

316 West Ninety-fourth Street.

A NEW TEST FOR INCIPIENT CANCER OF THE BREAST.*

By G. BETTON MASSEY, M.D.,

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The problem involved in the diagnosis of early carcinoma of the breast usually presents itself in a comparatively young woman during the years of functional activity of the gland. The position of the medical adviser who dreads unnecessary mutilation, as we all dread it, whether the patient be a near relative, a member of a family long depending on us for advice, or merely a stranger applying for our best service, is a delicate one when the adviser is also keenly aware of his stern duty to destroy all cancers in their incipient stage or stand a slacker, with the ultimate death of the patient on his conscience. A hard professionalism acquired in the school of surgical experience will demand that all mammary tumors be operated on at once. Yet a policy of "wait and see" is a strong temptation to many.

A small proportion of mammary tumors in younger women are not cancerous. A larger proportion are malignant, and curable in this stage by prompt measures of a most definite character. On a correct diagnosis may depend the saving of womanly symmetry on the one hand and of life on the other.

To cut into such a tumor for a specimen for microscopic examination, even if a negative report would be conclusive, which it rarely is, would be malpractice. The course of the Health Officer of

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New York City last winter in inviting physicians of that city to increase the rate of growth and precipitate metastases in their patients by such biopsies should have received greater rebuke than it did in the editorial columns of the MEDICAL RECORD. The incomplete knife operation, with frozen section examination during the operation, is most unreliable, the negative evidence of malignancy being uncertain and of little value. Besides, a mutilating operation is not avoided in benign cases.

The test of these clinically uncertain breast tumors to be described in this paper is curative rather than harmful to many varieties of benign growths, and since it postpones destructive eradication of those that are positive to it, or probably malignant, for periods of but two to six weeks, and is in no particular an irritant, it causes but little delay in those that demand radical treatment.

Such clinically evident carcinomas of the breast as those that are ulcerated, adherent to the integument, that present a retracted or galactorrheal nipple or enlarged glands in the axilla, need no test of any kind. The lay diagnosis is often correct. Not an unnecessary day should be allowed to pass without their being placed under effective treatment, together with enlarged regional glands, whether this treatment be destructive ionization, if the method is available, or the knife; or if the case is not suitable for radical treatment no time should be lost in beginning a course of intensive radiation.

Turning to the group of incipient mammary tumors that do not present the clinically conclusive evidences mentioned, we should note particularly that *tenderness* and *aching sensations* are *not* among the symptoms of a frankly malignant growth in any stage. Pain is, of course, present in the late stages, usually of a lancinating character; but someone has aptly said that pain is not a sign of cancer, but is a sign that a patient is dying of cancer. It is rarely present in the early stage. The uncomplicated cancer of the breast, of whatever variety, usually steals on the victim without sensory symptoms of any kind, and may give rise to extensive internal colonization before accidental discovery. Fibromas are also usually without sensation.

Nevertheless, a tender lump in the breast, or one that gives rise to a stinging sensation, may be carcinoma associated with other morbid conditions. Tenderness may indicate a chronic mastitis masking a beginning adenocarcinoma. It also accompanies cystoma of the breast, single or multiple. though these cysts have frequently been found to be the site of carcinomatous nodules on their inner walls.

The rationale of the test to be described is the removal by an effective method of the chronic mastitis that causes or complicates the hardened, tender spot in the breast, and thus either remove the tumor, together with all tenderness, or else remove the complicating mastitis and leave the hard, nontender tumor as a clinically evident carcinoma, cyst or fibroma—in either case now demanding destructive removal without delay.

The test is the application to the tumor of the faradic current from the long secondary wire of a well-built machine, the application to be of twenty minutes duration with most of the coil in use, the active electrode being a well-moistened pad the size of the tumor placed on the skin over it and held in place by adhesive strips, and the dispersing electrode, a large pad, beneath the back, the patient being in the recumbent position. The application should be repeated daily for two weeks. If the sensory symptoms are then relieved without decrease in the size of the tumor or its disappearance, a positive diagnosis of malignancy may be tentatively made, though a further persistence of four weeks of the applications may be indulged in before operation. If the case be one of mastitis alone there will rarely be any mass left after the second to the fourth week.

Should one's modern equipment not include a faradic coil with a 3,000 to 4,500 feet secondary, a very gentle static wave current may be used, for the indication is for painless, rapidly successive inductions, however produced, though my own experience has been limited to this "high tension" faradic current and the latter is probably preferable. The current of the most recent Morse machine with a slow surge might also be effective.

As to the method of radical operation in a positive case, I urge bipolar ionic destruction, particularly when but a small part of the breast is involved. Eradication of a small carcinoma from the breast without destruction of the whole organ is possible by this method, the patient retaining most of her breast and all of her pectoral muscles. But the axilla should be most carefully explored by touch and any palpable glands destroyed at the same time. Should enlarged glands be found above the clavicle the screened *x*-ray should be employed with thoroughness and with much hope of control or eradication of the disease in this situation.

Finally, I must insist that loss of time in the treatment of an operable carcinoma of the breast, save the two to six weeks specified, is no part of the test or the treatment in positive cases, and that the institution of immediate effective treatment is imperative should the test be positive. The faradic current is advised as a test of malignancy, not a treatment. The electricity in the ionization operation is an entirely different proposition, the high temperature and intense chemical activities devitalizing the malignant tissue in twenty to thirty minutes. A degree of heat or chemical activity short of this destructive effect can only be of harm in cancer, and it is for this reason that high frequency or ordinary galvanic currents as well as applications of iodine, etc., are detrimental, while the decongestive action of the faradic current on nonmalignant vascular stasis and its total absence of effect on the cancer tissue make it valuable in a differential test.

1823 WALLACE STREET.

Sudden vs. Protracted Effort.—Amar states that in "brusque" exertion the intrathoracic pressure becomes from 200 to 300 kilos and the volume of pent-up air 3 liters. The time interval of brusque exertion is two or three seconds, and the above status results from arrest of inspiration. It is therefore not wise to allow wounded men to take part in any intensive form of arm exercises. They should not exceed in any case 20 kilos of action during one to two seconds of time.—*La Presse Médicale.*

THE SIGNIFICANCE OF PYREXIA IN INFANTS.*

By W. W. HARPER, M.D.,

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THE essayist has endeavored to make this paper strictly practical and has therefore excised all extraneous matter. He wishes to paint the picture of his daily rounds. Frequently the doctor is called because the mother finds that the baby has fever—the pyrexia often being the only symptom. As the mother demands to know the cause of the fever, the doctor will do well to keep in mind the more common causes. These are: Acute tonsillitis; acute otitis media; pneumonia; acute gastrointestinal indigestion; the exanthemata (*a*) measles, (*b*) scarlet fever; osteomyelitis; rheumatic fever; malaria; typhoid fever; pyelitis.

Acute Tonsillitis.—If the doctor makes it a golden rule to examine the throat of every child, even if the child is brought to his office for a finger scratch, he will be abundantly rewarded. Frequently he will be surprised at his findings, and he will never be embarrassed by the other doctor finding a throat lesion which he failed to detect because he did not look into the child's mouth. Follicular tonsillitis gives a high temperature and one look is sufficient to make the diagnosis.

Acute Otitis Media.—A child that is crying constantly is either hungry or has earache. If the crying is from hunger the child will become quiet when fed, but if due to earache the baby will either refuse to nurse or will turn away from the nipple and scream with pain. Otitis media usually causes high temperature and intense earache, but not infrequently the baby gives no evidence of pain; therefore a careful ear examination should be the routine. As long as one can see the cone of light and the ossicles, one may be sure that there is no pus in the middle ear. A red drum indicates an inflammation, but it should always be borne in mind that rough use of the ear speculum or an attempt to wipe away wax with a cotton applicator very quickly reddens the drum of a baby's ear, therefore handle the speculum gently and try to see the drum by "looking by" the wax.

Pneumonia.—When called to see a child with a temperature of 103° or 104°, which persists for twenty-four hours, after thorough purgation, one should suspect pneumonia. For the first twenty-four hours the physical signs are usually negative. In fact, an infant may go through an attack of pneumonia without a single physical sign. If, however, *light percussion* is done over the entire chest, one may detect a small area of dullness at an apex or along the outer fringe of the lung. In the absence of physical signs, a continuous high temperature, rapid respiration, a "dopy" appearance of the patient, and a marked leucocytosis should warrant a diagnosis of pneumonia. It must be remembered that in pernicious pneumonia the system may be so overwhelmed with toxins that the leucocyte factory fails to respond to the toxin stimulus—in which case there will be no leucocytosis, but a differential count will show a high percentage of neutrophiles.

Acute Gastrointestinal Indigestion.—With the hyperpyrexia there is a history of a dietetic error. The vomitus contains sour, undigested food. The symptoms promptly subside after a dose of castor oil and a water diet for twelve hours.

Measles.—Usually there is a history of an epidemic. Kopliks spots appear early, the conjunctivæ are injected and there are evidences of a coryza. A dirty, crescentic eruption shows on the face about the fourth day, and rapidly spreads over the body.

Scarlet Fever.—Scarlet fever is ushered in with fever, vomiting, marked angina of throat and enlarged tongue papillæ—the "raspberry tongue."

Osteomyelitis.—No examination of a child is complete until the bones and joints have been carefully manipulated. If, in a case of hyperpyrexia one detects a tender, diffuse edema over a long bone which is painful when handled, and if the child positively refuses to use the part the diagnosis of osteomyelitis is justifiable—if there is a leucocytosis.

Rheumatic Fever.—It should be remembered that under three years of age rheumatism is not common. Joint infection in infancy is usually an epiphysitis—due to the staphylococcus or *Micrococcus catarrhalis*. Non-traumatic epiphysitis under six months is always syphilitic. Rheumatism when it affects a child, as a rule does not involve the joint but produces an endocarditis, pericarditis, or carditis. A child that is sweating in the presence of hyperpyrexia is probably suffering from a rheumatic infection.

Malaria.—Infants do not have chills, but the cold stage of malaria is ushered in with pallor or cyanosis. In acute malarial fever there is no enlargement of the spleen. Although running a very high temperature these little patients do not seem to be very sick. If a blood examination fails to show plasmodia, it will usually reveal a decrease in red and white cells, an increase in percentage of endothelials, stippled red cells, anisocytosis, and polychromatophilia.

Typhoid Fever.—Typhoid fever is much more common among infants than is supposed. The child is not pale, but has a rather suffused appearance, soon grows stupid, the tongue has red edges, and soon becomes dry, the spleen enlarges and feels soft to the touch, the pulse is slow, and there is a stair-step rise of temperature. Blood examination shows a leucopenia with absence of eosinophiles. A blood culture in the first few days will show typhoid organisms. In the absence of an incubator and ox-bile culture media, one may use sterile physiological salt solution—twenty to thirty drops of blood to several c.c. of solution, and place the tube in the pajama pocket during the night and the inside coat pocket during the day. Twelve to twenty-four hours at body heat should show motile organisms under the microscope, which, when stained by Gram's method would show typhoid bacilli. Widal test should be positive after the eighth day.

Pyelitis.—In every irregular fever always suspect pyelitis—especially in girls. The leucocyte count is high and a differential shows an increase of neutrophiles. If the patient is a girl, secure a specimen of urine by holding her over a vessel while she nurses, or by catheter; if a boy, apply a finger cot or rubber bag over the penis. Do not use cotton as this strains out all pus corpuscles. In pyelitis

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the urine appears milky macroscopically—which milky appearance does not disappear on addition of acetic acid and heat. Such urine under the microscope shows pus cells and bacteria.

ADVANCEMENT IN OBSTETRICS.*

By MARION T. BENSON, M.D.,

ATLANTA, GA.

Last to share in the advance of modern medical science has been obstetrics. According to a statement made by H. Crutcher obstetrics is not among the respectable arts, and never will rank as a respectable art until it is made respectable. The profession is to blame for the abuses in obstetrical practice and until the profession takes the steps to elevate obstetrics to the high plane which it so richly deserves, human life will be sacrificed.

According to E. T. Davis "modern obstetric surgery has been slow in developing because human life has been cheap. Compensation is given willingly for the removal of abdominal tumors with a reasonable certainty that they would not return, but the birth of a child is the beginning of trouble and expense for a considerable period of years and the legal value of human life is its wage-earning capacity." He further illustrates this in the experience of a young general practitioner, who had been trained in the modern antisepsis. He was called to attend the patient in her home and made every effort to secure proper aseptic technique. The husband interrupted him in this, saying that it was an ordinary case of confinement and that he could not afford to have all this done for his wife.

According to DeLee "there die annually in the United States 20,000 mothers from childbirth, besides the mortality of the newborn, which is also very high." This enormous waste of human life, has created a new interest in obstetrics, and the time is ripe for a continued advance in this branch of medicine, and it is time for obstetrician and gynecologist to write, think, and talk the advancement of obstetrical practice.

In the last few years, I am glad to state, the science of obstetrics has advanced and this important field of practice will continue to advance as the laity themselves have become aroused and are demanding more than a midwife.

The two most recent agitations in obstetrical work are the so-called "twilight sleep" and "pituitrin." In regard to "twilight sleep," which has been heralded from one end of the country to the other, not only in medical journals but in the lay press, the consensus of opinion is that scopolamine is a dangerous drug and should not be used in obstetrical practice. During the first stage of labor, we have other drugs, which if administered properly and carefully, will give an analgesic effect without harm either to mother or child. These drugs are morphine and chloral. These drugs given during the first stage of labor will aid dilatation, relieve muscular spasm, and diminish shock. Morphine can be given in small doses hypodermically during this stage, and as stated above, will not harm mother or child. Chloral has to be given by stomach and is very likely to be rejected, therefore, if it is rejected, morphine can be used. In the second stage morphine and scopolamine have a very injurious effect as they prolong this stage of labor, subjecting the child to a longer period of pounding and uterine compression and the longer the second stage of labor is allowed to continue the longer we have interference with fetoplacental circulation.

In the second stage, we have gas-oxygen, ether, or chloroform, and when we consider the life of the infant, as well as the after effects to the mother, we should be very particular in the use of any drug which will affect either. With either of these, we control the second stage of labor and one or the other should be used accordingly.

The use of pituitary extract has been under discussion quite extensively and most writers on this subject condemn or limit its use. The danger is rupture of the uterus or its effect upon the child. I have to differ from the majority of obstetricians in regard to the use of pituitrin. In my own private practice I have used it in some five hundred cases and have yet to see any injurious effects either to the mother or child. We should know when to give it and when not to give it. We should also know how much to give at a dose and what we may expect from the same. Pituitrin should never be given until the cervix is fully dilated, the head presenting in the pelvis, or just above the ischial spines or on the pelvic floor. We must be sure the outlet diameters are ample to allow the exit of the head, and when it is used under the above conditions, I have yet to see any injury to either the mother or child. I have used it before the cervix was fully dilated, and if this is done one is very likely to have a torn cervix, so therefore do not use it until there is a fully dilated cervix. In inertia uteri it has a most marked effect. In those cases in the past, where there has been a fully dilated cervix with no pains, one has been afraid to leave his patient, and sat around all day or all night with the family and patient, but now an injection of pituitrin not only relieves the patient of the nervous dread of her approaching confinement, but will also relieve the physician of a very long wait.

In abruptioplacentæ, when the head is engaged, after the rupture of the membranes, small doses may contract the uterus on the fetal mass sufficiently to check hemorrhage from the placental site.

In the third stage, after the delivery of the placenta, pituitrin has a marked contracting effect on the uterus and the so-called after pains are very markedly diminished and may be even eliminated entirely. I have noticed particularly in multiparæ, who have suffered in previous confinements with the after pains, that there has been marked difference when pituitrin extract has been used.

In cesarean section, just as the incision is made in the uterus, an ampoule of pituitrin will minimize the amount of hemorrhage. It should not be given before the operation is begun because the uterine spasm may be so great as to interfere with proper suturing.

If the uterine contraction is too great, or if we find the delivery of the child is too rapid, it can be checked or retarded according to the operator's desire by either increasing or diminishing the use of chloroform. In some cases where I find a delivery

*Read at the annual meeting of the Chattahoochee Valley Medical and Surgical Association, held at Warm Springs, Ga., July 10-12, 1917.

is too fast, by pushing the chloroform I have been able to retard same, and then letting the patient come out from under the effects of the chloroform, making the delivery as slow as I desire.

The dose of pituitary extract should vary according to the desired effect, from ¼ to 1 c.c. This can be repeated in 30 to 60 minutes.

Another advance in obstetrics is in asepsis and antisepsis. They should be practised most carefully in every case of obstetrics. If the obstetrician is careful and if he is clean at the time of the delivery, and if the patient and nurse are clean, there is absolutely no reason for infection afterwards, and the time is coming when infection in this line of work will be unknown. In my own work of something over five hundred cases delivered in the last seven years, I have not had a single case of infection and this work has been carried on among the poor, as well as the well-to-do, in homes and hospitals. It shows that if we use ordinary precaution peritonitis from childbirth will be unknown.

Every case of lacerated perineum either of the first, second, or third degree should be repaired as soon as possible after delivery. If this is done, it will save many a woman future trouble. We should see that the smallest tear is repaired, and by so doing we can often save the muscles, which have been separated through the stretching and thereby help to keep down the old familiar saying that we so often hear when a patient walks into our office, "Doctor, I have never been well since my baby was born."

It will also help to keep down infection, if the repair is done immediately, as we shall then not have a gaping wound, allowing infection to pass through. As stated above, in my work, I have not had a failure of closure or infection in the past seven years.

Cesarean section is being done more frequently now than ever before and with less danger to mother and child. In some parts of the country there are too many cesareans being done and in some parts too few as a life saver.

The development of modern obstetrical surgery dates from the time when Saenger accurately closed the uterine muscles and peritoneal covering separately. The mortality of the classic section immediately fell to the rate corresponding to that of other abdominal operations.

Where we have a deformed pelvis, or where a quick delivery is required, as in eclampsia, cesarean section is indicated, and if properly carried out, will give a beautiful result.

The use of forceps has been handed down to us from the days of Aetius. The instruments which he used were two crochets. From this time on there has been a gradual development up to the modern obstetrical forceps. Aetius recommends in difficult labor—first the use of the fillet; if that fails the forceps; and then, if still unable to deliver, perforation.

As we learn from books of the Eleventh and Twelfth centuries the Arabian physicians used forceps and were skilled in their application. They possessed two varieties—straight and curved. So we therefore see that the forceps has been in use ever since there have been any writings upon obstetrics. The forceps should never be used until the head has become engaged in the pelvis. The old method of high delivery should be a thing of the past, on account of the danger of injury to the mother or child, a danger which is very great unless the forceps is applied very skillfully. In applying the forceps we must remember that permanent injury can be caused to the child, even when not destroying its life, by leaving scars or depressions which would develop in later life. I know it is the practice of some obstetricians to deliver the majority of cases with the forceps. They are in a hurry to get through, or they do not care to wait, so they apply the forceps and make quick delivery, lacerating cervix, perineum, etc., thereby causing permanent injury to the mother. We must remember that two lives are involved, and in no line of work are judgment and skill more indicated than in obstetrics.

To minimize shock and pain, the injection of novocaine or cocaine into the perineum, according to the method of Crile, is advocated. I have had very little experience with this in my work and simply mention it as one of the recent measures which have been brought out.

Rectal examination is advised very strongly by some obstetricians, who claim that they seldom make a vaginal examination. The object of the rectal examination is to keep down infection, but I fully believe that if our hands are not infected before we make the examination there will not be any infection. However, when there is any risk of our hands being infected, I would recommend the rectal examination.

J. C. Hirst and S. T. Barnett have both recently recommended the use of corpus luteum by hypodermic injection for nausea in pregnancy. This very troublesome part of obstetrical work in the early stages is so greatly relieved, according to their reports, that it seems worth recommending. I have used it in a limited number of cases and the results have been very gratifying.

In conclusion let me warn every one, either man or woman, that unless fully prepared to give the time and skillful knowledge, he or she has no right to accept the care of an obstetrical case. Unless one is able to perform a vaginal or abdominal cesarean section; to operate where there is ectopic gestation in any form, or to open the abdomen promptly and repair rupture of the uterus, and in fact unless he understands obstetrics thoroughly, he should not practise obstetrics.

Every one practising obstetrics should be perfectly familiar with the mechanism of labor and of the various presentations, should know when to wait and when to hurry, when to use and when not to use forceps, should be able to do promptly primary perineorrhaphy, how to prevent and arrest postpartum hemorrhage, and should be familiar with asepsis and antisepsis. When these requirements are met we shall have a better understanding of obstetrical work and obstetrics will be advanced and many lives will be saved.

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Holland Society of Psychoanalysis.—This society was organized in February of this year in affiliation with the International Society for Psychoanalysis. — *Nederlansch Tijdschrift voor Geneeskunde.*

A FURTHER CONTRIBUTION RELATIVE TO CAPILLARY CALIBER AND ITS RELATION TO NORMAL AND DISEASED STATES.

By W. V. GAGE, M.D.,

WORLAND, WYO.

SINCE the publication, in the MEDICAL RECORD of Sept. 1, 1917, of an article entitled "The Relation of Capillary Caliber to Normal and Pathological Sensation and Function," many new phases of the subject have presented themselves, and I wish, in the following paper, to continue a consideration of what, to me, seem to be facts bearing out the statements of the previous article.

The enormous potency of the hitherto overlooked element of capillary caliber, as the real factor which determines between health and disease, is being hourly more impressed upon me, and I have already, in my own mind, classified as "facts," manifestations which I formerly tabulated as "theories," and I hereby wish to place myself on record in support of this simplest and, upon analysis, most obvious physiological and pathological principle, i. e., "Capillary caliber is back of every function and sensation, both physiological and pathological, experienced by the economy."

I realize that I am asking much of my readers when I suggest that they accept as facts the statements I make in this and the previous paper; but I feel so positive regarding the position I take, and so sure as to the ultimate outcome of the matter, that I base my all upon the statements made. By this I mean upon the fundamental principle involved, as the newness of the idea necessarily demands faulty premises on my part, and possibly "proofs" which time may show to be fallacious.

I believe that this single factor of capillary caliber determines an individual's energy or lassitude, his chill or fever, his health or sickness, his sexual life, his birth, maintenance, decline, old age, and death.

As the element which *compels* old age, the contracted capillary stands alone, whether this old age, in organ or individual, has back of it accumulated years, or faulty, hurried living, and the gray hair or baldness, the atrophic, glossy skin, the tooth loss and absorption of the alveolar processes, the loss of body heat and weight, the dimness of vision and the defective hearing, the pacific mentality and blunted sensation reactions to all outside stimuli, such as fear, anger, joy, or pain, all point to lessened capillary caliber.

In the tissue changes of old age which spell disease, as in malignant growths, etc., we must look for the dilated capillary, but we must recognize that dilatation is comparative only, *i.e.* a caliber looked upon as pathological in the aged might be normal in youth, the age of the elastic capillary.

The contracted capillary is the "shepherd of old age," and by it old age is not only produced but protected, for it throws a fostering arm around the declining years of life by obtunding all of the functions of youth which spell stress and strain and resistance.

The age-contracted capillary promulgates a mental and bodily aquiescence, a pacific state which renders age immune to the worry and care and anxiety of former years.

In contradistinction to the quietude of old age, with its contracted capillary, consider the brutishness and cowardice and bluster and great susceptibility to pain in the ordinary drunkard, whose "trade mark" from nose to stomach, and from bleary eye to bloated extremities, is the dilated capillary. The dilated capillary spells pain and over-functioning. The contracted capillary stands for anesthesia and lessened functional activity.

Can it be possible that we shall at some future time be so able to regulate blood supply that we may command a return to normal, in a given diseased organ, or stay the hand of time in the bringing about of early old age?

The tortuous artery of old age is the natural consequence of distal capillary contraction, and no other abnormality could be rationally looked for, unless we theorize as to the possibility of arterial dilatation, to take the place of the tortuosity, and dilatation is prevented by the sclerosis which has come to be looked upon as a classical finding in the old age artery.

The familiar pride-purchased, agonizing pain due to the wearing of a tightly fitting shoe is only equalled in exquisiteness by the relief which comes when the shoe is removed and the foot allowed to assume its normal condition.

The throbbing pain from the tight shoe, because of its grossness, has never been considered worthy of investigation, but it is due to an enormous interarterial pressure, acting against an artificial obstruction—the inelastic leather casing.

The interarterial pressure, which I speak of as "enormous," can be appreciated best after the following experiment: Suppose you find a blood presure of 140 in a given case. You have inflated your arm-band, until the pulse is no longer heard, and the gauge marks 140. Take this same arm-band and fold it upon itself, to about the size of the hand, place it upon a flat surface, and press upon it with the hand, and again inflate until the gauge shows 140. You will probably be astonished to note the amount of pressure needed to hold the index of the gauge to the selected reading.

Imagine, with a pressure like this, the contest going on in a foot imprisoned in a tight shoe when the blood pressure tries to overcome the binding force of the inelastic leather constrictor.

The phenomenon of the tight shoe pain, and the inflammation and tenderness and swelling which follow, explains all the pain phenomena to which the economy is subject.

Thousands of physiological and pathological problems will be solved, when once we start to ignore the nerve, except as a carrier of sensation or stimuli, and place the blood-vessel where it belongs, as the factor back of the sensation transmitted. One will surely find that the intensity of pain is in a direct ratio with the lack of elasticity in the tissues which go to make up the part affected.

As to the dilated lung capillary, and its role in the production of dyspnea and air hunger, I refer the reader to my former paper, but will further add that, to me, the lung is analogous to a "carburetor," and that the caliber of the lung capillary determines as to whether or not the economy is

asked to "run on a mixture either too rich or too thin," *i.e.* the dilated capillary and consequent compressed aid cell, meaning too rich a mixture, or the contracted capillary and dilated air cell which mean too thin a mixture, or air in excess of the carrying power of the contracted blood vessel.*

Please note that the so-called incurable diseases, either medical or surgical, have with them either the *chronically contracted* or *chronically dilated capillary*, while in conditions which we look upon as amenable to treatment, we find an *acute* departure from normal capillary caliber.

This list includes all diseased states, from tonsillitis to cancer, and from a pimple to acute and chronic albuminuria; and the acute condition, in any diseased state, becomes the chronic one so soon as overstrain or hardening causes the capillary to lose its resiliency.

We must look back of the vasomotor system for an explanation of the variations in capillary caliber, either transient or permanent. We must see the vasomotor system simply as a transmitter of stimuli.

It is the hormones, elaborated by the ductless glands, which determine as to normal or eccentric bodily states, and these ductless glands deliver to the economy a complex chemical substance which is normal or abnormal according as to whether or no the gland is supplied with blood through the medium of a normal or abnormal capillary.

This fact should be kept in mind in the consideration of the action and interaction of the ductless glands. A perfectly healthy ductless gland with a normal blood supply may be delivering an abnormal hormone, because of the fact that it is being asked to metabolize a chemically lacking hormone, furnished by a faulty ductless gland on which it is dependent.

Is the suprarenal the principal gland in the production of the hormones which stimulate capillary contraction? If so, let us find the gland which must surely be working in opposition to the adrenal, learn the control of both glands, and we shall have gone far toward the handling of the bodily functions.

One element must be constantly borne in mind, *viz.*, owing to the fact that the circulating system is a closed tube and of a limited capacity, it must be obvious that capillary dilatation in one organ or part of the economy must of necessity mean compensatory contraction at some other point, and maintenance of balance will compel *two* regions where pathological or at least abnormal functioning may be looked for.

The subject is an endless one. Take under consideration any normal or abnormal function, any physiological or pathological process or result, *and consider the impossibility of producing that process or result without a capillary of the caliber essential to the state in question*, and the vastness of the field is startlingly evident.

I hope that this, and the previous paper, will create enough interest to stimulate others to work along the lines referred to, as I am satisfied that herein lies the solution of many an hitherto unanswered problem.

*The illustration is possibly out of place, but I was at a loss for another so applicable.

Medicolegal Notes.

Damages for Result of Exposure to Cold.—A physician was summoned to attend a patient on a cold night in March. The journey of about fifteen miles was made in a buggy. On returning, at an exposed point on the road he was prevented from crossing railroad tracks by a standing freight train for about fifty minutes. He was in good condition when he stopped, but after about fifteen minutes he discovered that he was beginning to feel numb and chilled. By the time the train moved he had become so affected by cold that he was no longer able to grasp the lines, and was compelled to wrap them around his wrists and arms in order to control his team. As a result of the exposure he contracted articulate rheumatism and suffered from this disease for a long time. In an action against the railroad to recover damages it was held that he was entitled to recover, and judgment for $875 was affirmed.—Cowdrick vs. N. Y. Central R. Co., 65 Pa. Superior Ct. 416.

Privileged Communications.—The South Dakota Code of Procedure, §538, a statute substantially similar to §834 of the New York Code of Criminal Procedure, provides that a physician cannot, without the consent of his patient, be examined in a civil action as to any information acquired in attending the patient necessary to enable him to prescribe. In an action by a nurse against an administrator for services rendered to the decedent and his wife it was held that testimony of a physician as to the general character and value of the services rendered by the plaintiff as a nurse to the patient was not privileged. The plaintiff called as a witness, to prove her services as a nurse and the value thereof, a physician who attended the deceased during his illness and for the same purpose another who attended the deceased's wife during her last illness. The defendant's objections to this testimony on the ground of privileged communications was held properly overruled. The court said that the general policy of such statutes is well understood. It was sufficient to observe that these physicians testified only to the general character and value of the services rendered by the plaintiff as a nurse, and were not examined and did not testify as to any information acquired in attending their patients necessary to enable them to prescribe or act for such patients. A similar decision was arrived at under the New York statute in similar circumstances in re McQueen's Estate, 13 N. Y. Supp. 705, on the ground that the information testified to did not at all enter into the physicians' professional conduct as the physicians of the patient, but related to a wholly distinct and separate subject.—Higgs vs. Bigelow, South Dakota Supreme Court, 164 N. W. 89.

Unrecorded Certificate—Compensation for Services.—Action was brought upon a promissory note given by the defendant to a firm of physicians for services rendered in treatment by a system known as "Chiropractics." The defense interposed was that such services were rendered by the payees of the note in violation of the Alabama criminal statutes prohibiting the practice of medicine by anyone who has not obtained a certificate of qualification from the board of medical examiners. The Alabama Court of Appeals holds that the statutory provisions found in chapter 39 of the Alabama Code, embracing §§1626-1646, relative to the right of physicians to practise medicine without certificates of qualification are regulations for the benefit of the public as well as for persons dealing with those who hold themselves out to the public as professionally qualified to treat diseases of human beings; and it is the public policy of the State to punish the violations of these statutes, and contracts made in violation of these statutes are void in the hands of all persons involved in the guilt of the transaction. Contracts made in violation of these provisions are void in the hands of all persons involved in the guilt of the transaction. Any contract made in violation of Code 1907, §1644, providing that a physician shall not be entitled to compensation for services where his certificate has not been recorded, and §7564, providing a penalty for practising medicine without a license, is void *ab initio;* hence it is a good defense to a note given for the services of a physician that the physician is acting in violation of such sections.—Whitehead vs. Coker (Ala.), 76 So. 484.

Military Medicine.

TUBERCULOSIS IN THE FRENCH ARMY.

WHILE tuberculosis in the French Army is a sufficiently serious problem, an analysis of individual reports readily shows that there is much misconception in this regard. Tuberculosis is a civil plague, and in fact was such long before the war, but it has never seemed reasonable or plausible that the picked fighting men could be stricken wholesale with active tuberculosis. A study of several articles, abstracts of which have been published in the MEDICAL RECORD, show plainly that only a relatively small fraction of the so-called tuberculous soldiers have, or have had, active tuberculosis. The vast majority present the disease in the latent or stationary form, or else have only adhesions from past pleurisy of presumably tuberculous nature. In one material instance, at least 50 per cent. of the alleged "tuberculous" soldiers were doing full duty at the front. It is, of course, true that on a peace footing none of these 50 per cent. would be in the ranks.

But the 50 per cent. or less who have been invalided naturally make up a great body of men who require hospital treatment, and the real problem consists in finding accommodations for them. This is discussed by Leuret in the *Journal de Médecine de Bordeaux* for July. In the absence of exact data we can only infer that this problem deals essentially with the salvage of lives both for military duty and on general principles. The selection should be along the lines which obtain in sanatorium practice, *i.e.* the incurable patient constitutes a separate problem. In Leuret's article, special sanatoria, wards in general sanatoria, and out-of-door clinics, are all discussed. It is the consensus that 300 beds should be the maximum for a single service.

The movement extends beyond the confines of the actual fighting men, for sanatoria in industrial districts seem to provide hospitalization for the workmen as well, although it is not clear as to whether there is segregation of one or the other class. But these sanatoria for workingmen appear to be under the control of army physicians. The tuberculous soldier who may be regarded as on the road to recovery does light farm labor, which favors the cure, and at the same time makes him useful to his country. Dr. Cantonnet is an enthusiast regarding the "work cure." Other light occupations in the country are also facilitated, so that open-air convalescence is rendered possible for men who take their families with them from the cities.

Some Experiences in the German Red Cross.—In the spring of 1914, after a five years' residence in Germany, Clarence A. Neymann states that he passed his State examinations in Heidelberg, and had just entered the department of hygiene with the intention of doing some serological work when the war began. In the general excitement that preceded the outbreak of hostilities he was prevailed upon to join the Red Cross and remained with that organization until the end of April, 1915.

Having only his memory upon which to rely, it is with some hesitation that he offers his impressions of this nine months' service, but he considers that the changes made in the medical organization in Germany since he left two years ago are of minor importance.

At the outbreak of the war the military hospital service was divided into dressing stations, field hospitals, base hospitals and evacuation hospitals. The dressing stations were situated behind the firing line, but within artillery range. The field hospitals were out of range of all but the heaviest artillery and were movable. The base hospitals were far inland, entirely removed from the scene of action, and the evacuation hospitals were in the vicinity of the base hospitals. The evacuation hospitals were really mere homes for convalescents, usually presided over by an elderly physician of the town or village in which they were situated and supervised by the nearest base hospital. This was the sum total of provision made for the sick and the wounded at the outbreak of the war. There were insufficient facilities for returning the men from the front, most of the wounded arriving at the base hospitals in cattle cars on straw bedding with wounds exposed and fractures often without splints.

Germany was sure of a victory within three months and as a consequence no provision had been made for specialized treatment of any kind. The situation in Heidelberg, where he was stationed, as in other university towns, was a little better than elsewhere because of the university clinics already in existence, and these clinics, having become base hospitals, naturally cooperated in exchanging their sick and wounded.

During the first part of the war, that is, up to the time of the battle of the Marne, not a single mental case appeared in the hospital, the "Vereinslazaret Stadthalle," a base hospital of 280 beds with a very active service, where Neymann was stationed. The psychiatric clinic in Heidelberg was half filled with ordinary wounded and there seemed to be no need of a psychiatrist anywhere. Neymann considers that this was partly due to the attitude of the troops, who were buoyantly sure of speedy victory, and partly to the fact that, owing to the general unsatisfactory conditions as already outlined, no attention was paid to individuals who acted queerly. Thus psychoneuroses hardly existed and patients suffering from deeper-seated mental disorders were swept along by the multitude.

Later, with the definite departure from open to trench warfare, Neymann states that the picture changed. Hardly a transport of sick and wounded, arriving twice a week, but what contained its quota of mental cases. The psychiatric clinic had assumed enormous proportions and had become so overcrowded that the psychoneurotics had to be treated in the base hospitals. Now these psychoneurotics slowly but surely began to be a nuisance in the base hospitals that did not have a psychiatrist attached to them by accident. They were "uninteresting cases" to the men of eminently surgical training and were sent to the evacuation hospitals, stagnated there, and finally returned to the front. There all their former symptoms reappeared immediately and they were sent back to the base hospitals. Neymann speaks of one case that went through this procedure three times.

Finally the government stepped in and provided each base hospital with a psychiatrist from a psy-

chiatric clinic, provided one was near at hand, as was the case in Heidelberg. The psychiatrist also dealt with the case of plain slackers. Besides this, the government sent a proclamation to all base hospitals, warning against returning psychoneurotic patients to the front as *felddienstfähig*, capable of service in the field in a haphazard way. Conditions thus were bettered. Patients were kept in the base hospitals until improved, then sent home for a rest and finally assigned to garrison duty, near their home towns. The plain slackers were assigned to heavy labor away from home, while cases of dementia precox, general paresis, etc., were declared unfit for duty and concentrated in the regular state institutions. They were, however, treated as soldiers and enjoyed especial privileges whenever possible.

Neymann describes four types of psychoneurotics which he encountered in the base hospitals. It was for the interest of all concerned to remove severer affections to the psychiatric clinics as soon as possible, even if they were severely wounded. This was done in part directly from the field hospitals and was the only classification these hospitals attempted, all other sorting being done by the base hospitals where there was time and for a more thorough examination.

The first type of psychoneurosis which Neymann brings before us and which he states stands out before all others is that of grenade fever. These individuals were usually stoop-shouldered and narrow-chested, with a poor physical build and a naturally weak constitution. All complained of indigestion (the hospital served good but coarse food), backaches and headaches. However, they lived through the hospital routine pretty well and only lost control when grenades were mentioned or experiences at the front were dwelt upon. Then they would lose control so far as to fall down to the ground. They would be pale, restless, and nervous and could not sleep without hypnotics for a number of days. Unfortunately no association tests were done.

The second class was represented by those individuals who had had especially trying experiences and then simulated some internal or mental disorder for which men in their company had been sent to the rear. This condition would persist for months, even after they were told that they were unfit for duty in the field. Pseudo-epilepsy was one of the forms simulated. One case of this type had been struck between the shoulders by a mine which did not explode just a few days after a man in his company had been sent to the rear on account of repeated attacks of epilepsy.

From this to slackerdom is but a step and all intermediate stages were encountered. All such individuals were considered unfit for duty at the front as they lowered the morale of their entire companies.

Neymann points out that quite opposite from the reaction of the naturally weak and neurotic is that of the mentally slightly deficient. Thus the troops from Bavaria are notably brave, yet among their wounded were many high-grade morons. These individuals, who are wandering laborers, never settle down or get married, spend their money as they earn it, believe in the direct intervention in their behalf of certain sacred statues, can just read and write, and if opportunity is offered will commit petty theft, have not proved bad soldiers.

There were all types of individual reactions. Thus, those patients who had gone through depressions in previous years again became depressed. Hypomanic individuals became very wild and lost almost the last remnants of civilization. Such persons were most difficult to control in the first few weeks after their return from the front, unless they were so seriously wounded that they were confined to their beds. They were constantly exceeding the time limit of their leave, getting drunk and making other kinds of disturbance. After a rest in the hospital for a period of time they usually calmed down again and became manageable. Neymann states that all of these facts agree with our modern psychiatric view of the specific reaction of each individual.—*Mental Hygiene*, July, 1917.

Observations Upon Shock.—In the *Annals of Surgery* for September, 1917. Dr. Edward W. Archibald of Montreal and Capt. W. S. McLean, C.A.M.C., write on shock in war surgery. There are three kinds of service in the surgery of the present war: (1) That of the hospitals close behind the front line, termed casualty clearing stations; (2) that of the base hospitals in France which are usually situated from thirty to sixty miles back; (3) that of the base hospitals in England. In England one sees chronic surgery; at base in France one sees subacute and acute infections, and one goes occasionally shrapnel hunting. But in the casualty clearing station one sees three conditions in particular, which are rarely or never seen at base far back. They are abdominal wounds, the early and severe effects of "gassing" and finally shock; and shock is seen to an extent unparalleled in the experience of any surgeon at home. The very frequency of it was impressive, and not less so the inability of surgeons to rescue such patients when the degree of shock was really serious.

Attention is called particularly to the fact which is not always appreciated that the transport of the wounded from the trench to the casualty clearing station is frequently a most trying experience. The soldier before he is hit is often in a state of fatigue, and not seldom during the winter he is wet and cold into the bargain. Add to this the jolting of a stretcher journey of 1,000 yards down a muddy, slippery, uneven communication trench; add to this the bumping of a horse ambulance along the roads of France such as they are at present well up toward the lines; add to this the transfer to the motor ambulance and a vibratory ride along the stone pavement of that country; add to this a couple of changes of dressing of a painful wound; add a certain loss of blood even in the best cases; add finally the effect of cold, and you get a composite set of circumstances for the reduction of the patient's resistance than which even Dr. Crile could ask nothing better.

A French surgeon, M. Santy, in a very recent number of the *Lyon Chirurgical*, has called particular attention to the influence of great exposure to cold and to fatigue during the time which elapsed from the receipt of soldiers' injuries to

their arrival in hospital. M. Santy had served both in the advanced dressing station and in what corresponds in the French Army to the casualty clearing station, and he says that apart from those who die on the field the occurrence of shock in the wounded soldier when seen soon after infliction of his wound is extremely rare, but that the loss of even a strictly moderate amount of blood, together with the distresses of transport, will frequently push a wounded man, previously in good condition, into what he calls secondary shock, before his arrival at the hospital. There is little need to spend time on the definition of shock. It may, however, be remarked in passing that wounds of the chest and of the head, very rarely indeed presented the symptoms of shock. The authors in going over the notes of their shock cases found that practically all were wounds of the locomotor system or of the abdomen.

From a review of these observations of their bad shock cases the authors picked out a few main facts which they thought merited discussion. As for temperature Guy Kinnaman in an article some years ago pointed out the serious effects of shock upon the temperature. Archibald and McClean found uniformly a serious fall very frequently. If the patients were in marked shock the clinical thermometer would not register, which meant that the temperature was somewhere below 92°. Of 12 cases in which the temperature was low to this extent, death within a few hours took place in 9. If shock were marked, as judged by the general signs, blood pressure was practically always below 75, and occasionally it could not be got at all. Out of seventeen cases with a blood pressure below 75, only three rallied from the shock, and these all died in two or three days from gas gangrene. All the rest died within a few hours after admission or after operation. The pulse was nearly always rapid, 110 or over. This probably has the same significance as in hemorrhage, a lack of sufficient blood to the ventricle in diastole. Respiration was usually increased by 6 to 12 in a minute, *i.e.* 24 to 32, and was always shallow. Hemorrhage, of course, was apt to complicate the situation. It is well known that even a moderate loss of blood tends to predispose to or aggravate shock. However, there was a considerable number of cases in which hemorrhage was either absent or very slight. In these apathy and cyanosis as opposed to restlessness and blanching were marked. Another striking difference lay in the effect of intravenous salt or transfusion, helpful in hemorrhage, useless in severe shock. It was frequently necessary, on account of infection or bleeding, or, in abdominal cases, the presumed danger of peritonitis, to operate soon after admission in the middle of shock. It can easily be imagined how serious such operations were. In a general way, operations aggravated shock very definitely. The old dictum that one should wait for the rally seemed to the writers to be absolutely confirmed by their experience.

With regard to treatment under the existing untoward conditions, a great deal of salt solution was given. It was learned to give it intravenously rather than under the breast; in the latter case it was apt to be absorbed far too slowly to do any good. Rectal salines were often given in addition. Their experience confirmed what all know, that the effect of intravenous salt is very transitory. It rarely held up the blood pressure in serious cases for longer than a couple of hours, often much less. If the trouble were chiefly hemorrhage, results were much better. A number of cases with a blood pressure of 70 or over were saved by intravenous saline. In a certain number they gave, following Hogan, a colloid solution of 25 grammes gelatin in a liter of saline solution. Its effect lasted three or four times longer. Nevertheless, in cases of bad shock it did not avert the fatal outcome. In hemorrhage it was more effectual than saline alone. Transfusion of blood was done in three cases using the citrate method, 16 to 20 ounces being given. Its effect was disappointing; while the color was improved and a slight rise of blood pressure was got, it had no more permanent effect than the gelatin on salt.

Pituitrin was freely used and always brought up the pulse to a certain extent, but this was often transitory, and, on the whole, the authors concluded that it had no real beneficial effect in bad shock. In moderate shock it was of distinct value.

Archibald thinks that shock trouble begins in the vast capillary system, that enormous area of marshy ground in which fluid has such a chance to stagnate. It is known with fair certainty now. from the work of Cotton, Slack, and Lewis, that the capillaries possess active contractability.

Dale and Laidlaw believe that in shock produced by histamin the tone of the capillaries is lost and blood stagnates. For the present, Archibald accepts this as the point of primary failure in traumatic shock. Pallor followed in bad cases by cyanosis was an outsanding feature in the observations of the authors. The veins no longer receive enough blood. If they did, shock could be overcome by gravity and compression, which is not usually the case. Consequently, according to Yandell-Henderson, the failure in the venopressor mechanism is a secondary effect; likewise the gradual failure of the heart and of the coronary supply, all of which assist in the establishment of a vicious circle. The capillary failure leads to insufficient oxidation, which results in asphyxial acidosis. As Henderson says: "The acid substances thus formed cause the protein of the tissue to imbibe water from the blood in much the same manner that fibrin swells in dilute acids. Hence the fatally rapid transudation of fluid from the blood vessels."

Recent English work has demonstrated in shock a serious loss of plasma into the tissues, with consequent rise in the hemoglobin count and the viscosity of the blood in the vessels. All this work suggests, in the opinion of Archibald that hypertonic salt solution at twice decinormal strength would be of some promise. Its chief effect would naturally be to call back into the blood the plasma lost to the tissues. But very possibly it also acts by restoring capillary tone. Archibald has been informed that some encouraging results have recently been obtained at the front with it. He has had no clinical experience, but in one of his ani-

mals, reduced to deep shock by abnormal exposure, the tongue, up to then quite cyanosed, recovered quickly with hypertonic salt a normal pinkish tinge, obviously a local effect on capillaries, inasmuch as blood pressure previously at 35 was raised only to 50.

Regulations Affecting Hospital Care of Soldiers.—While the base hospitals at the Army cantonments are prepared to care for the sick of the divisions, under ordinary circumstances, in case there are an unexpectedly large number needing hospital care the Surgeon General will make arrangements with the civil hospitals for their temporary reception in civil hospitals, and it may become necessary to procure such accommodations for severe cases requiring special apparatus or treatment before time has permitted adequate provision for them in the special Army hospitals. In such cases the Government will pay the usual hospital charges for such patients, but no charges for medical, surgical, or other services connected with them. As the United States Army General Hospital at Fort Bayard has limited accommodations, tuberculous patients may have to be cared for at the base hospitals, but when this is done they will be quartered in wards reserved for them exclusively. Cases of insanity which can be received by their friends upon discharge will be sent home. The insane not thus provided for, if their disability was incurred in the line of duty, will be sent to the Government Hospital for the Insane at Washington, D. C., or to such institutions as the Surgeon General of the Army may indicate. If the disability is not in the line of duty, they will be returned to institutions in their own State, to be cared for by State appropriation.

Hospitals for Our Men in France.—The Army Medical Department announces that its plans for the establishment of hospitals for the American troops in France have been completed. Each unit of 27,000 men will have four field hospitals, two evacuation hospitals, and four base hospitals. The Red Cross announces that when the base hospital units now awaiting call are in service New York City alone will have sent 200 surgeons and physicians and more than 500 trained Red Cross nurses. Four units from this city are already abroad. They are the Presbyterian, Roosevelt, New York Post-Graduate, and the New York Hospital. The remaining units, Bellevue, Mount Sinai, the German Hospital, and Metropolitan units, have long been in readiness for a call to service. There are about 2,000 Red Cross nurses already serving in Europe. Fifteen thousand nurses have been enrolled. It is estimated that this number will be sufficient to care for an army of 1,500,000 men.

Cuban Red Cross Unit for France.—The Cuban Red Cross Society, of which Señora Menocal, wife of the President of Cuba, is chairman, is equipping a 100-bed hospital unit, manned by Cuban physicians and nurses, for service on the front in France. A number of ladies in Havana have set out to raise a fund of $1,000,000 to finance the unit.

A New Portable Hospital.—Experiments are being made, under State auspices, with a new portable hospital devised by Dr. William A. Brooks of Boston, Lieutenant of the State Guard. The new hospital, consisting of four collapsible buildings, is at present located on an elevation near Brookline, Mass. The portable buildings can be taken down, packed, and transported by means of motor trucks in a very short time. The entire outfit is designed with a view to moving it to a scene of emergency in the briefest space of time possible and at the same time providing a complete hospital equipment.

Red Cross Mission to Italy.—The Red Cross is sending a permanent mission to Italy immediately, and announces that it will take every practical step to alleviate suffering and extend such assurance and comfort as is possible to Italian soldiers and the civilian population. Acting on the recommendation of the recently returned American Red Cross mission to Italy, the War Council has appropriated money to develop an ambulance service and to operate such civilian relief as it may be feasible to extend in the immediate future.

German Losses in Three Years of War.—According to declaration made before the German Reichstag by the Independent Socialist, Georg Ledebour, who bases his estimates on the weekly official bulletins issued by Germany up to August 1, 1917, the German losses during the war up to that date are: Dead, 1,132,963; wounded, 2,888,787; crippled and invalided for life, 602,858; prisoners, 602,506. These estimates are even larger than those made by the French and British statisticians.

Ambulance Fund of Poets Grows.—According to the latest reports from the Poets' Committee, the fund which they are collecting for the purchase of ambulances now amounts to $112,457. This fund has already put a number of ambulances to work on the Italian front and by November 15 at least fifty will be in commission. In addition to the ambulances the equipment consists of thirty tent hospitals and several barracks hospitals.

The Bureau of Tuberculosis of the American Red Cross in Paris has been conferring with French authorities in devising plans for the care of the women and children of France that are affected with tuberculosis. The Bureau will shortly begin its work as a special institution. The Edith Wharton Sanitarium for Tuberculosis, which is a separate institution, will be ready for patients by November 15.

Needs of the Red Cross in France.—In response to a request from Henry P. Davison, chairman of the War Council of the American Red Cross, for a general estimate of the money necessary to continue the relief work in France for the next six months, the French Commission has cabled that it will need at least $30,000,000. This is in addition to the $10,000,000 that has already been granted by the War Council. The Red Cross War Council has recently appropriated $31,212 to buy seventy-five tons of food for 100 American prisoners now held in Germany. The soldiers and sailors captured by the Central Powers are not provided by their captors with sufficient food to keep them in good health, nor with sufficient clothing; so the American Red Cross and the United States Government is preparing to feed all American soldiers and sailors who may be taken prisoners during the war.

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SERUM TREATMENT OF PNEUMONIA.

FOR years, ever since the Klemperers in 1891 announced that they had produced a serum for the cure of pneumonia, which, however, did not cure, attempts have been making to perfect a specific therapy for this disease. Experiments with animals appeared to demonstrate that they could be immunized against lethal doses of pneumonia by vaccine treatment, and that the serum of such immunized animals was protective in other animals against infection, or even curative when certain precautions were observed. However, it is not always safe to argue from rabbits to man, and the attempts to cure pneumonia in man by similar methods have quite uniformly failed. Much of the insuccess in the earlier experiments was due to the lack of differentiation between the different strains of the pneumococcus. As we now know, there are several strains or types of this bacterium, which differ greatly in their morphology, cultural characteristics, and immune reactions, and the serum derived from one type is hardly more effective in an infection by another strain than would be antimeningococcic serum in such infection. In the case of one strain, indeed, that called *Pneumococcus mucosus*, every effort to produce an immune serum has hitherto given no satisfactory results.

Of all recent experiments in the line of a serum therapy of pneumonia, the most promising are those conducted at the hospital of the Rockefeller Institute by Avery, Chickering, Cole, and Dochez.* They have succeeded thus far in preparing an effective serum only for Type I infections, but for them they appear to have produced a really curative serum. As about one-third of all cases of pneumonia, at least of the cases coming under their observation, are associated with the Type I pneumococcus, it is evident that it is well worth while to have a serum that will cure most of them, reducing the mortality from 25 to 7.5 per cent., or less. The results were actually better than these figures would indicate, for of the eight fatal cases treatment was begun in three only a few hours before death, when they were desperately ill; one recovered from the pneumonia, but died of pulmonary embolism 16 days later; one had an extensive tuberculous involvement of both lungs, and apparently recovered from the slight pneumonic infection, dying more probably of tuberculosis; another was treated late in the disease, and died at the end of nearly eight weeks from a general streptococcus infection. There were, therefore, but two cases in which it could be fairly claimed that the serum treatment failed, and in one of these, an early case in the series, the result was probably due to insufficient dosage. Trials of the serum in other hospitals in New York, Boston, and Pittsburgh have also had satisfactory results, and in a series of 65 cases treated by Major Nichols on the Mexican border last fall only 5 died, showing a mortality of 8 per cent., while of 18 cases of the same type infection not treated with serum 7 died, giving a mortality of 39 per cent.

The results obtained by the use of this serum are, therefore, seen to be most encouraging, but they as yet only hold out a hope of a successful specific therapy of pneumonia, and do not actually promise it. Pneumonia is caused by such a variety of organisms—three distinct types of pneumococcus and a variety of other strains not as yet differentiated, but all grouped under Type IV, in addition to many other bacteria than the pneumococcus—that even were there a specific serum for each one the employment of a polyvalent serum covering all forms of infection would be manifestly impractical. Even in the case of Type I infection, the necessity of a differential diagnosis at the earliest possible moment, and the measures needed to desensitize the patient before giving the serum in the very large doses called for, keep the method out of the category of those adapted to general use. It is available only in hospital cases or in those exceptional ones in private practice in which all laboratory facilities are at the instant disposal of the physician. All these difficulties in the way of a general employment of serum therapy in pneumonia are, however, we may be permitted to believe, only temporary, and one is justified in hoping that these workers, or others inspired by them, will eventually find a remedy for the remaining 66 per cent. of cases of pneumonia, and one that is as readily applicable by the family physician as is the administration of diphtheria antitoxin. That such a remedy is urgently needed cannot be questioned, for lobar pneumonia to-day causes more deaths than any of the other acute infectious diseases, and moreover, as shown by recently published statistics of the Metropolitan Life Insurance Company, its death rate is slowly but steadily rising.

*Monographs of the Rockefeller Institute for Medical Research: Acute Lobar Pneumonia, Prevention and Serum Treatment. By Oswald T. Avery, M.D.; H. T. Chickering, M.D.; Rufus Cole, M.D., and A. R. Dochez, M.D., New York, 1917.

GASTRECTOMY AND GASTROTOMY FOR HAIR BALLS.

TWO unusual cases in which operation was performed for hair balls in the stomach are reported in the September, 1917, number of the *Archives de Médecine des Enfants*. In the first case, which is reported by Dauriac, a total gastrectomy was per-

formed. The second case is reported by Broca, who removed the hair ball by gastrotomy. In Dauriac's case the patient was a poorly developed girl, 13 years of age. Among the findings on examination were the following: The abdomen was somewhat distended and also contained a certain amount of ascitic fluid. The epigastrium was occupied by a large tumor, of woody consistency, movable transversely but slightly fixed in the vertical plane, so that while it could be somewhat displaced upwards it could not be brought further downwards. The lower border of this tumor reached a point about four finger breadths below the umbilicus. The tracing of the tumor on the skin gave the outline of a ptosed stomach. Percussion over this mass gave absolute dullness. The tumor could not be indented at any point, its woody consistency being uniform throughout. In palpating the abdominal wall over the tumor, a crepitation was perceived resembling that of a subcutaneous emphysema, a sign which Dauriac says suffices for the recognition of the existence of a hair ball. The fact that the child could take its food without pain, vomiting, or intestinal troubles turned the attention of the examiners from the stomach and many diagnoses were suggested, including tumor of the spleen or kidney, sarcoma of the ileum and cyst of the mesentery. Exploratory operation showed that the mass felt was the stomach. The stomach walls could not be picked up in folds and appeared to have become a part of the hard mass which, in reality, they enclosed. A diagnosis of sarcoma of the stomach was made and a total resection done with end-to-end anastomosis of the esophagus and duodenum. The child made an uneventful recovery, in spite of the fact that the parents surreptitiously gave her a green apple and some chocolate only six hours after operation. For the first week the child was ravenously hungry and the bowels moved frequently; but gradually the appetite and bowel movements became normal. The child gained weight rapidly and at the end of six months she was fat, rosy-cheeked and healthy, having no trouble whatever from her stomach or, rather, the lack of it. It was ultimately found that from the age of four years the child had been in the habit of pulling out and eating her hair.

When operated upon for hair ball, Broca's patient, also a girl, was but four years old and had already been operated upon once before (November, 1915) because of intractable vomiting followed by refusal of all food. A small mass had been felt in the epigastrium, yet at the exploratory operation no mass was definitely felt in the stomach; but in drawing the colon forward Broca had felt a resistance which suddenly yielded and he believed that he had released an incarcerated coil of intestine. The immediate postoperative course of events seemed to confirm that belief; for the child at once ceased vomiting, took its food well, and grew fat. In April, 1916, a small mass was again found in the epigastrium. By September the mass was much larger and in January, 1917, it had become very large, while abdominal pain and digestive disturbances reappeared. Béclère, upon radiographing the region at this time, stated that the tumor was in the stomach; but Broca, who could not believe that even a sarcoma would have developed so rapidly, thought the case one of omental tuberculosis, and a course of radiotherapy was instituted. The child was rapidly going from bad to worse when it was caught eating a sponge and it was also found that it had the habit of eating hair. Meanwhile, Dauriac's case had been reported; and, in view of the clinical history and radiographic findings, Broca agreed with certain of his colleagues in the diagnosis of hair ball, performed gastrotomy, and removed a mass of hair which nearly filled the stomach and extended 52 centimeters down the intestinal tract. In a note dated June 1, 1917, it was stated that the child is cured, eats and digests well.

Cases of true hair ball, in the stomach are very uncommon and a correct preoperative diagnosis in these cases is still more rare. One of the most interesting cases of this kind was reported by Walton Martin of New York (*Annals of Surgery*, December, 1914), who performed gastrotomy and removed a mass of hair forming a complete cast of the interior of the stomach. In the case reported by Dauriac the *x*-ray was not employed, while in Broca's case radiography was not resorted to before the first operation. If *x*-ray studies had been made doubtless the stomach would not have been removed in the first case, while the second child would have had to undergo but one operation instead of two. The value of the *x*-ray examination in cases where there is even a remote possibility that the stomach contains a foreign body is self-evident.

MODERN CONCEPTION OF BRONCHIAL ASTHMA.

DURING the past two years a very extensive literature has appeared on the subject of bronchial asthma, particularly in respect to its etiology and specific treatment. In view of the large amount of research which has been done by various workers along these lines, it would seem that our conceptions of the disease would have to be recast and amplified. It is now pretty generally conceded that this type of asthma is an anaphylactic phenomenon, that is, it is due to a hypersensitiveness of the human economy to foreign proteins. Such proteins are contained in all kinds of foodstuffs, pollens, animal hair, and bacteria. The two chief portals of entry of foreign proteins are the gastrointestinal and respiratory tracts. On this basis the exciting causes of the asthmatic attack may be divided into the ingested and the inspired types. Included under the latter type is the bacterial form occurring in persons who are sensitized to the different pathogenic bacteria in the respiratory tract.

In a series of papers appearing in *The Journal of Medical Research* during the current year, Walker gives the results of his investigations, the important features of which are the diagnostic cutaneous test and treatment by means of injections of the foreign protein to which the patients are found sensitive. As regards diagnosis, bronchial asthma should be considered anaphylactic when no other origin can be found and when a specific skin test is obtained. Cardiac, renal, pulmonary, and pituitary disease all may cause symptoms which simulate true bronchial asthma. The skin test is performed either as a scarification similar to the von Pirquet tuberculin test, or as an intradermal injection of which the luetin test is a good example. The former is considered to be the most satisfactory, being easy of application and readily interpreted. The method of preparing the various proteins for the cutaneous test is given in detail by Walker. He found that many patients are sensitive to several proteins, a fact that complicates the diagnosis somewhat, but in no way invalidates the test. Walker states that there is certainly a specificity among proteins in the cause and treatment of bronchial asthma and treatment with an indifferent protein or bacteria will not relieve the condition. When an individual is sensitive to food proteins only, the asthma can frequently be relieved by omitting from the diet the particular food or foods which are at fault. Subcutaneous injections of these food proteins at regular intervals do not, as a rule, increase the patient's tolerance for them.

The isolation of one or more organisms from the sputum apparently bears no definite relation to the skin test, so that it is not sufficient to culture the sputum and disregard the individual's skin reaction to the protein of the organism or organisms so isolated. Walker found, however, that a small percentage of asthmatics do not give a characteristic cutaneous reaction with any protein. In some of these cases he was able to demonstrate a positive serum agglutination with *Staphylococcus aureus*, and the patients when treated with vaccines made from this organism showed improvement. Babcock has obtained equally good results from vaccine treatment with an anaerobic fusiform bacillus which he isolated from the sputum as the predominant germ in several cases. In the absence of a positive skin test with the different proteins, it is therefore apparently worth while culturing the sputum and, if a suitable organism is found, trying vaccine treatment. Of course we must not lose sight of the possibility of obscure or hidden foci of infection as a source of protein absorption, especially in infections of the mouth, teeth, and accessory sinuses, as well as in the abdomen where lesions of the gastrointestinal tract may lead to stasis, thus producing protein intoxication. Eradication of such foci and corrective abdominal surgery often relieve and sometimes cure the asthma without further treatment.

THE SOLDIER, THE COURTESAN, AND SYPHILIS.

An anonymous contributor writes at length on this subject in *Le Progrès Médical* for Sept. 1. History, he states, is the perpetual educator of us all, so that to illuminate present conditions we must study the past. Fiaux has recently published a volume on the "Sexual Biology of the Soldier," in which statistics enter largely. Camp morals in past wars have shown great variation. The Duke of Alva had the female camp followers fully organized. Some on horseback, elegantly attired, were intended for the officers, while hundreds on foot ministered to the rank and file. At the other extreme, Strozzi threw eight hundred prostitutes into the river at a single stroke. In a Huguenot army of the sixteenth century the soldiers were compelled to marry the prostitutes. In other campaigns both soldiers and prostitutes were flogged, pilloried, placed in the stocks. Girls were made to run the gauntlet or were daubed with soot or axle grease and exposed on the promenades. None of these stringent measures accomplished the least good because the spread of syphilis was unchecked. It was said late in the eighteenth century that two out of every three soldiers were syphilitic.

At the time of the Revolution three admissions to a hospital for venereal disease were adjudged to render the victim "unworthy to serve his country." The necessity of prompt cure was recognized and the scene was flooded with so-called "specialists" (in reality charlatans), who vaunted their nostrums. Oddly enough, one Boyveau-La Hecteur had a numbered remedy, a mysterious "206." In Berlin when under French rule and in Paris there was an attempt to regulate prostitution, at the same time severely punishing violators of the regulations. In 1814 it was shown that in a supervised house but one girl in seven was infected, while among the clandestines the ratio was one in four. At that period the "soldier's girl" was recognized as a special type of prostitute. These, as a rule, had no home or shelter, were poorly clad and dirty, were glad to get a fee of one or two sous, and at times even a crust of bread thrown from the soldier's window after his return to the barracks. The close of the Napoleonic wars brought about some changes, but the percentage of infections in the troops remained very high. Midway in the nineteenth century the average incidence was 10 per cent, but in some localities it was much higher.

After the Franco-Prussian war, the figures were more favorable, and in 1889 the number of infections fell to about 5 per cent. and in 1895 to 3.75 per cent. The greatest reduction seemed to be in syphilis. By 1911 the ratio was below 2.5 per cent. Both syphilis and gonorrhea were reduced by one-half between 1880 and 1911.

Fiaux apparently does not cover the figures of the present war, although we know that there has been a great increase in incidence. According to him we have only to revert to the measures which

reduced the morbidity before the war, although conditions differ. Before the war the troops were professional soldiers, while today we have to do with a citizen army which sooner or later must be disbanded.

Oatmeal Gruel in Infant Feeding.

Oats have always held a high reputation as a nutritive food for man and beast. Oats contain a higher percentage of carbohydrates and fat than other grains, and, moreover, the fat in oats is of better quality than that in other grains, and the iron content of oats is very high. Oatmeal gruel is an excellent food for infants, and was first used in this capacity by the French. At the present time, oats are being used extensively for well and sick adults, and especially for well and sick infants and children, in the form of oatmeal gruel. Dr. A. Levinson, in the *Archives of Pediatrics*, gives the results of investigations taken by himself and colleagues as to the value of oats as an infant food. He summarizes as follows: (1) Oats is an important addition to infant food. (2) The most valuable preparation is oatmeal gruel. (3) The 5 per cent. mixture, which contains 1.5671 grams, dry substance and equals 5.4 large calories in 100 c.c., is the most efficacious preparation. (4) Oatmeal gruel can be prepared very simply by washing grits in cold water and boiling for 30 minutes and then straining. (5) Gruel can be given at any age with beneficial results. (6) Its taking increases the appetite of the child. (7) It makes the stool homogeneous. (8) It often relieves constipation. (9) It has high iron content. The experiments carried out by Levinson were mainly in order to find out if oatmeal gruel had a favorable effect upon the stool of infants. As will be observed above, the conclusions from this point of view were eminently satisfactory.

News of the Week.

America May Use German Patents.—The Federal Trade Commission has issued regulations under which German-owned patents and copyrights will be licensed for manufacture by citizens of the United States. After the regulations were made public the commission conferred with a group of medical men to consider the licensing of certain drugs and non-toxic substitutes for local anesthetics of which the supply in this country has run dangerously low. Approximately 20,000 patented and copyrighted articles are said to be affected by the commission's orders. It is said to be likely that any licenses issued for the manufacture of drugs will carry a provision that a certain percentage of the output be turned over to the Public Health Service. The regulations follow the law closely in safeguarding the interests of patent owners, who must be reimbursed for the use of their inventions, and licenses will be issued only where the interest of the public demands it.

Widespread Epidemics in Germany.—A press correspondent, who is with the French Armies near Verdun, reports that thousands of letters have been taken from German prisoners which describe in harrowing terms the ravages of dysentery, cholera, and typhus fever in Germany. These letters bear witness to the prevalence of such epidemics at Cologne, Mülheim, Coburg, Burgstädt, Guben, Alakenbourg, Langen, Lichtenberg, Staltach, Altona, Wiesbaden, Grunewald, and many other German cities. It is reported that over one-half the letters taken from the prisoners contain some reference to the spread of these epidemics. The deduction seems to be warranted that if these letters have been allowed to pass the censors the actual conditions must be much worse than those mentioned which have been allowed to pass.

Wants Federal Control of Habit-Forming Drugs.—Police Commissioner Woods of New York has entered a protest against the loose method of enforcing the law against the indiscriminate sale of habit-forming drugs which makes it extremely difficult to prevent the traffic in these drugs in New York. He has written to the Attorney-General urging additional Federal legislation for the purpose of curbing the "alarming increase" in the traffic in these drugs. Commissioner Woods wants the sale of habit-forming drugs placed directly in the hands of the Federal Government, with zone districts created for their distribution, and severe penalties for alteration of certificates calling for drugs. He states that on an average 2000 arrests of drug users are made annually in New York City.

Tetanus Germs in Vaccine.—A report from St. Paul, Minn., states that vaccine sent there for use in vaccinations against smallpox was followed by a request for its return, as there was a possibility that it contained tetanus germs. The vaccine was sent to Washington for analysis. At the same time it is reported that smallpox vaccine used in the inoculation of the members of the Albany Base Hospital Corps, which expects to sail for France any day, contained tetanus germs. Orders have been sent from Washington that all the men who were inoculated with this vaccine be inoculated again with tetanus antitoxin. Military authorities, though reluctant to discuss the matter, entertain the suspicion that it is another evidence of German barbarity.

New York State Prison Population.—The total prison population of New York State is 5924. This is apprecibaly less than that of a year ago. The decrease is explained as due to prosperity and the war.

Automobile Accidents More Fatal Than Typhoid and Scarlet Fever.—A recent communication from the New York State Department of Health calls attention to the fact that automobiles killed more people in this State during the first nine months of 1917 than did typhoid and scarlet fever combined. During the month of September automobile accidents in New York State caused 155 deaths —more than the combined mortality by intentional murder and suicide. It is also notable that the greater portion of deaths from this cause occurred in streets and highways of up-State districts, the distribution of deaths being: New York City 55, up-State cities 63, and rural districts 37. The number of deaths from automobile accidents in the State thus far in 1917 has been 775, which exceeds the number for the corresponding period

of any previous year. The mortality from automobile accidents, and likewise typhoid fever, is usually highest in September. The latter, however, has maintained the low record made in 1916. September, 1917, recorded 796 cases of typhoid fever, with 84 deaths in the entire State, which represents a decline of 28 per cent. in the number of cases and 26 per cent. in the number of deaths. For the year 1917 there have been reported, up to September 30, 2,840 cases and 590 deaths, compared with an average of 3,934 cases and 590 deaths for this period.

Harvey Society Lecture.—The second of this series of lectures will be delivered at the New York Academy of Medicine on the evening of Nov. 10, at 8:30, by Dr. Carl L. Alsberg, U. S. Department of Agriculture. His subject is "Current Food Problems."

Evening Clinic for Genito-Urinary Diseases.—The Polyclinic Hospital announces that it has established a dispensary service for the treatment of genito-urinary diseases in the male. These clinics are held Tuesday and Saturday evenings.

Milk for Russia.—The American Red Cross has purchased one million pounds of condensed milk for the babies of Russia. This consignment is to be shipped immediately and an equal amount will follow next month. This appropriation was made in response to an urgent request from the Red Cross Commission in Russia.

The Hebrew Orphan Asylum of New York City has selected a site in the Wakefield Section of the Bronx for new buildings which it proposes to erect in the near future. The site is 100 acres in extent and it is estimated that the entire cost of the new home will be $1,000,000.

Three Full-Time Medical Positions.—Framingham, Mass., has three full-time medical positions now open. These include a public school medical supervisorship, a medical position in one of the city's large industries, and a medical position at the head of an industrial medical organization for the community as a whole. The first two positions will pay $2,500 a year, and the third $3,500. Men with industrial experience are preferred, though young men with a sound medical background will be considered. Further information may be obtained from Dr. Donald B. Armstrong, executive officer of the Community Health Demonstration, Framingham, Mass.

Assistant Medical Officer.—The Civil Service Commission of the State of New York announces an examination for the position of assistant medical officer, Department of the Health Officer of the Port of New York. The position carries a salary of $1,500 and requires residence and service at one of the quarantine islands of the lower New York Bay. Applications must be in the office of the Civil Service Commission, Albany, N. Y., before Nov. 28. Preference will be given to those having a knowledge of cholera, plague, yellow fever, smallpox, leprosy, epidemic cerebrospinal meningitis, and typhus fever.

Physiological Chemist and Laboratory Assistant in Bacteriology Wanted.—The Civil Service Commission of the State of New York announces examinations for these positions, for which degrees in medicine are not required. Applicants for these positions must have a degree from a college maintaining a standard satisfactory to the Commission or an equivalent education and special training in these respective lines. The position of physiological chemist pays a salary of $1,500; that of laboratory assistant in bacteriology, $720 to $1,200. Applications must be in the office of the Civil Service Commission, Albany, N. Y., by November 28, 1917.

Examination for Superintendent of Sea View Hospital.—The New York Municipal Civil Service Commission announces an examination for medical superintendent of Sea View Hospital, Staten Island, N. Y. Applicants must present evidence of graduation from a recognized medical college, one year internship in a general hospital and one year's experience as an officer in an institution for the treatment of tuberculosis or equivalent executive experience in public health work. The position pays a salary of from $2,100 to $2,490 a year. Applications must be filed with the Municipal Civil Service Commission before November 13, 1917.

The Fifth Conference of Industrial Physicians and Surgeons, Department of Labor and Industry, will meet in the State Capital, Harrisburg, on November 20, 1917. Copies of the program may be obtained from Dr. Francis D. Patterson, 506 Kunkle Building, Harrisburg, Pa.

The Medical Inspectors and Physical Educators Association of the State of New York will meet at a place to be designated at one of the sessions of the Section on Hygiene and Physical Education of the New York State Teachers' Association, at Syracuse, on November 26, 27, and 28. The purpose of this meeting is to elect officers of the State Association for the following year and vote upon the constitution of the Association.

The Radium Sanatorium of New York has secured the services of Miss Bianca de Vitalis as superintendent. Miss de Vitalis is a graduate of Essex County Hospital of Newark, N. J., and Fordham Hospital of New York, and for several years has been a prominent figure in many philanthropic organizations.

Dr. E. Styles Potter has been appointed visiting surgeon in the Genito-Urinary Department of the West Side German Dispensary.

Dr. Byron C. Darling has removed to 103 Park Avenue, New York City.

Obituary Notes.—Dr. JOHN MILTON DEXTER, a graduate of the College of Physicians and Surgeons in 1894, aged 50 years, was run over and killed by an automobile while crossing a street near his home in New York City, on Nov. 1.

Dr. HENRY ALLERS of Harrison, N. J., a graduate of New York University Medical School, in 1881, died on Oct. 30, aged 61 years.

Dr. EDWIN D. NEWTON of Athens, Ga., a graduate of Jefferson Medical College, Philadelphia, Pa., died of pneumonia on Oct. 19, aged 82 years.

Dr. JOSEPH JAMES HARRISON, one of the oldest physicians in Tennessee, died at his home in Loudon, Tenn., after a brief illness, at the age of 84 years.

Dr. ALBERT NATHAN, a graduate of the medical College of South Carolina, in 1909, and a practicing physician of Charleston, S. C., died in Boston, on Oct. 22, aged 30 years.

Dr. WILFRED H. SAGE, a retired physician of

Boston, and a graduate of the Buffalo University Medical School, died at the residence of his daughter in Medford, Mass., on Oct. 26, aged 63 years.

Dr. ELBRIDGE A. SHAY, a graduate of the Cleveland University of Medicine and Surgery, in 1883, died at his home in St. Louis, after a long illness, on Oct. 20, aged 68 years.

Dr. ALONZO G. TRAFTON of South Boston, a graduate of the Medical Department of Bowdoin College, in 1877, died on Oct. 28.

Dr. DANIEL TROTTER, a graduate of the Medical College of Atlanta, Ga., in 1913, died at his home in Madison, Ga., on Oct. 16.

Dr. NEWELL B. BURNS, a graduate of Harvard Medical School, in 1909, died at the State Sanitarium at North Reading, Mass., with which institution he was officially associated, on Oct. 29, aged 35 years.

Dr. THOMAS SCILLES KENNEDY, died at his home in New Orleans, La., about Oct. 18. He served during the Civil War, was a graduate of Tulane University, La., in 1869, and was for fifteen years in charge of the Children's Clinic of the Charity Hospital.

Dr. JOHN KOLMER, a graduate of Jefferson Medical College, in 1894, died after a long illness, at his home in Indianapolis, aged 51 years.

Dr. SILAS D. PRESBREY died at his home in Taunton, Mass., on Oct. 23, at the age of 79 years. He was a graduate of Harvard Medical School, in 1865, city physician of Taunton for some years, and took a leading part in the establishment of the Morton Hospital.

Correspondence.

OUR LETTER FROM PARIS.

(From Our Regular Correspondent.)

AN AMERICAN FIELD HOSPITAL—TUBERCULOSIS AND THE RED CROSS.

PARIS, October 1, 1917.

I HAVE just returned from a short trip and during my absence visited a field hospital and can testify to the splendid organization of our medical corps. Our boys are well cared for and Americans at home may rest assured that the system is so well studied out that no matter where the army moves to, or how often, the hospital arrangements will be perfect. In two hours the hospital I saw could be packed up and sent marching to another place, having all its equipment ready for service. The different huts were kept at proper distances from each other, so as to avoid spreading such maladies as measles, mumps, and so on. The surgical huts were spick and span. Some of the men are so energetic that they sprain muscles, sometimes, or hurt a hand or foot or fall and fracture a bone. But the men I saw seem to take such things as part of the business and were as jolly as could be.

Every day men arrive for treatment and every day men are discharged cured. The air is good, the food of the best America can send out to us, and there is an atmosphere of efficiency, cheerfulness, and friendship everywhere that helps the cure and gives the men plenty of sympathy. Many of them were playing football, others were playing checkers, some were reading papers.

The Y. M. C. A. is doing good work here and sending the men games and implements for sport of different kinds so as to suit all tastes.

By going among the convalescents I had a chance to learn some of their views. One said he could not make out why he did not get his letters delivered to him. Another complained of the parcel delivery arrangements. He had received letters saying that his mother had sent him different comforts, but he never got them. Another complained because in the neighboring village or town the Americans were charged higher prices than the natives. This was a pretty general grievance. Our men cannot see why the natives do not treat them more as friends and less as millionaires ready to spend extra money for little comforts.

The men need cheerful news and constant encouragement in their life abroad doing something for the cause. One man said: "It's all right when you don't think of it," which is just the psychological point our people at home can well remember. Another said: "Tell our folks that they needn't get gloomy over our life here. Tell them we are well and happy and have no time for worry. We are having a mighty fine time." The work is serious enough without reminding the men of what they left behind them. What was to be noticed throughout the rank and file everywhere was the extreme courtesy, the desire to help each other, the readiness to answer questions, to show you the way anywhere or tell you to whom you ought to go for information; the pleasant smiles of our boys who pass and recognize you as a friend and a fellow countryman; the modesty and simplicity of the officers, who give all their time to their responsibilities and yet have time to be courteous and chivalrous, as our American traditions are observed.

Commenting on the improvement in the standard of the men composing the present army, an officer said: "The class of men in our army now is far ahead of anything when I was a young man. Here in the hospital, I observe our men at my ease and study them, and I can tell you they are a fine lot of fellows. They are intelligent and well educated. The American soldiers are not improvident; they send their money home and put away their savings. You see them grouped together, very often discussing war problems, making maps of maneuvers, and arguing points of tactics. They are soldiers right enough. They have military genius among them, and you will see this made good as the war develops."

An occasion indicating the splendid relations existing between France and America, and between the American Red Cross and other organizations in France, took place when the activities of the Tuberculeux de la Guerre were transferred to the American Red Cross. The Tuberculeux de la Guerre was one of the earliest organizations to undertake the great fight against tuberculosis in France. It is only because, in conjunction with the Rockefeller Foundation, the Red Cross is making large plans for the care and prevention of tuberculosis that it felt justified in accepting this very generous offer. Large projects have been formulated and are under way. Sanatoria and hospitals are essential parts of any such large organized plans for dealing with tuberculosis in France,

and it is highly desirable that all sections of the organization should be thoroughly coordinated. This being the case, the American Red Cross accepted the very generous offer of the Comité des Tuberculeux de la Guerre, assumed the development of the work now under way, and pledged itself to carry on this work for the care, cure, and prevention of tuberculosis.

146, Avenue des Champs Elysées.

Progress of Medical Science.

Boston Medical and Surgical Journal.

October 25, 1917.

1. The Bearings of Industry on Medical Practice. David L. Edsall.
2. The Activities of a Labor Department. Edwin Mulready.
3. The Adjustment of Physical Defectives to Employment. W. Irving Clark.
4. The Establishment of a First Aid Hospital in Industry. Herbert J. Cronin.
5. Changing Methods and Advances in the Treatment of Progressive Deafness from Chronic Secretory Otitis Media. Francis P. Emerson.
6. The Etiology of Disturbances of the Heart Beat. George Edward Barnes.

5. Changing Methods and Advances in the Treatment of Progressive Deafness from Chronic Secretory Otitis Media.—Francis P. Emerson says that, for the reason that otology is not an exact science, there are problems connected with its practice that should be reconsidered at stated intervals. One of these is the diagnosis, prognosis and treatment of that form of progressive deafness which is the result of chronic secretory otitis media. As a result of detailed study he states that (1) Every case of chronic progressive middle ear deafness has a primary focus, which persists as a low-grade infection, subject to acute exacerbations. In chronic cases such foci are usually multiple. (2) Such primary focus is usually constant for the individual, and is indicated by the location of exacerbations. (3) Every case showing variable hearing can usually be improved up to their best hearing, or more. (4) So-called cases of nerve deafness of non-specific origin are in the experience of the writer due to toxemia from some definite focus. (5) Inflation in *chronic cases* is unscientific and harmful as a routine, as the tube is already open and has partly lost its tone in the majority of cases; and in those cases not open, it does nothing to remove the cause. (6) Nasal obstructions do no harm to the middle ear unless infection is present. Such obstructions, however, are the primary cause in the development of imperfect drainage, which predisposes to infection, and which is always present in cases of chronic secretory otitis media originating in the nose. (7) Foci, whether in the sinuses, tonsils, mandible or epipharynx, are potential factors in the progress of chronic progressive otitis media, either by direct extension or through the lymph and blood streams. (8) No hearing test will forecast the improvement in a given case as long as we have a positive Rinné with variable hearing. (9) Whatever the macroscopic appearance of the membrana tympani, the cause of the deafness is active for a long time outside the middle ear as a toxemia, or low-grade infection subject to acute exacerbations. (10) Constitutional diseases have but little effect upon the course of chronic secretory otitis media, except to lower the patient's resistance and make him more susceptible to exacerbations of his localized focus or foci.

New York Medical Journal.

October 27, 1917.

1. War Tetanus. Leon H. Cornwall.
2. The Bringing Up of Children and Nervous Diseases. Adolph Stern.
3. Diabetes Mellitus. I. W. Held and M. H. Gross.
4. Two Cases of Inflammatory Stricture of the Right Ureter Due to a Pelvic Abscess Following Ureterotomy of the Left Ureter. Walter H. McNeill, Jr.
5. Circumcision. F. D. Austin and T. G. Sharpe.
6. Applicability of Desiccation Surgery to Eye Conditions. J. A. Kearney.
7. A Case History of Puerperal Eclampsia. Maurice Cohen.
8. Aniline Poisoning. Valentine C. Baker.

1. War Tetanus.—Leon H. Cornwall states that although the major symptoms of war tetanus are familiar to most medical men it is surprising how frequently the early symptoms are overlooked. In the case of the army surgeons in the field this is not to be wondered at when one considers the number of duties required of officers of the Medical Corps. Early symptoms which often give rise to the first clue are profuse perspiration, vertigo, and difficulty of urination. The masticatory spasm which leads to trismus and contracture of the neck muscles is the forerunner of opisthotonus; the spasm of the breast and diaphragmatic muscles with the accompanying pain resembling pleurisy will many times not be enough for the patient or physician, because the wounded soldier in his patience and without knowledge of the danger minimizes these symptoms and concentrates his attention on the healing of the wound. The physician may suddenly discover that he is dealing with a case of severe general convulsions or one morning may find his patient suffering from intermittent convulsive attacks or in the condition characteristic of the spasm of the whole body musculature. That he stands by the bed of a tetanus victim will occur to him with a shock. With reference to the toxin present Cornwall states that from the wound the toxin passes along the pathways of the nerves, probably following along the perineural sheaths to the spinal cord. It may be absorbed by the blood and lymph capillaries and reach the cord indirectly, being taken up by the end plates of the motor nerves. The central nervous system and peripheral nerves do not take up the antitoxin in the same way as they do the toxin. A high antitoxic content of the blood will not protect an animal if the toxin is injected into a nerve and not subcutaneously or intravenously. The antitoxin can only neutralize that part of the toxin unabsorbed at the point of injection or that portion which is in the bloodstream and ununited with the nerve endings. A cure can only result if before the antitoxin injection a lethal dose has not been taken up by the nervous system. The result depends upon the interval between the toxin and antitoxin administration. The amount of antitoxin which, injected intravenously simultaneously with the toxin, will protect the animal against many times the lethal dose of toxin, fails if a few minutes elapse between the toxin administration and that of the antitoxin. After one hour forty times the amount of antitoxin is required that would suffice if given at the same time or immediately after the toxin, whereas after five hours six hundred times the dose of antitoxin necessary to neutralize the toxin *in vitro* fails. After a lethal dose of toxin is absorbed by the peripheral nerves only a direct injection of antitoxin into the affected nerve can hinder extension to the centers. If the centers are affected a very large dose of antitoxin subcutaneously is worthless. The bacillus of Nicolaier does not occur alone in wounds, but has associated with it many others. Among these are the pyogenic cocci, *Bacillus aerogenes capsulatus* of Welch and the *Vibrio septique* of Pasteur, the cause of malignant edema. The anaerobes play the leading role in the secondary infection of wounds of battle. The treatment consists of three varieties: general, local, and regiminal. The general treatment consists of the use of antitoxin and drugs. Locally the treatment includes the use of antitoxin for its neutralizing effect, antiseptic surgical care, and the injection of medication with bactericidal action such as phenol and peroxide. Absolute quiet comprises the major part of the régime. The merits of antitoxin are so generally accepted that its use as a therapeutic measure needs no defense. It is the immunizing and curative agent *par excellence*. There are several methods of administration, however, which should be appreciated as the indications for their use differ, certain cases requiring a combination of all methods. For the administration of antitoxin four methods are employed: subcutaneous, intravenous, intraspinal, and endoneural. In every wound contaminated by dirt or pieces of clothing and especially wounds of the extremities a prophylactic injection of 1,000 to 2,000 units should be given subcutaneously at or near the site of injury. Owing to a difference in the methods of the standardization of antitoxin units in this country and abroad the dosage is not the same. In Europe twenty units constitute the dose for prophylactic purposes. The value of the local injection of antitoxin in prophy-

laxis is due to the fact that it prevents the absorption of the tetanus toxin from the wound by combining with and neutralizing it. If, however, the toxin has been absorbed by the nervous system this method is of no avail. One initial prophylactic dose is not sufficient, but should be repeated weekly for three doses or until the wound is healed. Cornwall draws the following conclusions as a result of his work: (1) Tetanus is a common scourge of war. (2) In the present war there have been more cases of tetanus per 1,000 than in any previous war. (3) Tetanus develops after wounds contaminated by dirt and clothing and is more frequent regions. (4) The usual incubation period is from six to sixteen days, but in tardy tetanus may be prolonged after wounds of the extremities than those of other regions. (4) The usual incubation period is from six to sixteen days, but in tardy tetanus may be prolonged to three months. (5) Low temperatures and free excess of oxygen prolong the period of incubation. (6) The onset is frequently so insidious as to render early diagnosis difficult. (7) The pathway of the infection is along the perineural lymph channels to the spinal cord. (8) Early prophylactic injection of antitoxin should be given in every wound contaminated by dirt or particles of clothing. (9) For therapeutic purposes the serum should be given subcutaneously, intravenously, intraspinally, and endoneurally. (10) To prevent the muscular fatigue due to spasms and convulsions sedatives are of great value and absolute rest is of paramount importance. (11) So called tardy tetanus may occur as late as three months after injury and is especially likely to follow secondary surgical operations or other trauma at or near wounds previously infected with tetanus bacilli. (12) The prognosis is grave when the disease develops early, but late cases have a favorable prognosis.

Journal of the American Medical Association.

October 27, 1917.

1. The New Public Health. W. S. Rankin.
2. Experimental Shock. C. C. Guthrie.
3. The Value of Eye-Ground Observations in Recent Cases of Fracture of the Skull. J. A. Kearney.
4. Syphilis of Bladder. H. A. Fowler.
5. Nineteen Cases of Typhoid Fever Due to Eating Turkey Salad. Powhatan S. Schenck.
6. Psychoses Other than Paretic Dementia in Syphilitic Individuals. Alfred Gordon.
7. Intravenous Glucose Injections in Shock. Joseph Erlanger and R. T. Woodyatt.
8. Symptomatology of the Nervous System in Chronic Intestinal Toxemia. G. Reese Satterlee and Watson W. Eldridge.
9. A New Complement Fixation Reaction as Applied to Leucorrhea: A Comparative Study of Forty-seven Cases. Louis D. Smith and F. Lee Stone.

9. A New Complement Fixation Reaction as Applied to Leucorrhea: A Comparative Study of Forty-Seven Cases.—Louis D. Smith and F. Lee Stone state that the difficulty of making an absolute diagnosis of gonorrhea in woman by a combination of clinical history, signs, symptoms and the usual laboratory methods has led them to undertake a comparative analysis of forty-seven cases of women suffering from leucorrhea, employing the usual methods and the complement fixation test devised by one of them (Smith). In entering on these experiments, they were immediately impressed with the insecurity and lack of value of all ordinary methods to serve as a criterion for diagnosis to substantiate their findings. For who, by the usual methods at command, can with absolute assurance delegate a woman suffering from leucorrhea to the categorical diagnosis of gonorrhea? In conducting the special test, it was deemed advisable, in order to eliminate bias, to do so without a knowledge of the nature of the case. Accordingly the specimens were submitted in serial numbers to one of them (Smith), and the other data were kept separately (Stone) until after the report of the test, when all ascertained facts were coordinated. In this manner the special test under trial was performed without any guiding influence, and the other laboratory examinations were made without knowledge of the outcome of this test. The principle of the test involved is that of the Bordet-Gengou complement fixation reaction. In their test the antibody of the bacteriolytic system is supplied by commercial antigonococcic horse serum, and the antigen is the unknown element. This antigen is embodied in the suspension of the leucorrheal discharge which, although gonococci may be few, nevertheless contains the products of their interaction with the tissue and also their own autolytic products. In other words, the principle of the Wassermann test is reversed, in that in the latter the unknown element is the antibody in the patient's blood, and the known antigen is tissue extract, whereas in our test, the antibody is supplied, and the antigen (identical with the gonococcus or its products) is the unknown factor. Thus employing principle it is possible to determine at its very inception a gonorrheal infection in male or female, and similarly to determine the time of disappearance of the organism according to experiments we are now conducting. A specimen of the discharge is collected from the cervix and vagina on a long cotton swab. The swab is immersed in about 2 c.c. of physiologic sodium chlorid solution. The discharge is freed from the swab and ground finely with the sodium chlorid solution in a glass mortar. The suspension thus prepared is permitted to stand over night and then heated at 56 C. (132.8 F.) for half an hour. In appearance a properly prepared suspension exhibits a faint turbidity, to obtain which it may be necessary to add more sodium chlorid solution. Practice will enable one to determine the proper dilution. Floating particles may be removed by a few seconds of centrifuging. In the test a positive and negative control should be used, each specimen requiring ten tubes (as used in the Wassermann test), consisting of a first and second row of four tubes, and single tubes in the third and fourth rows. In all tubes are placed 2 c.c. of physiologic sodium chlorid solution. To the first tubes of the first and second rows is added 1 minim of the suspension, in the second tube 3 minims, in the third 5 minims, in the fourth 7 minims. In the single tube of the third row are placed 7 minims of the suspension. In all the first row tubes and the single tube of the fourth row is now placed 1 minim of the properly standardized antigonococcic serum. In all tubes excepting the single third row tube is now placed guinea-pig serum (complement) as is done in the Wassermann test. The specimens are now incubated in the water bath for one-half hour at 37 C. (98.6 F.), when the antisheep amboceptor and sheep corpuscles are added and reincubated. Readings are then taken. The first row constitutes the test, the degree of inhibition of hemolysis indicating the degree of positiveness, if the corresponding second row, which is the control for the test row, has completely hemolyzed. The third row tube is a control on a possible hemolytic tendency of the specimen to be tested, whereas the fourth row tube is a control on the anticomplementary action of the antigonococcic serum. Results show that in only two instances was a negative test obtained when there was evidence of gonorrhea, one of these having presented a bartholinian abscess that had been cured. However, in these two instances slide examinations and blood complement fixation tests were negative. In seventeen cases with positive clinical evidence and negative slide examinations, our complement fixation reaction was positive. In four cases without clinical appearance of gonorrhea, the test was positive in two and doubtful in two. Five cases doubtful clinically yielded positive reactions. Three cases with positive clinical evidence and positive Smith test exhibited positive blood complement fixation reactions. In view of the fact that we have no real basis for comparison of the test under discussion, time and additional work are necessary to establish its value. It is feasible theoretically because it involves the principle of the Bordet-Gengou complement fixation reaction. In their experience it has been of great value in confirmative diagnosis of gonorrheal infections. It has served, finally, as a guide in determining cures.

The Lancet.

October 6, 1917.

1. A Report on the Pathology, Diagnosis, and Treatment of Absolute Hysterical Deafness in Soldiers. A. F. Hurst and E. A. Peters.
2. A Comparative Study of the Reactions to Human and Bovine Tuberculin Applied by the Method of Von

Pirquet in Cases of Tuberculous Disease of the Bones and Joints. H. J. Gauvain.
3. The New Dietetic Treatment of Diabetes. P. J. Cammidge.
4. The Local Treatment of Meningococcus Carriers with Antiseptics. P. Fildes and P. B. Wallis.
5. On the Closure of War Wounds in Home Hospitals. James Phillips.
6. Studies in Wound Infections. On the Growth of Anaerobic Bacilli in Fluid Media Under Apparently Aerobic Conditions. S. R. Douglas and L. Colebrook.
7. An Unusual Complication of Laparotomy for Gunshot Wound. William H. Johnston.
8. Inoculation Agglutinins. I. Walker Hall, with the Assistance of I. Hiles and F. Nicholls.

2. A Comparative Study of the Reactions to Human and Bovine Tuberculin Applied by the Method of Von Pirquet in Cases of Tuberculous Disease of the Bones and Joints.—H. J. Gauvain states that the work here reported was done for the Local Government Board, London. Bacterial reports were made on 116 cases of children suffering from tuberculous bone or joint diseases. As a matter of interest it was decided to undertake a quantitative investigation of the von Pirquet cutaneous test on such of these patients as were available to check the reactions by color photographs and to endeavor to ascertain: (1) Whether the reaction to cutaneous inoculations of tuberculin was constantly present in patients suffering from undoubted tuberculous lesions of the bones or joints—that is, in patients from whose lesions the tubercle bacilli had been isolated. (2) If not constantly present, under what circumstances the reaction would not appear. (3) Whether by using both human and bovine tuberculin for the von Pirquet test it would be possible to ascertain, from the reaction which followed, whether the patient was suffering from tuberculosis of human or bovine origin. (4) Whether the degree of reaction gave any indication of the severity of infection. (5) The extent and nature of the reaction. The von Pirquet test was applied to 80 out of the 116 cases. In order to avoid any risk of unconscious bias the inoculations were made and results recorded without the knowledge of bacteriological reports as to the type of bacillus found. The tuberculins employed were Koch's "old tuberculin," prepared from the "human" type of bacilli, and his tuberculin prepared in identical way from bacilli of bovine origin. The tuberculins were applied to suitable skin scarifications in dilutions of 1/64, 1/16, ¼, and in full strength, each in approximately equal bulk and controlled by inoculation of a scarification with the same quantity of sterile normal saline solution. In the majority of cases the scarifications were made on the anterior surfaces of both thighs; where the legs were not available both arms were used. In every case a minimum distance of at least two inches existed between any one scarification and its nearest fellow, so that adjacent reactions should not become confluent. To minimize the possibility of tuberculin applied to one scarification being conveyed by the lymphatic channels to a neighboring scarification which had been treated with a weaker solution of tuberculin the solutions, commencing with the control, were applied to the scarifications in order of increasing strength from the distal to the proximal extremity of each limb. Human tuberculin was always applied to scarifications on the right side of the body and bovine tuberculin to scarifications on the left side. The control solution and the tuberculins were all applied to the scarification marks with sterile glass eye-rods of the same size, a separate rod being kept in each bottle. In this way approximately the same quantity of liquid was applied to the center of each scar. The solution was simply placed on the scar, not rubbed in. The bottles containing the solutions of tuberculin were all placed on one tray in ascending order of strength. On the right-hand side of the tray was the human tuberculin, on the left the bovine. In the middle was the bottle containing the control solution. The bottles had distinguishing colored labels as a further safeguard against the possibility of introducing the wrong solution into the various scarifications. Gauvain states also that the final result of the investigation may be stated briefly as follows: (1) Local reactions to inoculations of both human and bovine tuberculin were invariably present in all patients from whose pus tubercle bacilli had been isolated. (2) Though reactions were invariably present the degree of reaction varied within wide limits. (3) Weakly and cachectic patients usually reacted feebly, quite irrespective of differences in the severity of their local lesions. (4) Strong and vigorous patients exhibited wide differences in the degree of their reactions, irrespective of differences in the extent or the severity of their local lesions. (5) The quantitative von Pirquet test was not found to be of value in forming an estimate of the severity of the infection, and was of little prognostic value. (6) It was impossible to differentiate the type of tubercle bacillus with which the patient was attacked by the nature of the reaction to the tuberculin employed.

British Medical Journal.

October 6, 1917.

1. Notes from the Anglo-Russian Hospitals. Herbert F. Waterhouse, W. Douglas Harmer, and Charles J. Marshall.
2. A Method of Early Closure of Recent Gunshot Wounds. Wilson H. Hay.
3. The Spread of Infection in Open Bone, and Its Bearing on the Treatment of Projectile Fracture. E. K. Martin and G. F. Petrie.
4. A Method for Efficient Drainage of the Knee Joint. A. W. Mayo-Robson.
5. Five Hundred Consecutive Cases of Acute Gonorrhea Treated with Vaccines; and a Note on the Electrochemical Method. N. P. L. Lumb.
6. A Case of Gonorrheal Keratosis. W. H. Brown and A. M. Davidson.

5. Five Hundred Consecutive Cases of Acute Gonorrhea Treated with Vaccines; and a Note on the Electrochemical Method.—N. P. L. Lumb states that after treating a large number of cases of gonorrhea it seemed that the only way of eradicating the disease was to attack it through the blood, in the same way as with salvarsan in syphilis. The administration of many thousand injections of a particular stock vaccine (Staphgon) prepared at this hospital brought to light one most encouraging fact, namely, the appearance of a visible discharge from the urethra or signs in the urine shortly after the injection of a moderate dose when the cure was not complete, or in other words, when the patient was not free from active gonorrhea. This is referred to in Colonel Harrison's manual on the subject as one test of cure, and in my experience it has proved very valuable. The return of the discharge can only be due to gonococci reappearing at the surface of the urethral mucous membrane, and it is reasonable to suppose that the vaccine has reached them through the blood stream, rendered them uncomfortable, so causing their migration from the deeper tissues to the surface. This, then, is a means of attacking the gonococci through the blood stream in the acute stage of the disease, and of penetrating tissues which the irrigating fluid cannot reach. By giving suitable doses of vaccine the hostility of the blood is increased to a maximum, while irrigation washes away the inflammatory products. The administration of a vaccine as a routine form of treatment in the *acute* stage of gonorrhea has not up to the present been generally adopted, and he has thought it worth while to bring the results to notice. Both in regard to dosage and the period of time between successive injections experimental evidence had to be accumulated, and the effect produced by varying these two factors was observed in several hundred cases before finally deciding in favor of the method now to be described, which differs considerably from that usually adopted in the chronic stage. In the first fifty cases treated the discharge had been present for at least a week before the patient presented himself for treatment and the disease was consequently well established. The rationale of the method used is as follows: (1) To affect the blood as early as possible, with a view to (a) Antagonizing the gonococcus; (b) diminishing the likelihood of complications. (2) To get as big an action as possible *in the shortest time* without inducing a negative phase. Two main lines of treatment were adopted: Intensive dosage with a mixed stock vaccine of gonococci and staphylococci, and weak irrigation on Janet's system. After the treatment of the first fifty consecutive cases, Lumb revised the method of treatment, which is as follows: On the first morning after admission a two-glass urine test is made, the urine of six or seven hours being passed into two conical glasses on rising in the morning. About four ounces are passed into one glass and the remainder of the bladder contents into the second one. The patient stays in bed for the first three days, getting up

only to irrigate in the morning and again in the afternoon. Milk diet is ordered and an unlimited quantity of barley water allowed. Aperients are given regularly as necessary to keep the bowels freely open. Irrigation is commenced with 1 in 8000 potassium permanganate on Janet's system, the container being placed five feet above the patient, who is instructed to thoroughly wash out the anterior urethra first and then to get the solution into the bladder. A dose of 50 million gonococci with 150 million staphylococci is given on the first morning, and urotropine, according to the following formula, for five days: Urotropine gr. x, Aq. ad ℥ j, Ac. sod. phosphat. gr. xx, Potass. citrat. gr. x, Syr. aurant. ℥ ss, Inf. buchu ad ℥ j. Dose: One ounce of each, mixed just before taking, three times a day. On the second day irrigation is carried out morning and afternoon as before, and the vaccine is given again on the third morning, the dose being 100 million, or 2 c.cm. By the fourth day the discharge in most acute cases has diminished to a small drop and the patient is allowed to get up and go about as usual, taking a moderate amount of exercise. He now irrigates with 1 in 6000 potassium permanganate, and the diet becomes an ordinary one, except that fish or *a small quantity* of meat is allowed, alcohol and condiments being forbidden. On the morning after getting up a four-glass urine test is made and used as the guide in further treatment. On the sixth day the medicine is stopped and another dose (100 million) of gonococci given, irrigation being continued as before. The patient then passes a two-glass urine test, as already described, on alternate days, and the treatment is modified as considered necessary. On the ninth day he receives 100 million gonococci, and a bougie is passed on the tenth day, the urethra being massaged if the glands are involved. The bougie at this stage is valuable in three ways: (1) It allows the massage of Littre's glands. (2) It reveals any tendency to stricture. (3) It has a stimulating effect on the mucous membrane. On the twelfth and fifteenth days two more doses of 2 c.cm. are given. The urine in both glasses is clear, though the first one may still contain a few flakes. The patient at this stage is taking as much exercise as possible, playing games every afternoon and eating a full diet. If under these conditions no discharge be apparent, the irrigation is changed to 1 in 1000 zinc sulphate or 1 in 4000 zinc permanganate for two or three days, and then all treatment stopped. The urine is examined as before and a final dose of 50 million gonococci given two or three days after all treatment has ceased. If the patient be not free from active gonorrhea, this "provocative" dose invariably gives rise to signs in the urine, or an obvious discharge within 24 hours, and this is a most valuable test. If the urine remain clear after this, the case is watched for another three days and then considered clear. No further injections are given for ten days. At the end of that period a second course of six injections may be commenced, the dose remaining at 2 c.cm., and the interval between each injection being two clear days. Many cases require one course only, others two, the latter particularly when complications are present. At the end of the first course of vaccines the two-glass urine test usually shows that the patient is practically free from discharge, apart from a little muco-purulent secretion in the morning. Irrigation is continued until nothing is seen at any time, even after vigorous exercise, and then stopped altogether. The test dose of vaccine (100 millions) is given, and the urine examined for six or seven days afterward. If no discharge reappears the patient is considered to be clear. Owing to existing circumstances it has not been practicable to examine urethroscopically every patient before leaving hospital, but in a considerable number this was done. With regard to the second course, it should be made clear that the whole of the six injections are frequently not required. When the urine is free from flakes and no discharge is seen at any time, irrigation is stopped and the test dose of vaccine applied. Should a discharge reappear, indicating that the disease has not been eradicated, the remaining number of vaccines to complete the six is given, and then a second interval of ten days allowed to elapse. Irrigation and local treatment have been carried out in accordance with the original scheme. The results of 500 consecutive cases show that 278 cases were uncomplicated, while 222, or roughly 44 per cent., were complicated. This is accounted for by two factors: (1) Active service; (2) lateness in reporting. A patient contracting gonorrhea often does not realize the condition until the discharge is profuse, and during that time a spell of hard work will do much harm. Also a number delay reporting to the medical officer in the hope that the discharge will disappear. Thus of 101 epididymitis cases in the series of 500 acute cases 70 were present on admission and 8 of the 10 arthritis cases. Of the prostatitis cases the exact number present on admission cannot be stated, since routine examination of the prostate was not carried out until the end of the second week of treatment. An analysis of the uncomplicated cases shows that 60 per cent. were under treatment 30 days or less, with an average of 19 days. The average duration for the whole of the uncomplicated cases (278) was 35 days, or 5 weeks. The complicated cases show clearly the importance of thorough treatment of the prostate, the cases of prostatitis requiring, on an average, 10 days longer than those of arthritis, and 22 days longer than those of epididymitis. The longest cases of all were those in which acute prostatitis was followed by acute epididymitis, this group forming 3 per cent. of the total. The average stay of all complicated cases was 52 days, or several days under 2 months. It has from time to time been suggested, though never with adequate proof, that vaccines are dangerous in the acute stage, and lead to complications. If this were so it would have been expected that in this series of 500 acute cases, all treated from the start with big doses, a large proportion of complications would have developed, especially epididymitis and arthritis. This is not the case. Of the 101 epididymitis cases 70 were present on admission, leaving 31 developed out of 430 cases, that is, 7 per cent. Of the 10 arthritis cases 8 were present on admission, leaving two developed out of 490 cases, that is, less than 1 per cent. The most remarkable feature of all is the exceptionally low percentage of relapses. Out of the 500 cases two only have occurred during a period of 4 months after completion of the series. Many of the cases left hospital more than 6 months ago. This gives a relapse rate of less than 1 per cent. It is a very satisfactory proof of the value of vaccines as a test of cure, and although by omitting it the number of days under treatment could be reduced in many instances, the relapse rate would very soon counterbalance any gain. At the present time everything possible has to be done to minimize the number of relapses of gonorrhea cases, and this system has been found, in actual practice, to be far in advance of any other; while the number of days under treatment compares favorably with any known figures.

Le Progrès Médical.

September 8, 1917.

Diabetic Polyneuritis.—Pitres and Marchand refer to the demonstration in 1890 by Auché that degeneration of the peupheral nerves was often seen to occur in diabetes mellitus. Such alterations might be encountered in one nerve trunk or a number. The condition might be silent or manifest itself by sensory, motor or trophic phenomena. Among the latter we find shedding of the nails, falling out of the teeth, a peculiar desquamation (ichihyoid) of the skin, zoster-like eruptions, malum perforans pedis and diabetic gangrene not due to arterial obstruction. Among sensory disturbances are obstinate neuralgias, painful spasms, areas of pruritus or analgesia meralgia paresthetica. Among motor disturbances are to be found pareses and paralyses with the reaction of degeneration and abolition of tendon reflexes. It is not to be inferred that these phenomena were not known before 1890, for they were familiar to clinicians long before that epoch; but our real understanding of their nature begins then. Diabetic neuritis, with or without paralysis, begins with lancinating pains and painful spasms, with or without anesthesia of the skin. Diabetic neuritis yields to treatment more readily than most toxic neuritides, and even the severest forms may respond favorably to treatment. Moreover, they do not leave behind the type of sequel seen in

other forms of neuritis. The expression of the disease differs much in accordance with the number of nerves involved. There may be but a single nerve trunk, or even a branch involved—the third nerve, ulnar, external popliteal and circumflex all seem specially predisposed. Dreulafoy once reported 45 cases of involvement of the third cranial nerve. Polyneuritis, on the contrary, is very rare and the authors know only a score of cases. These exhibit the greatest confusion and evidences of type are quite wanting. Of interest are a few cases of cerebral diplegia, brachial diplegia and paraplegia. The last named is partial—may be restricted to the adductors of the thigh and extensors of the legs. The authors report at length the case of a man aged 47 with oethyma and glycosuria. Later there were pain and weakness on the lower limbs which were followed by a certain amount of atrophy. He also exhibited weakness of the arms. The tendon reflexes were abolished and there were many anomalies of sensation. The patient responded in a remarkable degree to treatment; his symptoms all vanished and he was enabled to return to his occupation as driver of an automobile tractor.

La Presse Médicale.

September 13, 1917.

The Limits of Asystolia.—Perrin states that this name originated with Beau who applied it to insufficient contraction of the heart, resulting in dilatation and venous engorgement. Asystolia is symptomatic of various conditions of the heart and its diagnosis is made by the presence of a triad of symptoms—arterial hypotension, tachycardia and oliguria. The author objects to this conception as too narrow, although it represents the typical form. But there are atypical forms of asystolia in some of which the tension may be increased instead of diminished, or the pulse slow instead of rapid, or in which polyuria may replace oliguria. In order to bring the atypical cases into a general conception of asystolia it will be necessary to fix definite limits to the latter. If hypertension is present it means simply that the patient has cardiorenal disease. In such cases asystolia lowers the tension below the average. If the latter is say 210, the individual with asystolia would perhaps show a tension of 180. In Bright's disease we often see the association of high tension and asystolia. Similarly "polyuria" complicating the latter would be of lower degree than in the average subject with interstitial nephritis but might reach 1200-1500 c.c.; too small a quantity to denote an absolute polyuria, although considerable in comparison with the oliguria of typical asystolia. In regard to tachycardia this is wanting in mitral stenosis, in which affection there is compensatory slowing. In this association the pulse may not rise above 80, which would be rapid for uncomplicated mitral stenosis. In regard to treatment the indications are the same in all asystolia, whether typical or atypical. Blood should be withdrawn to relieve the right heart and digitalis given until circulatory equilibrium is reached. Hypotensive substances for hypertension are contra-indicated.

Flexion of the Great Toe from Percussion of the Tendo Achillis.—Villaret and Faure-Beaulieu have contributed a third article on the significance of this induced phenomenon in maladies of the sciatic nerve. This has now been recognized as a sign of value, largely because it is unequivocal and its interpretation does not depend on the appreciation of nuances. Moreover, it may be present as the sole symptom and make the diagnosis in equivocal cases. It probably depends on an exaggeration of the idiomuscular contractility which is so much utilized at present on neurological diagnosis.

Gazette Hebdomadaire des Sciences Médicales de Bordeaux.

September 9, 1917.

Simulation of Cerebrospinal Meningitis by Neosalvarsan Poisoning.—Sabrazés has seen two cases of this character, one of which he relates *in extenso*. A boy of 18 was received into the isolation ward of a hospital for contagious diseases with the diagnosis of cerebrospinal meningitis. The tongue was coated and dry, there was stiff neck and both Kernig and Brudzuiski's signs. The patient was in coma vigil interrupted with delirium. There were precocious, persistent red blotches of vasomotor origin and the countenance was red and swollen. The patient exhibited both vomiting and diarrhea. The temperature was subfebrile, with pulse 74. Neurological examination largely negative. The urine was rather scanty, with a trace of albumin and much arobilin. The blood count showed a hyperleucocytosis of 12,000. Blood was sterile to cultures. Rhinopharynx secretions also sterile. Lumbar puncture negative, or noncommittal. There were injected into the spine 10 c.c. of antimeningococcus serum. Venesection practised in an elbow vein gave blood for urea and Wassermann tests. Blood urea was 0.4 gm. per liter. Wassermann positive. As patient was unable to respond to questions, he was examined for recent syphilis. A healed chancre was found under the prepuce. It was learned that two injections of neosalvarsan had been practised by his physician. The first had been well borne. Sixteen hours after the second one had been given there was a violent reaction of headache and vomiting, fever and chills and sweating. The symptoms became progressively worse and on the third day patient developed apathy and delirium, and was referred to the hospital, as above stated, with the diagnosis of cerebrospinal meningitis. The only further medication consisted of adrenalin and camphor oil by injection, with diuretics and milk diet. Next day the patient was much improved and eventually made a good recovery.

Hygiea.

August 16, 1917.

Cholesterin in a Pleural Exudate.—Arnell reports a case of pleurisy in which the exudate was rich in cholesterin. The patient had had pulmonary tuberculosis, with spontaneous pneumothorax, the latter having been responsible for the incidence of the pleurisy. When patient was first seen this exudate had been encapsulated for six years. Even to the naked eye it exhibited brilliant crystalline flakes, which upon microscopic investigation proved to be cholesterin. After each act of paracentesis the content of the latter in the exudate diminished. At its highest it was less than one-half of 1 per cent. Albumin was present to the extent of 5.23 per cent, of which 0.85 per cent was nucleoproteid precipitated by acetic acid. The cell content was very small. The fluid was sterile and actually possessed preservative properties. The clinical course of the malady was chronic and benign. Treatment consisted of repeated tappings and dietetic-hygienic measures. In this case there was evidently a poor mechanism for absorption, with access of material which could form cholesterin. Such cases usually occur in pulmonary tuberculosis.

Physical Signs of a Cavity in a Case of Pulsion Diverticulum of the Esophagus.—Leffler reports the case of an idiopathic dilatation of the esophagus in a woman of 34. The *x*-rays and physical examination revealed the presence of a pulsating diverticle which communicated with the dilated esophagus. This lay in the upper field of the right lung, and was the size of an orange. The communication was opposite the junction of the second rib to the sternum, and regurgitation could be seen to take place on the screen. This double dilatation of the esophagus is very rare. Originally there was stenosis of the esophagus, but in recent years there has been notable improvement in the symptoms of obstruction. There have been repeated attacks of bronchitis with a feeling of exhaustion which led the patient to consult a physician. The latter made a diagnosis of pulmonary consumption and sent her to a hospital for tuberculosis. In this institution the *x*-ray and physical exploration led to the diagnosis of cavitary tuberculosis, but an injection of old tuberculin failed to produce a reaction. Further *x*-ray exploration after the use of bismuth paste and emulsion established the connection of the cavity with the alimentary tract. In the meantime a careful study of the sputum with the antiformin method eliminated the presence of pulmonary tuberculosis.

Book Reviews.

An Index of Differential Diagnosis of Main Symptoms. By Various Writers, Edited by Herbert French, M.A., M.D. Oxon., F.R.C.P. Lond., Physician, Pathologist, and Lecturer, Guy's Hospital; Consulting Physician to the Radium Institute. Second edition. With thirty-seven colored plates and over three hundred illustrations in the text. Price, $10.00 net. New York: William Wood and Company, 1917.

The 912 pages of this book are filled with much valuable information. There is not a symptom which crops up in the daily practice of the physician that is not most carefully described and the various possibilities of explanation are analyzed and discussed. In so doing it is impossible, of course, to avoid a certain dogmatism. The latest proved facts must be given, not theories or minority reports. Thus it may happen that each reader will find something somewhere in the vast bulk of the book at which to cavil, but no reader can help but find the volume as a whole a mine of information, which he can quarry at will or to which he can turn at once for a nugget of knowledge when the case is urgent; and the alphabetical arrangement of the contents facilitates reference exceedingly. The book is well constructed, the binding is good, and the paper is excellent. The illustrations can hardly be too much praised; those of us who do not visualize so readily as some will find here the conditions described also pictured in a graphic manner. For example, the diagnosis of diphtheria—that *bête noir* of so many physicians who hesitate to send in cultures to the Health Department for various reasons—is aided by pictures of sore throats in their natural colors, all varieties of diphtheria, and Vincent's angina. This book should be placed in the revolving bookcase just beside the physician's desk, within easy arm's reach.

Ammunition for Final Drive on Booze. An Up-to-Date Arsenal for Prohibition Speakers. By Rev. Louis Albert Banks, D.D. Price, $1.50. New York and London: Funk & Wagnalls Co., 1917.

A work of this sort can hardly be reviewed, for it is little more than a scrapbook of press agent clippings. It seems strange that a good cause should need boosting by a method which is so freely used to bolster up weak and evil causes. The medical reader will feel no surprise when he notes the absence of any reference to the many advertised quack medicines containing alcohol. Does not the expression "liquor traffic" apply to these goods?

Nutrition and Clinical Dietetics. By Herbert S. Carter, M.A., M. D., Associate in Clinical Medicine, Columbia University, etc.; Paul E. Howe, M.A., Ph.D., Assistant Professor of Biological Chemistry, Columbia University, and Howard H. Mason, A.B., M.D., Instructor in Diseases of Children, Columbia University, etc. Price, $5.50. Philadelphia and New York: Lea & Febiger, 1917.

The four sections of the book are devoted respectively to the physiology of digestion and nutrition, foods, feeding in infancy and childhood and feeding in disease. The subjects are most difficult to handle, for there is a minority antagonism to almost any practical generalization that can be made, and the author of a book on dietetics must therefore be very conservative in all his views. Few writers dare even today to omit the "red meat" bugbear, although this was "shown up" many years ago. Our authors completely ignore the phrase and do not discriminate against beef and mutton in any diet containing animal protein.

The writer of today has to be conservative in regard to vitamines, certain mineral constituents and all other alleged necessary food ingredients which are destitute of calorific or reconstructive values. We find no mention of the fact that the deficiency diseases appear to shade into one another in certain obscure borderline affections, nor of the alleged affinity between plant vitamines and hormones which has led to the use of the former in medicine. We are glad to see Fletcherism taken out of the category of food fads, but this is the work of the Medical Department of the United States Army.

In the section on foods, alcohol is discussed in a non-committal fashion as well befits such a difficult problem. No prejudice is shown against well-known and approved proprietary foods.

The omission of any reference to diet in cancer seems to us unfortunate, for there is now a large literature on this subject with considerable consensus of opinion. We also find no reference to attempts to nourish the body with amino acids and maintain N equilibrium with inorganic nitrogen, which are at least interesting and suggestive.

The proofreading of the book was very superficial and the index leaves much to be desired.

Muskets and Medicine, or Army Life in the Sixties. Personal Experiences in the War Between the States. By Charles B. Johnson, M.D. Price, $1.25. Philadelphia: F. A. Davis Company, 1917.

The author was but seventeen years old when the Civil War began and saw his first fighting in 1863. During this campaign he began to read medicine as a natural result of his duties as hospital steward. His experience made it an easy matter for him to supply interesting and valuable information on military medicine and surgery covering the last two years of the war. He thus had considerable advantage on one hand over the surgeon who did not begin professional studies until after the close of the war; and on the other hand, over the regular army surgeon, who might have felt less free to record his experiences.

Shell Shock and Its Lessons. By G. Elliot Smith, M.A., M.D., F.R.C.P., F.R.S. Anatomy, and T. H. Pear, B.Sc., Lecturer in Experimental Psychology. Price, $1 net. Manchester: University Press; London, New York, Bombay: Longmans, Green & Co., 1917.

The great trouble with the material which has been published on shell shock since the war began is that too little attention is given to its psychological aspects. The present volume attempts to remedy this by a discussion of the psychology of trench warfare. The authors also have very properly laid stress on the investigation of a shock to patient's mental life by psychological analysis, or psychoanalysis, or by any other name you wish to use to describe a process whereby the symptoms of the patient are understood, not merely enumerated. We could wish for more description of cases, but otherwise it is difficult to find any fault with this little volume.

The Practical Medicine Series. Under the General Direction of Charles L. Mix, A.M., M.D., Professor of Physical Diagnosis in the Northwestern Medical School. Volume IV, Gynecology. Edited by Emilius C. Dudley, A.M., M.D., Professor of Gynecology, Northwestern University Medical School; Gynecologist to St. Luke's and Wesley Hospitals, Chicago; and Sydney S. Schochet, M.D., Instructor in Gynecology, Northwestern University Medical School; Adjunct Gynecologist, Wesley Hospital, Chicago. Series 1917.

This book consists of abstracts of articles on gynecological subjects that appeared in medical journals during the year 1916, together with occasional brief editorial comments. Comparatively little material was available from foreign journals, but there was a considerable increase in the number of American contributions of value. In a brief introduction the editors review the trend of effort, and attention is called to certain interesting facts, among which is that the number of new operations for displacements is said to be eighty-one!

While perhaps the majority of the articles abstracted contain something of value, many seem hardly worth the trouble taken to abstract and print them here. There is one, for example, where even the editors feel constrained to add as a footnote: "Oh surgical indications! How many crimes are committed in thy name!" There are numerous typographical errors and evidences of careless proofreading. For example, one sentence on page 24 is absolutely unintelligible. These books are of value in furnishing an epitome of the literature of each year; but their value would be much enhanced if more care were taken to have the book text correspond exactly with that of the author's original article or the abstractor's manuscript.

Society Reports.

SEVENTH CLINICAL CONGRESS OF SURGEONS OF NORTH AMERICA.

Held in Chicago, October 22-26, 1917.

Monday, October 22—First Evening Session

THE PRESIDENT, DR. FREDERICK B. LUND OF BOSTON, IN THE CHAIR.

DR. OCHSNER, Chairman of the Committee on Arrangements, welcomed the distinguished collection of surgeons, especially of military surgeons, and said he considered them the most useful members of the medical profession at this critical time. He spoke of the work of the committee on the standardization of hospitals which had just closed its meeting, and felt sure that the work done by that committee would be an inspiration to every man to work toward the standardization of hospitals in his community. He said the great purpose of the meeting was to become thoroughly familiar with the wonderful work that the Surgeon Generals of the Army, Navy, and Public Health Service were doing. In closing he said: "This body of men can help because it is composed of men who are clean in their work, in their minds, in their morals and in every way, and they can shorten the war and lessen by hundreds of thousands those who will be lost during the war."

Dr. FREDERICK B. LUND stated that about 14,000 medical men had already enlisted and were ready for service and that they need about 8,000 more, but he was sure that medical conscription would not be necessary. He spoke of the wonderful service that had already been rendered by the men in charge of the units in France, and of the other men who had volunteered their services and attached themselves to the British Expeditionary Forces two or three years ago. In conclusion, he laid emphasisis upon the fact that "to the older men among us the war has brought the priceless opportunity of doing something unselfish before we die. To the younger men the Army and Navy give abundant opportunity to be of service and to show their skill if they have any."

Dr. JOHN G. CLARK of Philadelphia was conducted into office as the new president and said it was his pleasure to sit as an auditor for the evening in the assemblage of military surgeons who were devoting their time and attention to military affairs. They stood in the ranks of those who dealt with salvage rather than destruction and had saved more lives by warding off disease than were killed in Napoleon's army. Splendid progress had been made in the matter of life-saving devices that were already in use and many others were promised which would revolutionize medicine and surgery. He was convinced that medicine would come out of the war far richer than when it entered it.

Dr. FRANKLIN HEAD MARTIN, owing to illness, was unable to be present at the meeting to introduce the distinguished representatives of the Army and Navy and the visitors from abroad, so MAJOR EDWARD MARTIN was requested to take his place.

Secretary DANIELS of the Navy said that it was to the physician that the nation turned in time of war with supreme confidence that in preventive measures they could save the lives of the youths who were willing to rally to the standard, and he expressed the thanks of America to the men who were making the great sacrifices to devote their time and their skill to this purpose. He urged that the physicians use their great influence to stamp out venereal disease which was the most destroying evil that touched the American forces.

During the evening a telegram was received from President WOODROW WILSON and read by Dr. Davis: "To the Clinical Congress of Surgeons of North America: My warmest greetings and best wishes. It cheers us all to see thoughtful, patriotic work done in such good spirit. Woodrow Wilson."

Surgeon General GORGAS of the Army said he had contemplated with dread the necessary enlargement of his corps on account of the war, and had expected to have considerable trouble in the management of so many, but everything had gone smoothly. With the nation engaged in the most important war of all history we must acknowledge that it had responded most nobly in all its branches and not swerved away, but he thought the medical profession might claim preeminence so far. It was only fair to point out to their fellow countrymen that they had measured up to the standard of all that could be expected.

Surgeon General WILLIAM C. BRAISTED of the Navy spoke particularly in regard to the National Board of Medical Examiners which had been carrying on its work for two years and reporting from time to time. The quality of the examinations had been recognized everywhere, and it had recently been announced that the Mayo Foundation would receive their licentiates without further requirements. An examination had just been completed with twenty-nine candidates and there was to be another in January.

Surgeon General RUPERT BLUE of the Public Health Service stated that this was the time for the estimation of values and that everything which led to efficiency brought us nearer victory. Therefore, he was happy to announce that the health of the United States was in better condition today than ever before. There had been an awakening of the conscientiousness of the American people regarding the prevention of disease, and the water and food supplies, the inspection of schools, and the control of communicable diseases had all been placed on a good basis. Research had tracked infection to its lair and provided new methods for its control. With the knowledge that we must fight came the realization that these sanitary measures must be followed, and out of this war would come a better, stronger and more enduring national health.

Col. T. H. GOODWIN, R. A. M. C., wished very much that he could adequately express his appreciation of the honor given him in the invitation to be present as a guest of the Congress. "The medical profession of this country and of Great Britain have for many years past been closely united in ties of social and professional friendship." Servants of the Army and Navy of both these countries had for many years met in the spirit of closest amity and comradeship, and it seemed to him if they could do effectual team work in play they could accomplish even more when in earnest. The two nations were in the fight side by side, with a common object, identical ideals, and with the certain expectation of a mutually attained victory in the future—although probably not in the near future. When he came here five or six months ago Great Britain was in straits owing to the scarcity of medical men necessary, and they owed an unending debt of gratitude to America for the way in which she had responded. Since that time 900 medical officers and nearly 500 nurses had gone across to help on the Western Front, where their work would be helpful beyond description. He fully realized the great amount of pain and suffering that had been relieved by these men, and was convinced that "the friendship which has been felt for many years by the medical men of the two nations and by the armies and navies of the two nations will very soon be felt by the people of these two nations and the days of devotion and self-sacrifice for the good of the country will bind us together in a way which could never have happened in the days of prosperity."

Col. C. DIRCLE of the French Medical Corps received a very hearty welcome and said the manifestations of sympathy moved him more because he realized they were meant less for him than for France herself—France whose dauntless courage and indomitable valor we were applauding every day, and in her name he thanked us from the bottom of his heart. Unprepared she had staggered from the blow of Germany which had prepared for forty years, but after the surprise she had gathered all the forces of her energy and then, stronger than ever before, she had intimated to the Kaiser's troops—so proud and sure of living in Paris—France had intimated to them to stop and they have stopped. He spoke of the battle of the Marne where the glory of the French Army under the leadership of its chief, Marshal Joffre, had accomplished so much. He could not describe the treasures of devotion they witnessed; the death of their men had never been a cause of discouragement on the part of those who followed. On the contrary—there had always been many willing to occupy the vacant places. The American Army had now come to the help of France as did the British Army.

He highly approved of everything he had seen in the training camps he had visited and was sure that every physician and surgeon was ready to do his war work when strikes the hour. This was largely due to the personal enthusiasm and activity of Surgeon-General Gorgas who was giving such wonderful encouragement to everyone who worked in his service.

Colonel Sir BERKELEY MOYNIHAN, Consulting Surgeon to the British Army, said that at midnight on August 4, 1914, England—to her lasting honor—declared war against Germany and at eight A. M., August 5, 1914, he became for the tenth successive generation a soldier of his sovereign. From that time until he stepped on board the boat at Liverpool he had practised military surgery, thought of military problems, and lived with military people. There were about 30,000 medical men in England and one-third of them were wearing the uniform of the King and his Army and had seen actual service or foreign service. The Government had the right to take every man of military age and compel him to serve, but compulsion had always been, and he was sure would always be quite unnecessary. The medical profession in every country was that which had undergone the most complete education and had better and closer opportunity for broadening the mind of the individual practitioner, and if the aristocracy of the land did not rally to the flag we could not expect anybody else to do so. Regarding the work of the Army Medical Corps in his center in Leeds, he said that they had a civilian hospital of 480 beds, with a staff of four surgeons and four assistant surgeons. When the territorial system of hospitals was established throughout the country Leeds was chosen as one of the centers and they were asked to supply a military hospital of 521 beds. They agreed to this and the men attached to the hospital staff became by that act officers in the territorial branch of the Army. Of the eight surgeons there were three left at home—himself included, who was often in France, often in London, and occasionally in Leeds. With that disabled staff, with the help of the practitioners in the neighborhood they were running, with an efficiency he would not hesitate to display to the military surgeons of any land, a military hospital of 6,300 beds. The men of the Royal Army Medical Corps were both soldiers and doctors; as soldiers they went into any part of the line from the front trench to the base according to the needs at the moment. Since the war began up to the 25th of August, 1917, they had suffered 1,800 casualties; that is, that number of their men had either been killed or wounded, gased or disabled from further service. The highest distinction any Englishman could gain, in the opinion of his countrymen, was the Victoria Cross, and they had gained more than their share of that coveted distinction. Twice had members of the R.A.M.C. won both the cross and the clasp, indicating that they had been twice recommended for the honor. He paid high tribute to Surgeon-General Gorgas and Major Mayo for their work in connection with the M.R.C. and in preventive medicine. Ninety-eight per cent. of the British soldiers had been voluntarily inoculated against typhoid, with the result that they had had only 292 deaths from that disease and only 6,022 cases altogether, whereas in the South African war they had 57,684 cases with over 8,000 deaths. A far smaller number of cases of typhoid in this enormously large army living under infinitely more difficult circumstances than they had deaths from this disease in the South African war. In Africa, where the disease known as bilharziosis was so prevalent, they had also made wonderful progress. At the beginning of the war, when it was realized that they would have to have an army in Africa, men were sent out to study this disease, with the result that this parasite had been investigated, all of his domestic secrets had been revealed, and rapidly he was being exterminated, with the probability that bilharziosis would be stamped out from the face of the earth. In many other directions they had made very pronounced progress in other parasitic diseases, leaving out of account any description of the surgical advances. He said, in the opinion of those in high places who were best able to judge, the turning point of the war came in November, 1914, on that memorable day after the battle of the Marne when the second battle of Ypres was fought out. The English Army on that occasion was a thin line, when a man could not by reaching out both his arms touch his nearest neighbor. Between that single line and the coast there was nothing in reserve—everything was put in that line. To that line was supplied all the ammunition they had, which would not now be considered enough for a poor morning's work, 150 rounds per man with four machine guns to each battalion. That line for four nights and three days was bombarded unceasingly, not so much with the idea that those men should be killed, but that they should be prevented from having sleep. On the morning of the 11th the Germans made their attack on that poor, thin, miserable line of weary, begrimed, mud-stained, cheerful "Tommies"—and what was the attack? It was made by the best troops that Germany had at her disposal in the early days of the war, and they were magnificent troops of whom any nations in the world could justly be proud. The odds were never less than five to one and sometimes seventeen to one, and their men were so weary that they leaned their heads against the parapet, nodding in their sleep, so weary they could not see anything to hit until it got thirty or forty yards away, and along that line the German dead were found heaped up seven, nine, ten and eleven deep. The attack failed, and that thin line held, and that was all that stood at that moment between civiliation and disaster to the world. Then they were given a little time—time to prepare and to learn the bestial indifference of Germany to what may be termed the rights of men. They had to learn the hideous malignancy of the submarine peril and the submarine morality of the German people. And so the months went on until the challenge was thrown to America and those in America learned of the contempt that Germany had for America and of the hate that she had for America; "but it is a great compliment, the German hate, for her hate is the other side of fear." He begged his hearers never to forget that Germany was a great and formidable nation with an implacable hatred of them of this country, and said we might be sure that in this war, with her reserves which came up fresh at the rate of a million and a quarter every year, she would use against America every dirty device which she could think of. The question which he had been oftenest asked since coming to America was "when is the war going to end?" He believed that America would find, as England had found, that for her the war would begin when every man of military age in the whole country had offered his services and was prepared to surrender his life to his country. When upon the high altar of patriotism Americans had laid their wealth, their lives, their honor and themselves, and when they welcomed home the bodies of some of their most honored dead, and when they saw moving about their streets those who had offered their lives and given their limbs and their health that the great cause might be saved. His great hope in the war was "that now that America and England stand side by side the old, and stupid, and petty, and miserable little differences which never really amounted to anything shall disappear. The war is hell, but there is a hell of suffering and a hell of dishonor. We have walked through the hell of suffering, and our hearts have been seared by it, but we realize that after all the effect of it is purification; but there is a hell of dishonor that would have burnt in the souls of every man of us if in this great test time of the race we had turned aside and been false to the glorious traditions which we have inherited. Some day the sun of righteousness, and justice, and truth, and freedom shall blaze in full heat upon all the peoples of the earth, but that sun has not yet risen. It is still almost night, or at any rate only in the hours that welcome dawn, but already beyond those sodden hills there is the promise of the dawn."

Major GEORGE W. CRILE of Cleveland said that during his service in France he had heard no one express the opinion that the enemy was wavering or starving, that he was short of munitions or no longer fought a hard fight, or that the Imperial power was crumbling. He had talked with many German prisoners, and they were strong and well nourished. On the other hand, he had heard from British soldiers that when the Britain and the Teuton met face to face the Teuton

threw up his hands and surrendered—which showed that the Teuton had, at least, good judgment. He had come to know the British, but knew the French less well; he had seen the Briton in his difficulties, when wounded, and had seen him die, but never had heard a word of complaint; he had seen the Briton as a hero and had seen the same on the part of the French. He could conceive that the British and the French might not win the war, but he knew that their bodies would never be taken away from the line. They might be buried there, but they would never retreat. He paid the highest tribute in his power to the British and the French who had fought the great enemy machine over the crest of the hill. Everyone in France took it that the war would be long; the opinion that the enemy was weakening, or was nearing a collapse, that the morale had broken, and that the war was almost over, he had heard only since he arrived in New York. This showed a new danger, how extensive had been the peace offensive waged against the United States. Germany had all but convinced us that hers had been the empire of peace, that she invented peace, that she would soon build universities to teach peace to all the world. One day we heard the Germans were rising in their might to overthrow militarism, and the next day they subscribed $3,000,000,000 to militarism.

There were now six American hospitals in France serving with the British Expeditionary Forces. These units had taken over hospitals of from 1,600 to 2,000 beds; there were also several hundred men in the field service, ambulance corps and serving in other capacities. These men were under fire frequently and often shook hands with fate; they knew no fear, but stuck to their tasks bravely, and were men of whom we should all be proud. What had the British medical service accomplished in this war? They had kept their army more free from colds, typhoid and infection than the civilian population of Chicago. Their medical organization was so perfect that their transport never failed. The death rate from wounds and infection in the French and British lines had been reduced to an incredible minimum, and a vast army of soldiers had been returned to active service, wearing on their sleeves the insignia of having been wounded. The war machine was a vast mechanism of force, miles in depth and miles in length. It included all that sustained man, all that clothed man, all that pertained to the health of man, and all that gave him the power to maim and kill. It included all the things created through the labors of men and women and children. One part terrorized and killed; the other part reclaimed and replaced—this was the medical part of the war machine. The first part was most complete. In its broadest sense war was a practical application of physiology and chemistry, and the group that would survive would be the group that furnished the most effective science. The first line trenches must now include our scientific laboratories. The demands of surgery at the present moment were felt by everyone; a new set of problems had arisen, and if they were to be solved we must abandon mere personal interests for the time being. Many surgeons must leave their practice and do for the wounded man what had been done for the diseased. The same intense devotion toward the problems of the wounded soldiers would do for the soldier what had been done for the civilian who remained at home. It was a serious mistake to suppose that military surgery was surgery for the unskilled. It demanded a greater versatility and the ability to stand in twelve hour shifts and to meet every problem that arose in kaleidoscopic sequence. Could any man perform these operations and meet these problems better than the wounded soldier deserved? Let us be quite sure that the best men we could have would have the responsibility of performing these operations. During battle the patients came in flocks. If a man was interested in any particular thing and said so the stream was turned on him until he surrendered. More progress had been made in surgery of the chest and abdomen, in the treatment of wounds and infection and hemorrhage by the method of excision, and in the making of splints, in the brief three years of the war than in all time before. This was not a war of men, but of ideas. It probably now cost more than $100,000 to kill a man. When thousands were to be saved, what greater gain could there be than to discover something in the way of preventive medicine that could be applied?

Tuesday, Oct. 23—Second Evening Session.

The Work of the Army Surgeon.—Surgeon General GORGAS merely introduced the general subject of the work of the military surgeon and left the matter of consideration to the other speakers. He said his personal experience in military surgery was *nil;* he had been in service for forty years, but during that time he had been involved only in the Spanish-American war, and since that time military surgery had been practically born over. This war had demonstrated the fact that we would have to add enormously to the procedures that will have to be adopted before victory comes. The whole question turned upon the question of sepsis. The endeavor of the military surgeon should be to get at the wound as quickly as possible and render it free from infection as soon as possible. The principal role of the administrator would be to get the men at the earliest possible time, and with this object in view we should have our hospitals as near the front line as possible, and all our plans would be bent toward this end.

The Work of the Navy Surgeon.—Surgeon General BRAISTED said it was impossible to give a comprehensive idea of what had been done or of the problems and the enormity of the task before us in the time allotted. He called attention to the enormous increase in the number of enlisted men in all departments of the Navy and to the fact that the medical department must also look out for all the men engaged in the construction work for the Navy, which made a total of nearly a half million people for whom the Navy was responsible. There were formerly 394 medical men in the Navy, and there were now 828 in the regular service, either commissioned or awaiting commission, this being the full authoried strength of the corps. The men who had been appointed were obtained through a campaign which was instituted in the class A men of the large medical schools of the country, and the only candidates were those who were certified by their deans to be of high standard. It was impossible to put them through the naval medical school in one class, so courses of instruction were instituted in Philadelphia, New York and San Farncisco, as well as Washington. In addition to the 828 men now ready for active detail there were over 700 in the naval reserve corps. The Navy had twelve hospital units organized under and in conjunction with the Red Cross, and five small naval stations, the majority of which were rendering service. Four of the finest hospital corps training schools in the world were maintained by the Navy, and there were sometimes a thousand men in training. Surgeon General Blue had loaned fifteen of his best men to the inspection service, and all naval stations would be inspected by members of this force. Two ships were now being converted into hospital ships, and one now being constructed would be the finest hospital ship the world had ever seen. It would be built from the keel up as a hospital ship of a type never before contemplated. One of these ships would be available within the next two or three months, and the others were being rushed.

Training Camps for Medical Men.—Col. E. L. MUNSON told of the training camps that had been established for medical officers. There were approximately 500 medical men at the outbreak of the war who were capable of playing the medical game as it should be played. The law authorized seven medical men per thousand, but experience abroad had shown that ten per thousand was better. The corps had been increased until now the doctors and dental surgeons alone outnumbered the whole Army of the United States when it went to war with Spain. The Surgeon General was faced with the problem of training these men and at once secured authority to establish training camps for this purpose. There were now three large camps in the country, one at Fort Benjamin Harrison, Indiana; one at Fort Oglethorpe, Georgia, and one at Fort Riley, Kansas. The training at these camps was at first physical, for the average doctor was in need of vigorous physical training to fit him for the tasks

ahead. He was trained as a soldier until he could go as far as the rest in every way and stand a full day's work beside. He must know how to do everything necessary, for he would have to tell others how to do it when actually in service. Lantern slides and moving pictures were shown demonstrating the life at these Medical Officers Training Camps.

Military Laboratories.—Col. F. F. RUSSELL spoke of the necessity of having well equipped laboratories that could be operated on the same principles that were now carried out only in the larger cities. It was demonstrated some time ago that it was not sufficient to have a post laboratory department, and proper laboratories had been established from time to time with staffs of twenty-six men, or more. In these laboratories they had done the Wassermann and other complement fixation tests since 1909, and had done any kind of laboratory work that could be done with specimens sent through the mail. New laboratories were now to be established at all cantonments and in general hospitals at the Posts throughout the country. The laboratories at the cantonments must be able to carry on the regular laboratory work of a community of from 20,000 to 50,000 people. The greatest difficulty had been to secure supplies and apparatus, but this was now being met, and the principal articles had been delivered at all cantonments and additional supplies would be furnished as rapidly as possible. A great many women laboratory workers had offered their services and would be used as civil service employees as the need arose. Two classes of work would be done, clinical pathology for diagnosis in connection with the camp hospitals and the routine examination for typhoid carriers, hookworm carriers and infectious diseases. It was estimated that a million examinations would be necessary for the hookworm alone. The laboratories would also prepare all the vaccines and serums necessary for all the work done in the cantonments. The complete and cordial cooperation of all the officers in the Army would be necessary to achieve success, and the medial officers could do much to lessen venereal disease if they would devote to it the care they had devoted to less common diseases. Much work had already been done in the new diseases of the war—trench fever, trench jaundice and gas gangrene. Many research institutions had offered their services, and all who had worked under General Gorgas had come to have complete confidence in the future of the medical corps in his charge.

Gunshot Wounds and Their Treatment. — Col. Sir BERKELEY MOYNIHAN of Leeds, England, said that surgeons who were called upon at the outbreak of this war to treat gunshot wounds coming over from France were never likely to forget their experience. They had occasionally met with cases of suppuration, but never in the experience of medical men in our generation had cases of virulent infection like these been met with. By slow degrees it was realized that a new set of circumstances had arisen and a challenge had been thrown down to the profession, which had now been triumphantly if not conclusively encountered. The surgeons were scoffed at and told that they had never learned the lessons that Lister had spent his life in teaching, or having learned them had made haste to forget them. His first duty after returning from his first visit to France was to refresh himself with the works of Lister, and he found that in all his teachings Lister had carefully distinguished between the prophylactic work of antiseptics and their therapeutic value. The whole thing was based upon the knowledge that if we prevented the access of microorganisms to the wounds we showed with a gratifying constancy a blameless healing of the wounds. But Lister clearly distinguished in every one of his writings between that prophylactic virtue of antiseptics and their absence of value when once a septic process had become established in a wound. The original idea of the antiseptic system was the exclusion of all microbes from the wounds and during the operation to avoid the introduction into the wound of material capable of introducing sepsis into it. Then in wounds already septic attempts were made with more or less success to restore the aseptic state. Everywhere throughout his works Lister clearly distinguished between the results he expected to get, and it was no just tribute which was brought against the surgeon when he was told that Lister had lived in vain and that aseptic surgery had fallen grievously to the ground.

Sir Berkeley described the way in which a German rifle bullet traveled and the different types of wounds made by it, and said that while he knew the enemy would use every iniquity that could possibly pay, and every kind of infamy if it paid at the moment to do it, he did not use the explosive bullet because there was no accuracy of aim in that bullet as compared with the bullet he did use. One effect of the greatest importance produced by the bullet as it charged its way heavily and clumsily through the tissues with the terrific momentum of 1,000 meters per second was that it not only tore apart the tissues but killed them by means of its terrific velocity. There was not only a track through the tissue but a dead area around this track. It also drove into the tissues anything with which it came in contact, and if a bone was encountered every fragment became a projectile in itself and was driven into the tissues all around. These bullets had been shown to penetrate not only the body of one man, but of two, or even three, in succession. It was interesting to know that you might take the parts of one man out of the wound of another man through whom the bullet had passed. "A part of the pocketbook of one man may be driven into the side of another, and the golden sovereigns in the hip pocket of one may be removed from the buttock of the man behind him." If the bullet met no impediment in its early flight it settled down, and such a bullet might leave only a clean point of entrance and a slightly larger point of exit, but this kind of wound was rare in this war. During the last two years wounds produced by high explosives and by shrapnel had increased in number. "A gunshot wound depends for its qualities not only upon the missile which is used but upon the man whom it meets. The men in this war have been deprived for such long periods of those customary matutinal immersions that have become a part of the life of every civilized man that his skin has become hard and covered with the mud and clay of the trenches. It is impossible to explain the intimacy of the contact between the soldier and the soil on which he is fighting." Many of their men had been drowned in the mud of shell holes, which were sometimes so large that the largest automobile bus could be concealed in them. When the rain came it washed mud into these craters, sometimes filling them up until they appeared the same as the surrounding mud, and many men had stumbled and fallen into these holes and owing to their heavy packs had been unable to extricate themselves and had been drowned. Flanders was probably the most highly cultivated region in all of France, the soil having been fertilized and refertilized for many years, with the result that the mud was of a particular bacterial malignancy. All the kinds of infection which occur in gunshot wounds were those which came from the fecal bacteria that were found in this soil, the streptococcus and the bacillus of Welch being the most frequent. The men receiving these gunshot wounds were weary almost beyond endurance, were suffering shock, and all the circumstances, both local and constitutional, were in favor of a rapidly spreading infection. Looking at these problems from a surgical point of view, it was evident that there should be brought together at the earliest possible moment after the infliction of the wound the best surgical help that was available in the best surroundings. This meant that we wanted the best surgeons, who are young, at the most advanced point in the service to which it was safe to send them and where they could have all the material surroundings which make for safety in surgery.

The one thought should be to obtain complete closure of the wound at the earliest possible moment, either by primary or secondary closure. Primary closure was applicable to all cases where the wound had not involved a wide or deep destruction of tissues, provided you could have that collaboration of the patient and the operator at the earliest possible moment. This consisted in excising the wound as completely as possible and in one piece in order to avoid the reinfection of the new wound that you are making. Primary

closure of the wound was capable of being carried out in a very large proportion of the cases if the surgeons had the courage to do it, probably in 80 or 90 per cent. of the suitable cases. The principles and ideals for which they strove in badly infected wounds were to bring in larger quantities and on a rising tide the swarm of leucocytes into the wound, and perhaps to increase their activity by vaccine therapy, or to make use of the increased antitryptic power of the blood in very grave infection. The aim was to get rid of the sloughs and of discharge, and inhibit microbic growth, and one must be constantly on guard to prevent the active and passive movements of the limb which carried poisonous bacteria into the blood.

In regard to antiseptics Sir Berkeley said that from a military point of view the Carrel-Dakin method was an extremely difficult one to practice. Many people thought a very large part of the success of the Carrel method was due to the fact that the cases were received early, were placed at once under this careful, rigid technique and were retained for long periods. The great fault of the Carrel method was that if it broke down it failed lamentably. Admirable as this method was in time of peace, it had never taken hold in a wide area in the French Army and in England had rarely been accepted as the method of choice. When every circumstance was in its favor it was almost the perfect method; unless all circumstances were in its favor it failed drastically.

A second method was introduced by Rutherford Morrison and had been used by him for two years. It consisted in the free, mechanical exposure of all parts of the wound, the scraping away of all granulation tissues, the removal of all dead and seriously injured portions and all fragments of bone; then the wound was dried with gauze and "a very thin smear of what Morrison calls by the perfectly hideous name of 'bipp' is applied to all the surfaces." Bipp consisted of one part bismuth, two parts iodoform and one part paraffin. The wound was then stitched up without drainage, immobilized and left for ten days. Those cases did amazingly well, but Sir Berkeley had found by much experience that they did equally well when he "bipps them without bipp." He had since persuaded Morrison to try treating some of his cases without bipp, and had his authority to say that they had done just as well without it as any he had ever treated with it. "With a patient returned from France with a compound fracture, with suppuration beyond anything ever seen in civil life, these cases can be opened up, curetted, the dead bone removed, and in three weeks can be healed completely, and the bone united without any antiseptic whatever having been in contact with the wound either at the time of closure or any other time." He thought it did not make much difference what was done to the wounds provided there was a free, mechanical cleansing and a careful, scrupulous, rigid technique.

In closing Sir Berkeley said: "The question is still very open. The last thing that anyone must do is to imagine that a method for the treatment of wounds has finally, by the immense capacity for research, been found either by Carrel, or by Morrison, or by Browning with his flavine compound, or by anyone else. The one certain thing is that if you get your patient early, if you operate ruthlessly, taking away all dead and contaminated tissues, you will find that you can get an early and a perfect healing of that wound by first inteneion. If you cannot get that early access to your patient and see him only when a definite infection is soundly established in all parts of the wound, then again the essential thing is the free, mechanical exposure and cleansing of all parts of the wound, and having done that you may do such other things as you care to try. One method is as good as another and no method the equal of any, but the two things that have come out from all this exhaustive inquiry and most painstaking care of patients is that the primary essential is freedom from exposure of all parts, thorough cleansing, and from first to last the most absolute immobility that you can impose upon any wound of the parts. It is just as important, or more important to immobilize as firmly and as rigidly as you can a wound of the soft parts of the body as a compound fracture of the bone."

Major George W. Crile said he had found practically all of his preconceptions concerning surgery to be wrong. The missiles produced the most extraordinary wounds, and the thing that surprised him as much as any was that the super-mud acted as a missile in itself. A high explosive shell would dive into the mud and throw it with such tremendous velocity that it actually produced a penetration of the skin, and through that hole a vast amount of mud was often forced—much as in the making of a sausage—producing a very bad type of wound and in some instances death. He reflected the opinion of Sir Berkeley Moynihan that complete wound excision was not an easy thing to accomplish until one had had a great deal of experience, but considered it the proper procedure to follow. The wounds were made very much larger than he had ever expected to make, but the patients did remarkably well after this complete cleansing. Concerning antiseptics, the Lakeside Unit took with it a complete outfit for carrying out the Carrel-Dakin technique and used it now in their base hospital, and had also thrown teams forward into the front area. He had never seen any wounds do better than those in which a perfect and typical Carrel was carried out, but their experience had been practically the same as Sir Berkeley had intimated. If there was plenty of help and if well done the wounds did beautifully, but the treatment must be carried out from beginning to end without a slip. He did not know what conditions would be like in the front area, but the moment one was met with the problems presented there it was absolutely impossible to carry out any complicated technique. It meant you were keeping a long line of patients waiting, and before the day was over you had a large percentage of patients who had gone over from the twelve hour period of contamination into the period of infection. The patient should always be operated upon in the period of contamination, before infection had set in, if possible. When he first heard of "bipp" there were three reasons why he doubted whether it would be good—first, it contained bismuth; second, it contained iodoform, and, third, it contained paraffin. He was surprised to find that the patients did well, but it must be used lightly, first making a safe wound by an early operation, and after the dressing give perfect physiological rest. He had also found that if the other procedures were carried out they did just as well without bipp. In his opinion the ideal antiseptic for war surgery had not been found. The problems presented by the carefully trained soldiers who were following the physiological business of fighting were very different from those presented by the average civilian. In civil life no one would think of attacking a wound in the knee-joint, washing it out with salt solution, and closing it up without drainage, but 70 per cent. of the wounds so treated got on without any trouble at all. In all chest wounds they opened the chest widely, took out foreign bodies and clots, removed the blood, and then sewed up the wound tight without drainage, and it healed without any infection. Gas gangrene had now practically disappeared from the acute casualities, for they had learned that it attacked principally the muscles, and if they were excised there was practically no spreading of the disease. It had been found in the wounded men who lie out in "No Man's Land" for from two to ten days, having had wounds all this time, that the wounds that had done best were the ones that contained maggots. The reason that the soil of Belgium and Flanders contaminated so many of the wounds was because there was devitalized tissue, and as the maggot lived on this tissue itself, if it could destroy the devitalized tissue it did in time what the surgical operation did. He believed it was in the power of General Gorgas to do the greatest task of surgery for our armies if he was able to carry out the plan he had in mind of having our hospitals out near the front. In this way the soldiers could be brought in and cared for at the hands of good surgeons early, and that would amount to more than all the antiseptics that one could muster in all the world.

Symposium on the Antiseptic Treatment of Wounds.—Dr. Edward Martin, Philadelphia, said they had been advised by one member of the profession to take all the antiseptics and throw them into the sea, and

another had advised them to raise a brood of tame maggots to take care of wounds. What Sir Berkeley Moynihan had done most of the profession could not do, and what they were after was what they could do best for the good of the Army. The majority of the profession still believed that there was a germicide that killed the germ, and that was what they were after. They were still searching for the best and least injurious, and now Dakin thought he had found it. He had asked Lee to make a trial of his preparation, and the results had been very good. Drs. Furness and Lee had been detailed to carry on the research. They had selected surgeons with large hospital and industrial plants, and the reports were enthusiastic, with the exception of Boston—and that was in its favor. He urged that we await the outcome of these experiments before throwing away all antiseptics and treating every wound with courage and the knife and nothing else.

Dr. Edward K. Dunham of New York stated that we were chiefly indebted to Dr. H. D. Dakin for our understanding of chlorine antiseptics and their mode of use. Bacteriological studies on antiseptics had shown that, even when apparently perfect contact was attained, all the bacteria present were not equally rapidly killed. The rate of disinfection varied with the nature of the disinfectant and the medium in which it acted. For successful disinfection three conditions must be met: First, contact of antiseptic with infecting organisms; second, time during which this contact is maintained, and, third, adequate mass, or concentration of the antiseptic at the points of contact. There were also three things of prime importance that should be known about an antiseptic before it was chosen as appropriate for a given purpose: The speed, or rate of disinfection; the stability of the substance under the conditions of its use; the permissible concentration. The *speed* of disinfection was enormously influenced by the medium in which the antiseptic acted, but even in identical media there was a wide divergence in the speed with which different antiseptics accomplish disinfection. As to *stability*, there were numerous forms of instability manifested by antiseptics when applied to wounds, but the speaker confined himself to members of the chlorine group, explaining the action of the different members of this group. The germicidal action of chlorine antiseptics was not specific, but incidental to the high reactivity of this group of compounds, and for the best results provision must be made for an adequately frequent renewal of the antiseptic. The *permissible concentration* was governed chiefly by the degree of irritation occasioned by the solutions employed, especially upon the skin and mucous membranes. Chloramine-T was far less irritating than the hypochlorites and could be used in greater concentration. Dichloramine-T occupied an exceptional position. It was so slightly soluble in water that adequate solutions must necessarily be ineffective, but solutions in oil could be used in great concentration, up to 20 per cent. if need be, thus introducing an extraordinary mass of antiseptic at a single application, and this abundant mass could become effective, as experiments had shown.

Dr. W. Edsell Lee of Philadelphia reported on 7,228 cases in which dichloramine-T had been used, many of them war wounds in France. From this clinical experience the conclusions offered in their first report had developed into firm convictions. Their experience had been in accord with many of the surgeons that the chlorine preparations had proven superior to all other antiseptic preparations. However, if used for any length of time they produced marked irritation of the skin, so various modifications were tried, and the best was that suggested by Dakin. The original solution was very unstable and had to be prepared almost daily, and the 4.8 per cent. solution contained so little germicidal agent that it was necessary to have it at all times in contact with the wound. It was necessary to renew the solution every two hours, night and day. Carrel and others had overcome most of these faults by the development of a complicated and beautiful technique, which consumed a great deal of time on the part of the surgeon and nurse and an unusual expense for both apparatus and dressing material. They had made a search for a new antiseptic, and Dr. Dakin had requested them to try out the dichloramine-T. By using oil as a menstruum a large mass could be brought into contact with the infection in such a manner that it was slowly infused into the tissues, and during this period its action was in all respects equal to that of the chloramine compound. This eliminated at the start the necessity for the complicated Carrel technique. The results of these clinical tests had been the realization of Dakin's hopes. Dr. Lee illustrated his talk with lantern slides showing the method of applying the solution and the dressings and emphasized the economy in dressings required. By this means they were able to treat 80 cases an hour at their dispensary clinic, and on some occasions had treated 100. They used less than one-fourth of the gauze formerly used, less than one-tenth of the bandages, and had cut down the time of healing from fourteen days to ten.

Dr. William O'Neill Sherman of Pittsburgh spoke in defense of the Carrel method, and said if the impression was allowed to prevail that antiseptics were of no avail there was no use in going to France. We could simply let them put on a bandage over there and send the boys home. He had spent five months in France and England, and every man over there was infected. Carrel's hospital was eight miles back from the lines, but not a man was infected; there was not a drop of pus. He called attention to the work of Shutro, who had 300 beds in Paris and was using this method with good results. There had been 60,000 amputations in France that were due to infection. Lantern slides of wounds before, during and after treatment by the Carrel method were exhibited to show the splendid results obtained.

(To be continued.)

AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION.

Twenty-seventh Annual Meeting Held at Atlantic City, N. J., September 11, 12, and 13, 1917.

Dr. J. Willard Travell of New York, the President, in the Chair.

Presidential Address: The Influence of the American Electro-Therapeutic Association on Electro-Therapeutic Practice.—Dr. J. Willard Travell of New York delivered this address (see Medical Record, October 13, page 627).

Report of the Committee on Dietetics.—Dr. John W. Torbett of Marlin, Tex., made this report. He said the world war had forced us to consider dietetics more from an economic and also a health standpoint. Food faddists with some good ideas had advertised themselves and their special ability to the laity through that great public educator that the doctor dared not use, the public press. The doctor had not done his share to educate his friends and patrons along this line, often, the writer thought, from fear of being called a faddist or quack. We all knew that many people had headaches, urticaria, and many other unpleasant symptoms from eating certain articles of food, and all acute diseases were treated at once by cleaning out the alimentary tract. Monosaccharide and a few other foods only could be injected into the blood without digestion. Sterile milk and most protein foods would cause a profound reaction if injected under the skin and absorbed into the blood. Crystalloids were absorbed through the healthy bowels, colloids were not, but both might pass through the diseased or broken membrane. A person made sick and sensitized by a certain food one time might thereafter react unpleasantly in different ways to its continued use and not realize the cause. Most food sensitizations could usually be overcome by the careful use of very small amounts of the food, gradually increased, if the food were necessary to maintain normal nutrition. The use of only three or four different kinds of foods embracing the proper amounts of proteins, fats, and carbohydrates changed every two days would often help to discover the toxic food. Some raw fruits or vegetable should be eaten every day for the vitamines necessary to maintain normal nutrition. Pigeons fed rough rice maintained their strength, but if fed on polished rice only soon become unable to fly, showing the nutritional value of the phosphorus pentoxide in the pericarp. The blood should be alkaline and the urine acid, which was so

maintained by the foods, bread, meats, prunes, peanuts, plums, and cranberries, while the alkaline conditions were furnished by all other fruits, vegetables, and milk. Most persons were inclined to be too acid, hence the need for the latter class of foods.

The Value of Physical Measures for the Treatment of Wounds and Traumatic Injuries in the War.—Dr. Wm. Benham Snow, New York, called attention to the fact that in the treatment of wounds abroad during the war, it had gradually been established that electricity, light, and other mechanical measures played a most important part in the treatment of wounds and traumatic injuries, such as sprains and synovitis. The experience of the French and English observers had established the fact that the physical methods, in order to be successfully employed, should be under the management of those who understood the methods of application and not under the dictation of either surgeons or physicians who did not. The writer called attention to the great value of radiant light in the treatment of open wounds, streptococcic and staphylococcic infections, and erysipelas, facts which were not generally realized by the profession. He urged the early use of light following an injury both to promote healing with the hyperemia produced, and also as a prophylactic against infection. The use of the static current, as thoroughly established in the treatment of arthritis arising from trauma and sprains and injuries in the proximity of joints, was earnestly urged. In closing the writer expressly called attention to the importance and duty of the members of this association, who understood the principles of these methods, to endeavor to impress upon the Government the necessity of their establishment in the hospitals in this country and also in the hospitals abroad.

Mechanical Vibration Therapy, Exercise Therapy, and Apparatus.—Dr. Mary L. H. Arnold Snow, New York, said that as the interest of the present war demanded that the medical profession employ every available agent for amelioration, cure, or reconstruction, the committee wished to call attention to the indications for the use of mechanical vibration. These indications were: as a means of diagnosis, to elicit pain, to restore tone, and regulate the rhythm of the heart in high blood pressure, as a tissue exerciser in the treatment of various atrophic conditions, in chronic muscular contractions, coccygodynia and sacroiliac luxation, in nervous headache, for relieving local spinal tenderness, and for the reflex effect in asthmatic conditions. Exercise, passive and active, manual and mechanical, are being used in the after-treatment of many conditions as fibrous ankylosis and arthritis, and in the after-treatment of atrophies.

Report of the Committee on the Cancer Problem.—The committee's report called attention to the attitude of the Cancer Commission which assumed that all tumors of the female breast were significant of malignancy and should be removed when discovered. The committee took exception to this attitude, since many of these tumors were easily removed by physical methods of treatment and since in all cases the *x*-ray should precede operation and should also immediately follow the operation—an all important method which the Cancer Commission had always failed to observe. Attention was called to the fact that the Halsted operation, by removing the normal lymphatic glands in the axilla and beneath the pectoral muscle opened the way to the mediastinum which was otherwise protected. Radium in the treatment of cancer was far less effective than the *x*-ray and useful only as a matter of convenience in exceptional cases. While the *x*-ray was not a specific in the treatment of cancer, it inhibits the growth in all cases and some serious forms of malignancy yielded to that treatment. In epithelioma and giant-celled sarcoma it might be considered practically a specific. Success in the use of the *x*-ray for the treatment of malignancy depends very largely upon the skill and technique of the operator. No judgment as to its efficiency could be based upon its indiscriminate or unscientific employment. It was probable that under a more skilful technique it might be successful in most cases of malignancy, lengthening life in all cases by arresting the progress of growth. Probably no form of treatment required greater skill and familiarity in the matter of dosage and methods of application than the *x*-ray. The committee would disparage the massive dose method as there was here too great an element of danger, even in skilled hands. Attention was called to the fact that the important glands of the body—the liver, kidneys, adrenals, thyroids, and other secreting glands should so far as possible be protected during *x*-ray administrations. Protecting screens were for this purpose a necessity. The use of filters for eliminating the rays which produced dermatitis had made it possible to obtain far better results in the treatment of deeply located malignant growths than formerly. For measurement of *x*-ray dosage the pastilles were disparaged because of the unreliability, and the regulation of dosage by controlling the voltage, amperage, distance, and time of exposure, which was more scientific, was to be preferred. The committee also commended the employment of electrosurgical procedures in selected cases by constant current ionization, desiccation, and thermal coagulation methods.

Some Observations on Blood Pressure.—Dr. John W. Torbett of Marlin, Tex., read this paper. He said the pressure should always be taken carefully and quietly, without any excitement to the patient, using a reliable instrument and the auscultatory method on the bare relaxed arm. The systolic, diastolic, and pulse pressure and the pulse rate all should be taken and recorded. From January to August 9 of this year, 1706 cases of general medical and venereal cases of all stages had been examined by him, and of this number only 7 per cent. had a systolic pressure above 150 mm. of mercury and only 50 per cent. of these showed tube casts, albumin, or pus. Fifty per cent. of these by two or three weeks of baths, diet, purgation, and increased elimination had their pressures reduced to normal. The hot blanket pack, autocondensation, or the electric light cabinet, followed by the alternating hot and cold shower, cold mitten rub, or Scotch douche carefully given, were valuable means of promoting elimination, capillary reaction, and resiliency.

Hypertension, Its Early Recognition and Treatment.—Dr. A. L. Gordon of Burlington, N. J., read this paper. He said that in the study of mortality statistics it was found that while the general death rate had fallen during the past few years, the mortality of those past middle life had increased, due mainly to the degenerative diseases. Hypertension was one of the earliest signs of approaching danger, and if discovered early enough and the patient was properly treated he would be spared years of suffering by premature death. The cause was usually found in faulty habits and manner of living, especially overeating and more particularly of proteins, this causing bacterial activity in the gastrointestinal tract with the formation of toxins. Excessive nervous strain, overwork, pyemia, and poisoning by alcohol or lead might also be important factors. Symptoms of early hypertension were rare and it was very important to make a routine examination of all patients past middle life at regular intervals. Treatment consisted in correction of faulty habits, especially as to eating and use of alcohol, and the proper use of electricity. The hypertension could best be corrected by autocondensation. The liver might be stimulated and caused to perform its function of destroying toxins by the use of the static wave or the slow sinusoidal currents. Constipation might be corrected by the slow sinusoidal current over the abdomen.

The Rational Management of Various Types of Neuritis.—Drs. W. L. Clark and H. Smidt of Philadelphia presented this paper. In the acute form the authors laid great stress on rest, with counterirritation and heat by hot water, the lamp, or diathermy. The diet should be looked after and the bowels kept open. Everything that caused contraction should be avoided. In the subacute variety more energetic measures should be used to remove the infiltration. In this stage the lamp might be used plus galvanism, the high frequency vacuum tube, the brush discharge, the high frequency effleuve, the faradic current, or diathermy. If the wave current was used it should be very mild at first. In chronic neuritis, in addition to the foregoing, hyperemia should be produced by the static wave and the static spark. The faradic sinusoidal was good; also hydrotherapy, the electric cabinet, and baking. General tonic and reconstructive treatment should be used.

The Static Wave Current as an Aid in the Treatment

of Diabetes.—Dr. William A. White of New York read this paper. He said that in diabetes there was a diminished activity of the pancreatic parenchyma probably due to acute or chronic congestion with some infiltration. The liver was in a state of passive congestion to a greater or lesser degree. The general nutrition and metabolism were gravely interfered with in diabetes. The static wave current exerted a marked and favorable effect on tissue metabolism throughout the economy, and by the passage of the current through the tissues of the insulated patient functional activity was increased, associated with restoration of the nutritive and secretory processes.

The Treatment of Lowered Nutrition as Present in Tuberculosis.—Dr. Mary L. H. Arnold Snow of New York called particular attention to the importance of nutrition and made a plea for greater attention to the first, or prebacillary stage of the disease when the presence of bacilli was often unsuspected until the radiogram revealed the result of their action in the mediastinal glands. If laboratory investigations revealed the presence of infection the latter should be removed, and the nutritive index raised with instructions to the patient for strict hygienic and dietetic régime. For a high pulse rate, uncomplicated by valvular lesions, intervertebral vibration in the interscapular region would correct the pulse irregularities. The employment of radiant light and heat and the static wave current, or the d'Arsonval current to correct impaired liver function, and the use of the sinusoidal current for the treatment of constipation were indicated, and wherever mediastinal infection was present the *x*-ray was employed with the routine measure of dosage, or variations to meet indications. When *x*-ray treatments were given, precautions should be taken that the thyroid, adrenals, and heart were properly shielded.

The Formation, Equipment, and Administration of an Electro-Therapeutic Unit for Work Abroad.—Dr. Virgil C. Kinney of Wellsville, N. Y., in presenting this paper stated that the electrotherapeutist and the institutional man with executive ability were just as essential for army work abroad as the army surgeon. The author presented plans for a complete 100-bed unit, including buildings, equipment, and administration. This work was placed under two departments: (1) A department entirely separate from hospital work; this to be in a separate building and free from hospital influence. Here so-called rheumatism or any of its allied conditions, the nervous depressions and melancholias, the high blood pressures, or any toxic conditions might be given an intensive elimination and physical upbuilding. (2) A department occupying a portion of an already existing hospital and working in conjunction with the surgeon. This department should have separate rooms for electrical treatment and bath work, and, in addition, much portable apparatus to enable the therapeutist to give his numerous treatments at the bedside. The buildings were designed with special regard to simplicity of design, comfort, economy in operation, elasticity, and mobility. The whole plan was so comprehensive that the government could well spend some time in going over the work.

Physical Therapeutics in War.—Dr. Joseph Rivière of Paris contributed this paper, which was read by Dr. William Benham Snow of New York. The author asserted that, thanks to physical therapeutics and its benefits, the social waste of war could be reduced to a minimum. As soon as the required surgical measures had been completed the wounded of the war should be turned over the physical therapeutist. Some of the cases treated by the author were: Ankylosis, muscular stiffness, retraction, cicatrices, neuritis, atrophy, paralysis, lesions of the nerves and other conditions for the greater part complicated with arthritic manifestations, and disorders of the nervous system.

A New Test for Incipient Cancer of the Breast.—Dr. G. Betton Massey of Philadelphia described this test (see page 803).

The Static Machine in Humid Weather.—Dr. Frederic de Kraft of New York read this paper. He said the static machine was most reliable and could always be depended upon to produce current if certain conditions received attention. The high potential static charge readily leaked away in the presence of moisture. The following features were important: (1) The insulation within and without the case should be as perfect as possible. (2) The material of both revolving and stationary plates should be a perfect dielectric. (3) The case must be air-tight, and the outside must be kept free from dust and moisture. The best material for use in the interior of the machine to absorb both moisture and nitrous oxide was unslacked rock lime, a half barrel to a machine, placed loosely in boxes well covered with cloth. Fresh lime was required about every six months. (4) The gummy substance deposited on and in the case as a result of the action of ionized air and nitrous oxide was best removed by wiping with a cloth wet with kerosene. With due attention to these points a static machine should never lose its charge and should always be ready for use.

When Neuritis Proved a Wrong Diagnosis.—Dr. A. B. Hirsh of Philadelphia detailed the history of several cases that had been diagnosed as neuritis and which were really not neuritis, but pain reflected from some other source. The conclusions to be drawn from these cases were that the presence of actual neuritis must be differentiated from the reflected forms of neuralgia by careful search for the condition underlying each patient's symptoms, and for such differentiation definite measures were now at hand. Given a more correctly defined diagnosis, the probability of success in the treatment of curable cases was far greater than ever before.

The Effect upon Metabolism of Induced Sinuous Impulses.—Dr. Frederick H. Morse of Boston said the body was a storehouse of potential energy. Every part of the body had a normal rate of vibratory activity, the respiration 18 a minute, the peristalsis of the bowel 14 to 18, of the colon 6 to 8, while the ordinary gait was 80 a minute. In treating a part the author advised synchronizing the normal action of the body cells of that part. The value of stimulation of spinal nerve centers had been emphasized of late in many forms of treatment. We should combine stimulation of nervous tone with exercise of a part at its normal rate. Much systemic disturbance arose from stasis in the colon and weakness of the abdominal muscles—constipation. The treatment recommended as most efficacious in this condition was by a large electrode along the spine and smaller one on the abdomen over the colon, with the spine wave regulated to the normal rate of contraction of the part.

The War-Time Uses of Electricity.—Dr. Frank B. Granger of Boston said the war had served to demonstrate anew the value of physical methods of treatment for the relief of pain, the stimulation of certain types of indolent wounds, the removal of infections, the breaking down of ankylosed tissues, the restoration of atrophied muscles, the hastening of regeneration in degenerated nerves, and the improvement and cure of many functional nerve conditions. He divided the war time uses of physical measures into two heads: (1) The immediate and early convalescent stages; (2) the later or more or less chronic stage, or reconstructive and educational. In the first class relief of pain was obtained by radiant light and heat and in some instances by ionization. The condition known as trench foot was best treated by the galvanic current uninterrupted. Indolent wounds would often yield to ultraviolet radiations. Aviators after an exhausting flight were often invigorated by the high frequency in the form of autocondensation or vacuum electrodes over the entire body. Sprains and contusions were treated by radiant heat or diathermy. After the patient had been discharged from the base hospital and sent to another hospital or a convalescent home a greater variety of modalities and a wider range of treatment might be employed. Stiffened and ankylosed joints might be treated by chlorine ionizations. Neuritis and peripheral nerve paralyses should be treated according to the indication. Indolent ulcers were treated with zinc ionization and then ultraviolet radiations. Adherent scars would often yield to chlorine ionization followed by massage. So-called rheumatism, generally a myositis, was best treated by sodium salicylate ionization. In nerve exhaustion, high frequency, static electricity, and general galvanization or sinusoidalization were of extreme benefit. The returned soldier should be educated to earn a livelihood.

Twelve Cases of Anterior Poliomyelitis of the Epidemic of 1916 Intensively Treated.—Dr. Lucy Osborn Wight of New York told of her experience in treating twelve cases of anterior poliomyelitis after they had been discharged from various New York hospitals. Rational treatment consisted in an attempt to restore all possible power and function to the affected muscles and to restore and improve the invariably disturbed circulation. She said the two most important factors in treatment were warmth and rest. The treatment she had used consisted in radiant light to the spine and affected muscles, and also mechanical vibration to the spine and the affected muscles. After the first three months the static wave current was applied to the spine two or three times a week. Massage and muscle training were employed, the child making voluntary efforts to use the limbs in their normal movements. Twelve cases were reported in detail.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Louisiana State Board of Medical Examiners.

New Orleans, June 7, 8, and 9, 1917.

ANATOMY

1. Name the bones that articulate with the radius.
2. What important structures pass through the jugular foramen?
3. Name the nerves of the tongue. Which ones are sensory and which motor?
4. Give origin and function of the spinal accessory nerve.
5. Give origin and insertion of deltoid; digastric; sternomastoid; tibialis anticus, and latissimus dorsi muscles.
6. What muscles are inserted into the lesser tuberosity of the humerus?
7. Describe briefly the ankle-joint.
8. Name principal branches of the external carotid.
9. Describe briefly the blood supply of the intestines.
10. Name and bound the triangles of the neck.

CHEMISTRY.

1. What are alkaloids? Name a few.
2. What does the presence of nitrites in water indicate?
3. Name an alkaline caustic and give its chemical antidote.
4. What are the properties of urea?
5. How would you detect the presence of lead in drinking water?
6. What elements belong to the group of halogens?
7. Give the formula of (*a*) mercuric chloride; (*b*) mercurous chloride.
8. What is ptyalin?
9. What is hemoglobin? State some of its properties.
10. How does iodine occur in nature; give some of its properties.

PHYSIOLOGY

1. Where, and how, are the nitrogenous foods digested?
2. What factors are concerned in the heart sounds in (*a*) diastole, (*b*) systole?
3. How does the vasomotor system influence the blood supply?
4. What is the function of adipose tissue?
5. What are the functions of the cerebellum?
6. State the functions of the (*a*) anterior nerve roots, (*b*) posterior nerve roots, of the cord?
7. What causes the blood to clot? Describe briefly the process.
8. What is the function of the third cranial nerve, and state what muscles are innervated by it?
9. What is the source of animal heat?
10. What is glycogen?

PATHOLOGY.

1. Explain the difference between secretion and excretion, giving example of each.
2. Give the difference between exudate and transudate, with an example of each.
3. Define atrophy. Give the varieties of atrophy.
4. What is the difference between stock vaccine and autogenous vaccine?
5. Describe a Charcot's joint.
6. Give causes, varieties, and results of abnormal blood pressure.
7. (*a*) Mention at least four varieties of ulceration seen in the gastrointestinal wall; (*b*) describe the gross appearance of an amebic ulcer.
8. Describe the process of repair in an uninfected fracture of the bone.
9. Describe carefully the various steps in the formation of a tuberculous cavity in the lung.
10. Describe the process of primary healing; of secondary healing.

PHYSICAL DIAGNOSIS.

1. State four physical signs present in consolidation of lung tissue.
2. State the physical signs present in acute cardiac dilatation.
3. State the physical signs present in brain tumor.
4. Name the various abnormal respiratory sounds (râles), and indicate the physical conditions giving rise to each.
5. What are the physical signs of pyloric stenosis?

HYGIENE.

6. (*a*) What is pure water? (*b*) How should it be rendered potable when impure?
7. Name and describe briefly the methods of purification of public water supply.
8. (*a*) What is natural immunity; (*b*) acquired immunity. Explain each.
9. Describe the disinfection of a room occupied by a careless consumptive.
10. State briefly the sanitary supervision necessary for the production of pure milk.

ANSWERS.

ANATOMY.

1. *Bones that articulate with the radius*: Humerus, ulna, scaphoid (os naviculare), and semilunar (os lunatum).

2. *Structures that pass through the jugular foramen:* Inferior petrosal sinus; lateral sinus, meningeal branches from the occipital and ascending pharyngeal arteries; and glossopharyngeal, pneumogastric and spinal accessory nerves.

3. *Nerves of the tongue*: Lingual branch of inferior maxillary division of the trigeminal (sensory), chorda tympani (taste), glossopharyngeal (sensory and taste), and hypoglossal (motor).

4. Spinal accessory nerve. *Superficial origin:* From the lateral tract, inferior to the pneumogastric; and from the side of the spinal cord as far down as the sixth cervical nerve. *Deep origin:* From the anterior horn of gray matter of the medulla, and of the spinal cord as far down as the fifth cervical nerve. *Function:* Motor nerve to the sternomastoid and trapezius muscles.

5. Deltoid. *Origin:* Outer third of anterior border and upper surface of clavicle; from outer margin and upper surface of acromion process, and from posterior border of spine of scapula. *Insertion:* Middle of outer side of shaft of humerus.

Digastric. *Origin:* Digastric groove in temporal bone; a depression on inner side of lower jaw near the symphysis. *Insertion:* Central tendon attached to body and great cornu of hyoid bone.

Sternomastoid. *Origin:* Upper and anterior part of manubrium, and from inner third of superior border and anterior surface of clavicle. *Insertion:* Mastoid process of temporal bone and to outer half of superior curved line of occipital bone.

Tibialis anticus. *Origin:* Outer tuberosity and upper two-thirds of external surface of shaft of tibia, interosseous membrane, and fascia. *Insertion:* Lower and under surface of internal cuneiform and base of metatarsal bone of great toe.

Latissimus dorsi. *Origin:* Spinous processes of six lower dorsal vertebræ, posterior layer of lumbar fascia, external lip of crest of ilium, and three or four lower ribs. *Insertion:* Bicipital groove of humerus.

6. The subscapularis is the only muscle inserted into the lesser tuberosity of the humerus.

7. THE ANKLE JOINT "is a ginglymoid articulation formed between the lower extremity and malleolus of the tibia on the inner side, the malleolus of the fibula on the outer side, and the astragalus below. Its ligaments are anterior, posterior, external, and internal lateral. The *anterior tibiotarsal* ligament consists of a broad set of irregular fibers attached above to lower margin of tibia, below to astragalus. The *posterior tibiotarsal* ligament passes transversely between back part of tibia and astragalus. The *internal lateral*, or *deltoid*, has two layers—the superficial triangular, its apex arising from malleolus, its base spread out from before backward to be attached to scaphoid and inferior calcaneoscaphoid ligament, the sustentaculum, and inner side of astragalus; and the deep, a short, round cord passing from internal malleolus to astragalus. The *external lateral ligament* consists of three distinct fasciculi, anterior, middle, and posterior, arising from near summit of external malleolus, and being inserted respectively into the front of astragalus, the outer surface of os calcis, and the back of astragalus.—(Young's *Anatomy*.)

8. *Branches of the external carotid artery*: Superior thyroid, lingual, facial, occipital, posterior auricular, ascending pharyngeal, superficial temporal, and internal maxillary.

9. BLOOD SUPPLY OF THE INTESTINES. *Duodenum:* Pyloric and pancreatico-duodenal (of the hepatic), and inferior pancreatico-duodenal (of superior mesenteric). *Jejunum and ileum:* Branches of the superior mesenteric artery. *Cecum and appendix:* Iliocolic and appendicular arteries. *Colon:* Right colic and middle colic (of superior mesenteric), left colic and sigmoid branches (of inferior mesenteric). *Rectum:* Superior hemorrhoidal (of inferior mesenteric), middle hemorrhoidal (from internal iliac), and inferior hemorrhoidal (from internal pudic artery).

10. The ANTERIOR TRIANGLE OF THE NECK is *bounded:* In *front* by a line from the chin to the sternum; *behind* by the anterior margin of the sternomastoid; *base* is upward, and is formed by the lower border of the body of the lower jaw and a line from the angle of the jaw to the mastoid process. It is *divided* into three smaller triangles (inferior carotid, superior carotid, and submaxillary) by the digastric muscle and the anterior belly of the omohyoid. The *inferior carotid triangle* is bounded, in *front* by the median line of the neck; *behind*, by the anterior margin of the sternomastoid; and *above*, by the anterior belly of the omohyoid. The *superior carotid triangle* is bounded, *behind* by the sternomastoid; *below* by the anterior belly of the omohyoid; and *above* by the posterior belly of the digastric. The *submaxillary triangle* is bounded, *above* by the lower border of the body of the mandible and a line drawn from its angle to the mastoid process; *below*, by the posterior belly of the digastric and the stylohyoid; and *in front*, by the anterior belly of the digastric.

THE POSTERIOR TRIANGLE OF THE NECK is *bounded:* In *front* by the sternomastoid; *behind*, by the anterior margin of the trapezius: and its *base* corresponds to the middle third of the clavicle. It is *divided* into two smaller triangles (the occipital and the subclavian) by the posterior belly of the omohyoid. The *occipital triangle* is bounded in *front*, by the sternomastoid; *behind*, by the trapezius; and *below*, by the omohyoid. The *subclavian triangle* is bounded *above*, by the posterior belly of the omohyoid; *below*, by the clavicle; and *in front*, by the sternomastoid.

CHEMISTRY

1. *Alkaloids* are organic, nitrogenized substances, alkaline in reaction, and capable of combining with acids to form salts in the same way that ammonia does. Examples: Aconitine, atropine, quinine, strychnine, cocaine, morphine.

2. The presence of nitrates in water indicates contamination by organic matter.

3. Potassium hydroxide is an alkaline caustic; the *chemical antidote* is acetic acid (vinegar), or citric acid (lemon juice) or tartaric acid.

4. *Urea* is a crystalline solid, colorless and odorless, neutral in reaction, but basic in character, soluble in equal parts of water; it is decomposed by nitrous acid; it forms definite compounds with acids, and also with some salts and oxides.

5. To a sample of the water add a few drops of ammonium sulphide solution; a dark appearance, which does not clear up on the addition of hydrochloric acid indicates the presence of lead (or copper).

6. The *Halogens* are: Fluorine, chlorine, bromine and iodine.

7. Formula of mercuric chloride is $HgCl_2$; of mercurous chloride, Hg_2Cl_2.

8. *Ptyalin* is an enzyme which exists in the saliva, and is capable of converting starch into maltose in an alkaline medium.

9. *Hemoglobin* is the coloring matter of the blood; it is found in the red corpuscles, and is composed of carbon, hydrogen, oxygen, nitrogen, sulphur and iron; it carries the oxygen from the lungs to the tissues of the body. When pure, it is a crystalline solid, red or purple in color, more or less soluble in water; it dialyzes very slowly.

10. *Iodine* occurs in nature in combination only, in sea water, and the plants and animals which inhabit the sea (in the form of iodides); it also occurs as sodium iodate in combination with sodium nitrate. It is a black, crystalline solid, slightly soluble in water; on being heated it gives off a deep violet vapor; in contact with starch it strikes a blue color; chemically, it is less active than chlorine and bromine, which it resembles.

PHYSIOLOGY.

1. *Nitrogenous foods* are digested in the stomach and in the small intestine. In the stomach, by the action of the pepsin (with the hydrochloric acid), the protein molecules are split up into proteoses and peptones. In the *small intestine*, by the action of the trypsin of the pancreatic juice, a similar action occurs, and the proteoses and peptones are further changed into polypeptides and amino-acids, lysin, tryptophane and ammonium compounds.

2. There are two normal heart sounds which follow in quick succession, and are succeeded by a pause. The first, or systolic, sound is dull and somewhat prolonged, the second, or diastolic, sound is sharper and shorter. The sounds may be expressed by the syllables *lubb—dup*.

The first sound is heard best at the apex beat in the fifth left intercostal space; the second sound is heard best over the second right costal cartilage.

The *causes* producing the *first* sound of the heart are not definitely ascertained; the following are supposed to be causatory factors: (1) The vibration and closure of the auriculo-ventricular valves, (2) the muscular sound produced by the contraction of the ventricles, and (3) the cardiac impulse against the chest wall.

3. "Section of a *vasoconstrictor* nerve, such as the splanchnic, causes a loss of normal arterial tone, and consequently the part supplied by the nerve becomes flushed with blood. Stimulation of the peripheral end causes the vessels to contract and the part to become comparatively pale and bloodless. . . . Section of a *vasodilator* nerve, such as the chorda tympani, produces no effect on the vessels, but stimulation of its peripheral end causes great enlargement of all the arterioles, so that the submaxillary gland and the neighboring parts supplied by the nerve become red and gorged with blood, and the pulse is propagated through to the veins; the circulation through the capillaries may be so rapid that the blood is arterial in color in the veins."—(Halliburton's *Physiology*.)

4. *Function of adipose tissue:* To maintain the heat of the body by preventing its too rapid dissipation; as a protective; as a support for the small blood vessels in the long bones, and to give form and roundness to the body.

5. *Functions of the cerebellum:* Coordination of muscular movement and equilibrium.

6. The *anterior* nerve roots of the spinal cord are mainly motor in function; the *posterior* roots are entirely sensory.

7. When blood is withdrawn from the blood-vessels of the living body, it first becomes viscid, then sets, and is converted into a jelly-like mass. This is due to the formation of fibrin. The jelly contracts forming the clot; and at the same time the serum is squeezed out from the clot. Various circumstances and conditions will

hasten or delay the process of coagulation. In man, the blood generally becomes viscid in from two to three minutes; it forms the jelly-like mass in from five to six minutes; a few minutes later the serum begins to appear, and the whole process is completed in from twenty-four to thirty-six hours. The clot then floats on the serum. The process is thus summed up by Halliburton: In the plasma a proteid substance exists, called Fibrinogen. From the colorless corpuscles a nucleoproteid is shed out, called Prothrombin. By the action of calcium salts prothrombin is converted into fibrin ferment, or Thrombin. Thrombin acts on fibrinogen in such a way that two new substances are formed: one of these is unimportant and remains in solution; the other is important, viz., Fibrin, which entangles the corpuscles, and so forms the clot.

8. The third cranial nerve is a motor nerve to the following muscles of the eye: Levator palpebræ superioris, superior rectus, inferior rectus, internal rectus and inferior oblique.

9. *Heat is produced in the body* by: (1) Muscular action; (2) the action of the glands, chiefly of the liver; (3) the food and drink ingested; (4) the brain; (5) the heart; and (6) the thermogenetic centers in the brain, pons, medulla, and spinal cord.

10. *Glycogen* is animal starch; it is present in the liver, in muscles, blood corpuscles and elsewhere in the body. It is a white amorphous powder, tasteless, soluble in cold water; with a solution of iodine it gives a red-brown color.

PATHOLOGY.

1. *Secretions* are materials separated from the blood by glandular cells, and which serve some further purpose in the animal economy; as milk, gastric juice.

Excretions are materials separated from the blood by cell activity, and discharged from the body, and which are harmful if retained; as urine.

2. An *exudate* is the material (fluid and cellular constituents of the blood) which passes from the blood-vessels to the tissue spaces as the result of inflammation. A *transudate* is somewhat similar, but is not due to inflammation; it may be caused by changes in the blood pressure, or vessel walls. *Exudates* have higher specific gravity, more cells, and more albumin than transudates. An *exudate* is found in inflammation; a *transudate* occurs in edema.

3. *Atrophy* is a decrease in the amount of tissue, owing to a diminution in either the *size* or the *number* of the histological elements of which it is composed. It is attended by loss of weight and impairment of function. There are two varieties: (1) *Simple atrophy*, in which the diminution is in *size*, and (2) *numerical atrophy*, in which the diminution is in the *number* of the cells, etc.

4. A *stock vaccine* is one which is prepared from organisms isolated from previous cases of the disease. An *Autogenous vaccine* is one which is specially prepared for each patient from organisms which have been recently isolated from his own lesion.

5. *Charcot's joint.* "In locomotor ataxia the joints of the lower limb, especially the knee and hip, are sometimes affected with painless swelling and distension with fluid, loosening of the ligaments, and wasting of the ends of the bones. This permits of great mobility of the joint, and the ends of the bones are easily displaced (*pathological dislocation*). If the effusion subsides, the displacement generally becomes permanent by shrinking of the soft tissues, and fibrous or bony ankylosis is apt to take place. Sometimes there is great development of new bone at the margins of the capsule, and this leads to further deformity, and in the more mobile joints may prevent reduction of the displacements."—(Buchanan's *Surgery.*)

6. ABNORMAL BLOOD-PRESSURE.—*Pathological High Blood-Pressure.*—"High pressure *per se* is not a disease but a phenomenon or symptom, which may accompany a great variety of diseased conditions, including diabetes, gout, syphilis, chronic lead poisoning, cardiovascular renal disease, many anomalies of nutrition, etc. *Acute Asphyxia and Acute Anemia* of the brain (medullary centers) will powerfully stimulate the vasomotors, causing contraction of the splanchnic area and a rise in blood-pressure. *Lead Colic* affecting the abdominal vessels is usually associated with high blood-pressure, as is also the early stage of peritonitis. *Pain*, even when slight, as in pinching the skin, usually elevates pressure. Continuous high pressure is seen in certain forms of nephritis. Thus in primary acute Bright's disease and in nephritis secondary to scarlet fever, there is practically always a marked rise in arterial pressure. A rise amounting to more than 50 millimeters Hg. has been observed within 48 hours of the onset of an acute nephritis. Elevated pressure is also found in beginning arteriosclerosis of the first part of the aorta and of the splanchnic vessels."

Pathological Low Pressure.—"A pathological depression in blood-pressure may be caused by the depressing influence of circulating toxins, action either upon the heart, blood-vessels or controlling nervous mechanism or to sudden withdrawal of a large volume of blood from the circulation as in hemorrhage, after *venesection, copious diaphoresis, diarrhea*, or in *shock*. In general it may be said that lowered blood-pressure is of little significance except after hemorrhage or during surgical shock. Here the great and sudden reduction in pressure may be sufficient to immediately endanger life. It is noted that a moderate and progressive falling pressure occurs in most progressive and prolonged fevers, as in typhoid fever. When due to such a cause the depression is rapidly overcome and disappears as convalescence is established. Widespread dilatation of the vessels and consequent lowering of blood-pressure has been noted in the last stages of *arteriosclerosis*. (Krehl.)"—(Faught's *Laboratory Diagnosis.*)

7. *Four varieties of ulceration in the gastrointestinal wall:* Gastric, duodenal, typhoid, and tuberculous. *Amebic ulcer:* "Ameba excites at first a moderate exudative and productive inflammation followed by necrosis. Thus ulcers are formed. The ulcers may be superficial or deep, sometimes extending to the peritoneum; they enlarge by infiltration and necrosis at their edges, so that extensive destruction of the mucous membrane may occur. The amebæ may be present in the connective tissue at the base or sides of the ulcers. Not infrequently, owing to bacterial infection from the intestinal contents, varying degrees of suppurative inflammation may complicate the lesion."—(Delafield and Prudden's *Pathology.*)

8. *Repair of fractures:* "The broken ends of the bone are rough and irregular, and the periosteum is torn more or less, but some portion usually remains as a bridge between the fragments. The soft structures in the neighborhood are lacerated, so that the parts are infiltrated with blood clot, which fills up the spaces between the bone ends. As in repair of any other part, the blood clot in a few hours is infiltrated with leucocytes, whose duty it is to absorb the clot. The connective tissue cells in the surrounding parts proliferate, and the bone undergoes rarefying osteitis, so that the place of the blood clot is taken by granulation tissue. The granulation tissue becomes calcified, and the calcified tissue is ultimately replaced by bone. The periosteum plays a large part in the ossification of the new tissue. It becomes stripped up for some distance, hyperemic, and thickened. Granulation tissue is formed from it, and unites with that which has replaced the blood clot. This mass binds the bone together and forms the provisional or ensheathing callus, which is subsequently ossified by the growth of the periosteal osteoblasts spreading over the mass. The medulla becomes plugged with granulation tissue or internal callus, and this, as well as the granulation tissue lying between the fragments of compact bone, becomes ossified, the bone cells of the compact tissue probably proliferating to take part in the repair."—(*Aids to Surgery.*)

9. *Formation of a tuberculous cavity in the lung:* "The anatomical lesion, the tubercle, first appears as a grayish-white, translucent, semisolid granulation, about the size of a millet-seed, usually deposited in the walls of the bronchioles or around the small blood-vessels. From its presence in these situations it induces a low form of inflammation which ultimately results in its destruction. The tubercles then undergo softening or cheesy necrosis with the formation of cavities and consequent destruction of lung-tissue. The small tubercles may coalesce, forming larger nodules, or diffuse tubercular infiltration."—(Hughes' *Practice of Medicine.*)

10. Healing in an incised wound, if aseptic, and the edges are in apposition, occurs by *first intention.* "Exudation of plasma from the neighboring blood-vessels occurs, and its fibrinogen is converted into fibrin, so gluing the edges of the wound together. Leucocytes are poured out and infiltrate the wound, absorbing any blood clot present. These are followed by fibroblasts (connective-tissue cells), which take their place. New capillaries form by budding out from adjacent ones, and vascularize the new tissue. Fibrous tissue is formed by intercellular exudation from the fibroblasts and so the fiorocicatricial union is complete, for at the same time epithelium is spreading over the narrow surface line."

Healing by granulation or second intention occurs when the edges of the wound have not been brought together. "Exudation of plasma and leucocytes occurs, followed by fibroblasts and budding from the capillaries, thus forming granulation tissue. The dead tissues or sloughs are separated, and a red area of granulation is then exposed. The deeper layer of granulation tissue is converted into fibrocicatricial tissue, which contracts, and so the wound gradually lessens in size. In the meantime epithelium spreads in from the edge over the surface, and so the scar is completed."—(*Aids to Surgery.*)

PHYSICAL DIAGNOSIS.

1. *Four physical signs present in consolidation of lung tissue:* (1) Decreased resonance, on percussion; (2) increased vocal fremitus; (3) bronchial or harsh respiration, and (4) bronchophony.

2. In *acute cardiac dilatation: Inspection* shows diffused and indistinct cardiac impulse, and enlarged and distended superficial veins. *Palpation* shows a feeble and irregular cardiac impulse, and also confirms the signs found on inspection. *Percussion* shows increased cardiac dullness. *Auscultation* shows that the heart sounds are weaker than normal, and the first sound is sharper than usual. If there are any valvular lesions the characteristic murmurs will be heard.

3. *Brain tumors:* "The symptoms common to all cerebral tumors are: Headache, persistent and increasing in intensity; defects of vision, even blindness, due to an optic neuritis, a very constant symptom; defects of hearing, taste, and of speech, the result of paresis of the vocal cords; vertigo, associated with nausea and vomiting and convulsions, epileptiform in character. These convulsions are usually limited to one side of the body and occur at regular intervals. They may be localized (Jacksonian epilepsy) to one or more groups of muscles and are never attended with loss of consciousness. Nystagmus is sometimes present. Palsies such as strabismus, ptosis, dilatation of the pupil, facial palsy, paraplegia, and hemiplegia are not uncommon symptoms. Defects of sensibility such as sensations of numbness and coldness in the limbs and body may also occur. Occasionally, there are disturbances of equilibrium, manifested by a tendency, when standing, to go backward or turn to the right or left. The intellectual faculties may be well preserved until late in the affection when irritability of temper, depression of spirits, impairment of memory, emotional disturbances, and a gradually advancing dementia may develop. Slowing of the pulse, insomnia, and increased secretion of urine sometimes accompany cerebral tumors."—(Hughes' *Practice of Medicine.*)

4. *Abnormal respiratory sounds.*—"*Bronchial breathing* occurs in lobar pneumonia, phthisis, compensatory emphysema, tumor, syphilis, and infarct. Both inspiration and expiration are harsh and have a high-pitched (tubular) character. *Cavernous breathing* is low-pitched and blowing in character and is heard over cavities. *Amphoric breathing* is similar to the sound produced by blowing gently over the mouth of an empty jar. It is present in phthisical cavities, pneumothorax with patulous opening, and localized consolidation near a large bronchus. Adventitious sounds include râles, metallic tinkling, and pleuritic friction sound. Râles may be dry or moist: *Dry râles* occur in bronchitis and asthma, and may be low-pitched snoring sounds (sonorous râles) or high-pitched whistling sounds (sibilant râles). *Moist râles* are produced by the passage of the air through liquid, and may be crepitant, subcrepitant, or gurgling in character. *Crepitant râles* are extremely fine and occur at the end of inspiration; they are heard in the first stage of pneumonia and in engorgement and edema of the lungs. *Subcrepitant râles* are comparatively few in number, and are heard during inspiration and expiration, in capillary bronchitis, pulmonary edema, hypostatic pulmonary congestion, and incipient phthisis. *Gurgling râles* may be large or small, and are heard during inspiration and expiration in phthisical cavities, bronchial hemorrhage, in the stage of secretion in bronchitis, and over the trachea. *Metallic tinkling* is a bell-like sound heard in pneumothorax and phthisical cavities, and is caused by the dropping of a liquid through the space inclosed in tense walls. The *succussion splash* is produced in pneumothorax when the patient is suddenly shaken. *Pleuritic friction sounds* are heard during inspiration and expiration, and do not pass away after coughing. They are pathognomonic of pleurisy."—(*Pocket Cyclopedia of Medicine and Surgery.*)

5. *Physical signs of pyloric stenosis:* There is an abnormal prominence of the epigastric region; a tumor in the region of the pylorus which seems to be connected with the stomach; percussion gives a tympanitic note (if the stomach is empty), extending to or below the umbilicus; if the stomach is full, the note is high pitched; on auscultation, a splashing and rumbling sound is heard.

HYGIENE.

6. *Pure water* is colorless, odorless, cool, without disagreeable or salt or sweetish taste, and is free from bacteria, poisons, foreign bodies, etc. *Potable water* should be colorless, odorless, cool, limpid, soft; it should have an agreeable taste, neither salty nor sweet nor flat; it should dissolve soap readily without formation of a curdy precipitate; it should contain not more than about twenty-five to thirty grains of solids per gallon, and should not be polluted with sewage. Contaminated water is purified by: Distillation boiling, filtration, precipitation, and various chemical processes.

7. *The means of purification of public water supplies* are storage and sedimentation, chemical treatment, and filtration. *Sedimentation.* A part of the impurities in the water may be removed therefrom by storing the water in basins where the suspended matter sinks by the action of gravity, and in the process of settling entangles other impurities, as well as some of the bacteria in the water. In order to get good results, the basins must be shallow, the water left undisturbed, and the accumulated sediment removed from time to time. No complete reliance can be put on this method, as it does not guarantee a germ-free water. *Chemical purification:* The sedimentation of water in the basins may be hastened by the addition to the water of certain chemicals, which act as coagulants and form precipitates, entangling the organic impurities and bacteria, thus freeing the water from a large part of them. Alum (half a grain to the gallon), chlorine, bromine, copper sulphate, metallic iron, and ozone are used for this purpose. Neither sedimentation nor chemical purification are practicable for large water supplies, nor are they free from many objections. *Filtration:* This is the only method which has proved successful in providing a pure water supply. Filtration of large quantities of water is accomplished by means of sand beds of large area, the sides and bottoms of which are concreted, and on the bottom of which are placed numerous perforated and open drains which are to lead off the filtered water into separate special reservoirs. On the bottom of the filter areas, which are usually half or an acre in size, is placed a layer of coarse gravel, upon this a layer of finer gravel, which is then covered by a layer of fine, sharp sand, several feet in thickness, the whole filtering medium being from 4 to 6 feet in thickness. The filter is at first filled from beneath so that all air is driven off, and the filter area is then filled to a level of several feet above the filter bed. A filter of an acre in area may be made to filter two to four millions of gallons of water in twenty-four hours. Such filters act not only mechanically in intercepting all suspended impurities, but the slimy sheet which soon covers the top layer of the sand acts biologically upon the water and destroys a large number of bacteria, so that, it is claimed, the water may be freed from 99 per cent. of its bacteria, provided the rate of

filtration is not too rapid and the top of the sand-layers is scraped off half an inch from the surface from time to time.—(From Price's *Essentials of Hygiene.*)

8. *Immunity* is insusceptibility, or capacity for resistance on the part of the body to disease or, in the more limited sense, to infection or intoxication or their effects. Immunity may be *natural* or *hereditary.* The absolute or relative insusceptibility of turtles and fishes for tetanus, and of the lower animals for syphilis and for scarlatina, are examples of hereditary or natural immunity. On the other hand, immunity may be *acquired.* Acquired immunity may be secured by an attack of the disease from which the individual has recovered—*natural immunization.* Or immunity may be acquired by the introduction into the body of some material which gradually diminishes susceptibility without inducing distinct disease—*artificial immunization.* (Delafield and Prudden.)

9. "The clothing and bedding which are to be disinfected by means of steam should be carefully wrapped in cloths saturated with 1 per cent. carbolic acid solution, placed in a wagon, and taken to the disinfecting station. After the bed has been stripped, all refuse matter, paper, and articles of little value are wrapped in cloths saturated with carbolic acid and burned in a stove or furnace. The floor, doors, windows, furniture, and the walls for a distance of 1½ meters from the floor should be washed with 5 per cent. carbolic acid solution. The walls and ceiling of the room should subsequently be sprayed with 1:1000 bichloride of mercury solution. If the walls are papered, it is advisable to remove carefully the paper before beginning the disinfection. The room is then closed as tightl as possible and disinfected by means of formaldehyde."—(Bergey's *Hygiene.*)

10. *Essentials for the production and preservation of pure dairy milk:* Vaughan's rules are as follows: "(1) The cows should be healthy, and the milk of any animal which seems indisposed should not be mixed with that from the healthy animals. (2) Cows must not be fed upon swill or the refuse from breweries or glucose factories, or upon any other fermented food. (3) Milch cows must not be allowed to drink from stagnant pools, but must have access to fresh, pure water. (4) The pasture must be freed from noxious weeds, and the barn and yard must be kept clean. (5) The udders should be washed and then wiped dry before each milking. (6) The milk must be at once thoroughly cooled. This is best done in the summer by placing the milk can in a tank of cold water or ice water, the water being of the same depth as the milk in the can. It would be well if the water in the tank could be kept flowing, and this will be necessary unless ice water is used. The tank should be thoroughly cleaned each day, to prevent bad odors. The can should remain uncovered during the cooling, and the milk should be gently stirred. The temperature should be reduced to 60° F., or lower, within an hour. The can should remain in cold water till ready for delivery. (7) Milk should be delivered, during the summer, in refrigerated cans or in bottles about which ice is packed during transportation. (8) When received by the consumer, it must be kept in a clean place, and at a temperature some degrees below 60° F."

(*To be concluded.*)

Differentiation of Avian Tuberculosis.—According to Rochaix the bacillus of fowl tuberculosis will liquefy gelose of carrot juice, but not in all cases; hence the test is not dependable for excluding human tuberculosis.—*La Presse Médicale.*

Cephaloplegic Poliomyelitis.—Moreira reported a case of this affection—a type at present seen in Rio short of epidemic incidence. The disease, which has simulated hydrocephalus, is at present regarded as an abortive form of ordinary poliomyelitis. Its relationship to so-called polioencephalitis is not indicated.—*Brazil-Médico.*

Familial Labyrinthine Migraine.—Boenheim refers to three generations—grandmother, mother, and 6 out of 7 grandchildren—which presented so-called horizontal rotatory vertigo (sensation of riding in a merry-go-round) with migraine. The seventh grandchild had the latter uncomplicated. Of 7 great-grandchildren but one has developed the disease, but this defect may be due to tender age.—*Correspondenz-Blatt für Schweizer Aerzte.*

Miscellany.

Sanitary Conditions in Private Schools of New York.—A sanitary survey of the private schools of New York made some years ago showed that many such schools were being conducted under the most insanitary conditions. The Health Department thereon added a section to the Sanitary Code requiring such schools to have permits from the Department of Health. In order to determine whether the regulations with reference to such private schools were being complied with and whether they should be allowed to continue a resurvey has been made. This shows that there are in Greater New York 277 private schools with a registration of 26,334 pupils. Altogether the schools visited contained 1,321 rooms, or slightly over four rooms to a school. In only 36 of these schools were the Health Department rules completely complied with. In 863 of the rooms the floor space provided for each occupant was less than the required 15 sq. ft.; in 51 instances the ventilation was considered inadequate, in 10 the light provided was insufficient, and in seven living rooms were also used as class rooms.

The United States Birth Rate.—The Bureau of Census has issued its initial report on births and infant mortality, which places the statistical method of recording the assets and liabilities of the nation upon a rational foundation. A writer in *American Medicine* has made an analysis of these statistics which shows that the registration area for births comprises the six New England States, New York, Pennsylvania, Minnesota, Michigan, and the District of Columbia. While this is only 10 per cent. of the total area of the United States it contains an estimated population approximately 31 per cent. that of the country. According to the figures of 1915 there was a birth rate of 24.9 per thousand population. The death rate for the same year was 14 per thousand. The figures corroborate others previously presented showing the greater fecundity of white foreign born women over those of native birth. There are, according to these figures, 1,055 male births to each 1,000 female births; the infant mortality of males was 110 as against 89 for females. A comparison of the figures for this area with those of other countries shows that in the United States, in 1915, there were 178 births per 100 deaths; in the Australian Commonwealth (1914) the figure was 267; in Austria (1913) 152; Belgium (1912) 1,081; Italy (1913) 169; the Netherlands (1914) 227; New Zealand (1914) 279; Russia (1909) 152; Sweden (1912) 168. The birth rate in the United States of 24.9 was accompanied by an infant mortality rate of 100, while New Zealand with a birth rate of 26 had an infant mortality rate of 51. The death rate of the United States is not as low as that of the Netherlands, New Zealand, Norway, or Ontario. The United States death rate is exceeded in Belgium, France, Italy, Austria-Hungary, Sweden, Switzerland, and the United Kingdom. It is a matter for congratulation that the statistical method of recording the assets and liabilities of the nation have been placed upon a rational foundation and there is now good reason to expect that the area of registration in this country will be rapidly extended.

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AN EPIZOÖTIC OF POLIOMYELITIS AMONG DOGS.

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PARALYTIC affections of dogs, commonly of sporadic occurrence, have been frequently noted, and the occasional paralysis in connection with canine distemper is well known. But so far as we are aware there have been no reported outbreaks in which the central nervous system lesions corresponded with those observed in human poliomyelitis.

Therefore the small epizoötic which we report is, it is believed, unique in this respect, as the descriptions and photographs show lesions which must be regarded as entirely similar to those found in connection with human poliomyelitis.

In the course of his practice in Jamaica, which, although a part of the greater city of New York, is in all respects similar to a country town of a few thousand inhabitants, Dr. Johnson was called in the early part of March last to see a two-year-old collie dog (the property of a family by the name of Keller) which he found suffering from fever and paraplegia. This dog, after being under observation a week, was chloroformed.

The next case that came under his care was the Gibbs dog, also a collie of like age, and which was affected in the same manner as the Keller dog. This was on April 10. This dog lived for ten weeks.

About April 15 the first Ostrander dog came under observation. This dog was an adult female collie of two and a half years, with a six-months'-old pup. The owner reported that the dog, just previous to the paralysis, had shown some indisposition and a slight cough. When seen, the dog suffered from fever and paraplegia. Two weeks later, when the paralysis appeared to involve partially the left paw, the bladder and bowels, the dog was chloroformed and autopsied.

Two weeks after the death of this last dog her six-months-old puppy developed similar symptoms and, with the consent of the owner, was removed by the authors and kept under close observation. When removed, this dog had a temperature of 102°

FIG. 1.—Microphotograph of a section of cord (lumbar region) of Mollus' dog. Stained with hæmatoxylin and eosin. Magnification 25. (Photograph reduced one-half.)

The description of this and the following sections are so identical with that of a typical human poliomyelitis cord lesion that a quotation of a description of the latter is given to describe the dog-cord lesions:

"*The spinal cord.*—Even with the naked eye a section stained with logwood presents a striking difference from the normal. The gray matter stands out from the surrounding white columns unusually well owing to dense accumulation of nuclear elements within it. Under a low power this appearance is accentuated and, in addition, one is struck by the fact that the anterior spinal artery and its branches and a large number of the chief radial vessels are rendered prominent by the intense cellular infiltration of their walls. This condition obtains with regard to the vessels both in the anterplateral and posterior columns and is often present in the vessels entering with the posterior roots. A more detailed examination shows that most vessels, whether in the white or gray matter, are distended with blood which presents no evidence of ante-mortem coagulation, and that capillary hæmorrhages or red cell extravasations are scattered about. In the gray matter it is noticeable that although the nuclear elements are everywhere in excess of the normal they tend here and there to be gathered together in dense foci which may or may not have any obvious association with vessels. These foci are to be seen in the posterior as well as the anterior horns and are often well marked in the neighborhood of Clarke's column. Even when carefully looked for with higher powers it is difficult to find more than a very few of the anterior horn cells and the majority of these are much changed; they are usually swollen, rounded, and devoid of protoplasmic granules, while their nuclei are often enlarged and excentric. The cells of Clarke's column are similarly affected, although not so completely submerged in surrounding cellular exudation. On the other hand, the white matter is practically free from accumulations of nucleated cells, although the cellular infiltration of the vessel walls is marked, and the neuroglial cell are possibly in some excess. In contradistinction to the gray matter where it is nearly impossible to distinguish the constituent axis cylinders and ganglion cells, in the white matter one is able to detect the usual appearance of axis cylinders and myelin sheaths cut in transverse section, although both axons and sheaths are sometimes swollen, especially in the anterolateral columns. The soft meninges are also the seat of cellular infiltration, generally confined to the anterior median fissure and the anterolateral surface but occasionally on the posterior aspects of the cord as well. The cells lie in the spaces of the connective tissue network, which are consequently enlarged and are more numerous in the neighborhood of vessels."—Quoted from E. F. Buzzard, Goulstonian Lectures, "Certain Acute Infective or Toxic Conditions of the Nervous System—Acute Poliomyelitis," *Lancet*, March 23, 1907.

F., and showed paraplegia and partial involvement of the front leg muscles and paralysis (at lest partial) of bowels and bladder. It had been ill two weeks.

While under observation an attempt was made to introduce, intraspinally, blood serum from another dog, but whenever the needle seemed to reach the spinal canal nothing but a little blood (2-4 c.c.) came out, and as it was feared that a vein and not the canal had been reached no serum was administered in this way. Sixty cubic centimeters was, however, given intravenously without apparent effect. The dog soon began to show great difficulty in eating (it had to be fed milk from a cup), apparently having a partial paralysis of the throat and tongue muscles. It also developed a whining cry which became almost continuous, especially at night. It

FIG. 2.—Portion of section shown in Fig. 1.—Higher magnification (400) of area of anterior horn. (Photograph reduced one-half.) See description under Fig. 1.

was chloroformed after having been under observation fifteen days.

On May 1 a three-year-old collie (the McCormack dog) came under observation. It manifested fever and complete paraplegia. This dog, the owner stated, had never been off his premises except on a leash. The owner's wife said she thought the dog had contracted his disease from her, since she had just previously suffered from a severe pharyngitis, and had fondled the animal a great deal. This dog was nursed for a while and then destroyed.

On May 10 the Robbins dog, a two-year-old mongrel, developed fever and paraplegia, and was chloroformed a few days later.

On May 15 the Molius dog, a four-year-old mongrel, showed the same symptoms, and was likewise chloroformed.

All of the above animals, except the Robbins dog, lived within distances which would have allowed contact, although there was no history of such. Of

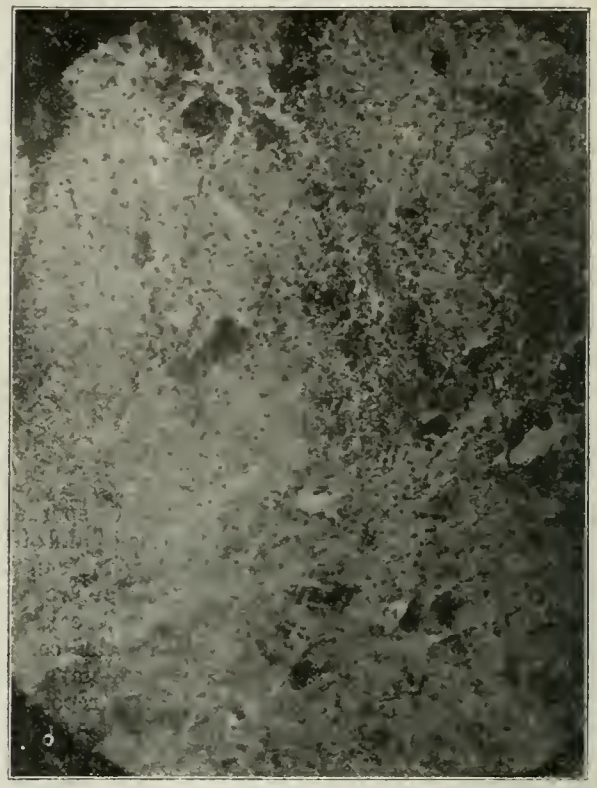

FIG. 3.—Section of upper lumbar cord from first Ostrander dog—region of anterior horn. Stained with hæmatoxylin—eosin, magnification, 400. (Photograph reduced one-half.) Central canal shown to right. The transversely cut blood vessel, and its branch running downward, in upper left hand corner of pictures show particularly well the specific perivascular infiltration

FIG. 4.—Photograph of brain of second Ostrander dog—collie pup—showing congestion of superficial vessels (specimen had been in formalin for some time before it was photographed, and vessels are much less prominent than when fresh).

course, the collie mother and her pup were in intimate contact (in the Ostrander household). In this last family there was an adult male collie, the sire of the pup, that escaped without sign of illness.

The above seven dogs were all that came under

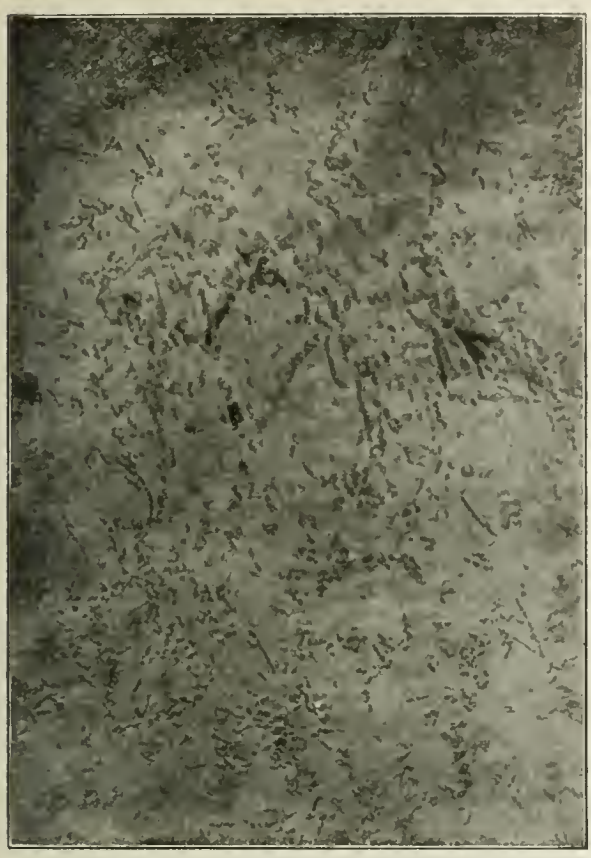

Fig. 5.—Microphotograph of bacillus isolated from brains and cords of dogs; and which was used in inoculation of dog of which a section of spinal cord is shown in the next figure—Fig. 6. Smear stained by Gram's method, counterstained with eosin. Magnification 1500. (Photograph reduced one-half.)

direct observation, but several others, evidently paralyzed, were seen in yards, and still others were reported to be suffering from the condition.*

During the extensive prevalence of poliomyelitis among the human population in this city in 1916, Dr. Johnson did not note any similar cases among the canine pets of Jamaica.

Pathology of Cases.—The first autopsy was performed on the adult Ostrander dog, immediately after the animal was chloroformed, in the Queensboro Hospital by Dr. Abramson. The meninges and superficial vessels of cord and brain appeared congested and the gray matter of the cerebrum softer than normal. Sections of the cord showed perivascular infiltration with leucocytes, which was particularly marked in the gray matter. Some of the nerve cells of the anterior columns could be seen (under high magnification) to be degenerated. (See photomicrographs.)

Autopsy on the puppy of the above showed intense congestion of the superficial vessels of brain and upper cord. Some of the superficial vessels of the cerebrum had given rise to a number of small hemorrhages, while the lumbar cord was purple, evidently from hemorrhagic extravasations which had taken place into its substance. A photograph of the brain of this dog and a microphotograph of a section of the cord from the same are reproduced herewith.

Autopsy on the Molius dog showed slight congestion of superficial vessels of brain and cord. Sections of the cord of this dog showed very markedly the perivascular infiltration and gray matter involvement so typical of human poliomyelitis (see microphotograph).

Bacteriology.—From cords and brains of all three animals a usually Gram-negative, pleomorphic bacillus was isolated—in pure culture from the first and the third. From the second a Gram-positive coccus was also obtained. This latter was later proved not to be what we may call a "fixed" coccus since, on extended cultivation, it developed into the bacillus described. A microphotograph of the pleomorphic bacillus is reproduced herewith.

A young dog inoculated intravenously with 0.25 c.c. of a fluid culture (serum-bouillon-limewater) of the pleomorphic bacillus, repeated on each of four successive days, developed the typical symptoms

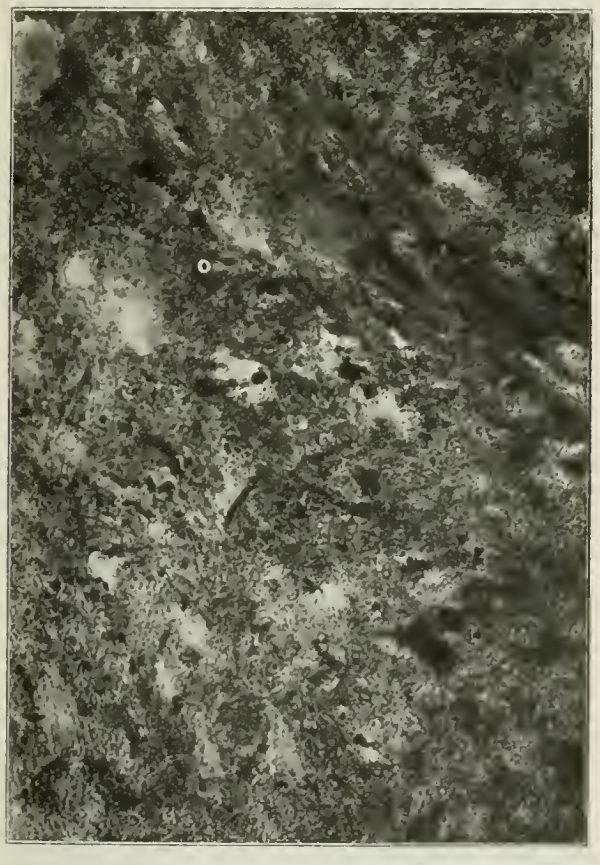

Fig. 6.—Microphotograph of section of cord (region of anterior horn) from dog inoculated with the bacillus isolated from the paralyzed dogs. Stained with hæmatoxylin and eosin. Magnification, 400. (Photograph reduced one-half.)

(paraplegia and fever) and lesions (see microphotograph of section of cord).

The shape of the bacillus varies greatly from a short coccus-like form to a bipolar bacillus. When the poles are well developed they are Gram-positive.

*The number of collies attacked in this series recalls the epidemic, apparently of poliomyelitis, reported among Esquimo dogs, very near relatives of the collies, by Pierson (*J. A. M. A.* Feb. 28, 1914). This may indicate a greater susceptibility of these dogs to the specific paralysis.

The organism is motile and has a single flagellum.

The organism will grow for generations on solidified Loeffler's blood serum, as a Gram-negative pleomorphic bacillus. It, however, tends to develop into a bipolarly Gram-positive bacillus which, when vigorous growth has been attained, will liquefy the solidified serum, at the same time showing as an involuted form from which the polar bodies break out.

It may be grown on plain nutrient agar and in bouillon, but replants from one medium to another often fail.

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161 Willett Court, Jamaica.

PARTIAL THYROIDECTOMY.*

AN OPERATION FOR TRANSPLANTING AND ANCHORING THE REMAINING LOBES OF THE THYROID GLAND.

By ERNEST V. HUBBARD, M.A., M.D.,
NEW YORK.

The following detailed account of the technique of an operation for partial thyroidectomy is offered in the hope that better results than those heretofore attained may be achieved from the patient's point of view.

In the removal of the distressing deformity known as goiter it has seemed for some years to the writer that more could be done than to obliterate pressure symptoms and avoid the possible later oncoming exophthalmic goiter.

As will be remarked in the course of the following article, it would seem, among patients who are still young women—and sometimes in older ones, too, deliverance from deformity means almost if not quite as much as lost goiter symptoms. The technique here offered has been given a very considerable, patient trial in some thirty cases. The

Fig. 1.—Case I, one year after operation.

writer will be pardoned for attention to minute, seemingly elementary, details of operation and management, as he is firmly of the opinion that the desired results can be obtained only through strict adherence to the rules laid down.

Granted that an operation is desirable, the following is the method I have employed, with, I trust,

Fig. 2.—Case II, six weeks after operation.

satisfaction to my patients, and I know to myself.

It is preferable for the patient to enter the hospital one or two days before operation. The preparation consists in a soap suds enema the night previous to operation, a second the following morning; diet as usual until the day of operation; no food whatever on this day, and a restricted supply of water.

It is advisable to give the operative area a thorough scrubbing with tincture of green soap washed off with alcohol, a sterile dry dressing being then applied closely to the neck, and allowed to remain untouched until the time of operation, when the surface is painted with a 3 per cent. solution of iodine in alcohol, allowed to dry, and repeated once or twice. Forty-five minutes before entering the operating room, it matters not what form of anesthesia has been chosen, a hypodermatic injection, containing morphine sulphate ¼ grain and atropine sulphate 1/100 grain, limits very considerably the time required to yield to a general or local anesthetic. In young patients from 16 to 20 years, and in frail, lightly built, undersized women, the formula should be halved and is sufficient.

The choice of the anesthetic depends on a number of factors. In patients of high-strung, apprehensive temperament, I believe the use of local anesthetics should be abandoned, as the shock at the time of operation more than counterbalances the greatly diminished postoperative shock and excitement. In patients of a reasonable, self-controlled, quiet disposition, local anesthesia is much preferable to gas-ether or chloroform, and this for two reasons. First, local anesthesia enables the surgeon to talk with his patient while operating, and thus immediately warns him of dangerous interference with the recurrent laryngeal nerve, and

*A thesis presented for election to the American Laryngological, Rhinological, and Otological Society, June 1, 1917.

avoids postoperative vocal cord paresis (nerve bruised), or paralysis (nerve permanently damaged or severed). Secondly, postoperative recovery is amazingly shortened through the use of local anesthesia. Ten days to a fortnight in bed I have fre-

Fig. 3.—Case III before operation.

quently seen reduced to 48 hours. If a local anesthetic is used, cocaine hydrochlorate, 2 per cent. solution, is ample. A towel lightly folded, or soft gauze should be laid across the patient's eyes.

Punctures are made along the line of the proposed incision at intervals of one centimeter, superficially, into the true skin. Sufficient time having elapsed to render the skin insensitive—usually from 10 to 20 minutes—the incision is made. From this time on, during the operation, 1 or 2 per cent. of cocaine is injected deeper and deeper into the tissues. As the operative field becomes painful, I have found that from four to six hypodermatic syringes, containing 30 minims each of a 1 or 2 per cent. solution of cocaine, sufficient for the entire operation. Adrenalin chloride, liberally applied, works admirably to check the milder hemorrhages. It is sometimes convenient to use a solution of 1 per cent. cocaine in adrenalin chloride solution 1 to 1000. Swabbing of the surface with adrenalin, or laying a pledget of surgical cotton moistened with adrenalin for a few moments on the bleeding surface often does very well. Instead of cocaine, and used precisely in the same way, I have had very satisfactory results with a 1 per cent. solution of novocain, or a 1 to 10,000 solution of beta eucaine. These two latter can be used practically ad libitum. I think they are not as reliable in their anesthetic effects as cocaine, but are seemingly harmless.

Reference has been made to conversation with the patient during operation. Far from resenting small talk, patients seem to welcome it, as it keeps the mind more or less diverted, and as I have said, acts as an invaluable danger signal. The onset of quavering or weakening voice is a sufficient warning of impending danger to the laryngeal nerve supply. If there were no other advantages whatever in a local anesthetic, I have found this one acting as a safeguard against accidental nerve severing, as determining its choice wherever feasible.

If a general anesthetic must be used, gas-ether is preferable to chloroform on the same grounds as in other operations, unless there be marked complicating pulmonary or renal disease. The scant margin of safety in chloroform anesthesia applies here as elsewhere, especially if the patient have either true heart disease, tachycardia, or high blood pressure.

Moderate extension of the neck is helpful, using a sandbag or folded sheet under the shoulders.

Formerly a vertical incision at the center of the neck was used. Professor Kocher introduced the crescentic, more or less horizontal incision corresponding with the natural neck creases. The ends of the crescent are cephalad. A good working rule is to place the center of the crescent over the most prominent point of the goiter. The incision should be about one centimeter shorter on each end than the apparent size of the growth. It is obvious that the smaller the incision the less the scar. Enlargement of the field can be had at any time when it is found necessary, continuing the line already made in either direction, and this is best done with blunt scissors curved on the flat. It is well to bear in mind that the apparent and the real size of the goiter are two very different things. One which appears to be as large as an ordinary peach, when the neck is opened may be found double this size, the part felt being superficial, and the larger

Fig. 4.—Case III after operation.

growth extending antero-posteriorly. Subcutaneous tissues are divided with Mayo's scissors until the underlying muscle field is reached. From this point on, anatomical landmarks are very likely to be displaced or obliterated. The surgeon must be guided

by the character of the tissues he encounters. Where a large goiter has for a long period pressed upon the overlying sternohyoid and sternothyroid muscles, I have found them displaced, greatly thinned, and hardly recognizable. The overlying

Fig. 5.—Case IV, six months after operation.

platysma myoides may have disappeared altogether. After the preliminary incision, further separation of tissues should be carried on in a vertical plane. Much can be done with the blunt end of a scalpel, a blunt curved tonsil separator, or perhaps best of all the index finger. The original incision is caused to gape by blunt retractors in the hands of assistants. Milder hemorrhages are controlled with adrenalin as I have indicated, cut arteries are clamped and tied. If one hold to the middle line as far as can be determined, between the sternohyoid muscles, and the separation is kept vertical, danger of severe hemorrhage is practically nil. Having passed the muscle planes, areolar tissue is easily broken through with the finger, and the capsule of the thyroid gland comes into view, of a greyish color. Enlarged veins lying on the capsule must be tied off and severed before opening the capsule vertically.

If the goiter cannot be enucleated through the incision already made, before lengthening the latter, determine whether the sternomastoid on one side or both is not overlapping and binding fast the growth. Often this is the case, and a horizontal nick, one-half to one centimeter long, into the muscle tissue removes the obstruction. Such small muscle incisions do not require suturing.

Some few minutes added to the "operating time," of which many surgeons are so fearful, are more than compensated for by the absence of postoperative hyperthyroidism, directly brought about by over-zealous manipulation of the thyroid gland, with a resulting squeezing out of its contents into the wound and absorption into the general circulation.

One or two fingers are slipped inside the capsule, their palmar surface toward the gland, and are gently coaxed behind the portion to be removed. This is lifted free of the wound, and with some blunt instrument an interlobar separation is effected. A slight cauterization will check any hemorrhage if the separation is made between lobes. The capsule itself, and the goiter as far as possible, should be handled only with mouse-tooth forceps and artery clamps.

Incision is now made vertically through the capsule, and the goiter appears. It is highly important not to damage the capsule, because the thyroid arteries and veins are spread upon it. The accident of tremendous hemorrhage and very probable death can thus be avoided, because the vessels entering the thyroid gland proper are much diminished in size. I have removed many goiters without being obliged to tie a single artery directly entering the goiter.

If in the blunt separation described, a vessel should be torn, it should be tied off before proceeding further. The capsule is to be left in situ. By intracapsular enucleation, the parathyroids lying at the four "corners" of the thyroid, remain unscathed.

The procedure now differs, depending on how much of the thyroid gland is to be removed. Only extreme cases of goiter warrant an entire removal, involving lifelong exhibition of thyroid extract. It is astonishing how small a remnant of thyroid tissue, if functioning, will furnish sufficient secretion to prevent myxedema. In a large majority of cases the removal of the right or left lateral lobe, which ever is the larger, and perhaps the isthmus and pyramidal lobe, is sufficient. When the remaining lobe still bulks large enough to cause further trouble, such a proportion as seems desirable can be cut

Fig. 6—Case V, showing scar following former operation.

away with a sharp scalpel. In every operation for goiter, in view of possible hemorrhage over a broad surface of torn gland tissue, a Paquelin cautery should be at hand for immediate use. A flat tip, heated dull red, lightly brushed across the bleeding

surface, will immediately check the hemorrhage.

The remaining technique of partial removal of the thyroid gland is offered as the writer's contribution to an improved appearance for the patient in later years. While, surgically speaking, a deformed neck is of comparatively small importance, symmetry means much to the average young woman in whom this malady occurs.

The old method, from this point on, has been to check all hemorrhage, close the wound with sutures, finishing the operation, and leaving a considerable mound, flanked by an equally considerable valley in the neck. It is said that these deformities correct themselves in course of time, I have not found this to be the case. Patients object to being saddled with another deformity, an asymmetrical neck, in exchange for the original tumor. This can be avoided wholly, and a pleasing neck contour obtained, by transposing and anchoring the remaining lobe as follows:

Great care must be taken to free from its bed the lobe to be transposed. As above described, the index finger works its way behind the lobe until the

FIG. 7.—Case V, six months after second operation.

latter is entirely separated from the capsule. Any hemorrhage is to be stopped before proceeding further. At this stage a liberal use of hot saline solution is usually very effective in checking hemorrhage. The lobe is now grasped lightly with artery clamps, taking hold somewhat to the rear of the mass on its external side, and rolling it over slightly beyond the mid-vertical line of the neck. A full crescentric needle, threaded with No. 2 chromicized 10-day catgut, is sunk deeply, not less than one centimeter, into the tissue and drawn through. The needle is then passed through the sternomastoid muscle on the side *opposite* the original bed of the lobe to be anchored. Removing the needle, the gut is drawn tight, bringing into closest apposition muscle and gland tissue, and the suture is tied securely. From four to six such sutures are sufficient.

It will be observed that one gives no further consideration to the glad capsule; it has dropped out of sight and need cause no further concern. There should now be a careful scrutiny of the whole operated field, to detect and stop any possible capillary hemorrhage. Hot saline scolution is again desirable, the wound thereafter being gently and thoroughly dried. The success of the anchoring and of the closure of the wound without drainage depends on these latter points. The skin incision is closed by a continuous subcutaneous suture of No. 1 simple catgut, the needle being introduced at half centimeter intervals. Aristol is freely sprinkled, and a gauze dressing with a liberal use of cotton follows. A double spica bandage should be applied tightly for the first 24 hours to keep all the sutures safe from injury due to restlessness. The patient is put to bed without pillows, and sufficient morphine should be given to insure quiet. Such patients deserve the luxury of a quiet ward if possible. Water, hot or cold, a teaspoonful at a time may be given after 6 hours whenever desired. On recovering consciousness, in cases where general anaesthesia has been used, the nurse must see that the patient make no effort to speak, until 24 hours have elapsed. Pain in the throat, due to vibration of the vocal cords is thus avoided. The nurse can ask the patient about her needs.

The day following operation, outer dressings are removed, a corner of the gauze is lifted with forceps, and the wound is exposed for inspection. If there is no puffiness or exudation, the gauze is replaced with a smaller quantity of cotton, and an ordinary neck bandage is applied more loosely. If there be oozing or puffing, and tension indicating a collection of serum within the cavity, it is necessary to insert a drain. For this purpose a small caliber soft rubber catheter, held in a bayonet forceps, is slipped between the lips of the wound, care being taken not to damage the suture, and the tip of the catheter is carried down to the bottom of the cavity, a distance of 4 to 6 centimeters or more. Two or three lateral holes should be cut in the catheter in the usual way. A safety pin through the protruding end of the catheter prevents its possible loss in the interior. The point chosen for the introduction of the catheter through the wound is usually on the side from which the lobe has been removed, and close to the end of the skin incision. Fluff gauze is laid over the catheter end, and the dressing is then to be completed.

Each day the wound should be examined, but remain untouched, unless the above complication presents itself, when drainage should be instituted as described. If one can obtain primary union, avoiding a drain, an added widening of the scar is escaped. If a drain is introduced at any time, it should be removed daily, cleansed, shortened and replaced until further need of it ceases. Left in place too long, it will cause a fibrous-walled sinus, rather permanent in character, which it is difficult to get rid of except by extirpation. Therefore, it is safer to remove the drain too soon than too late, for it can always be replaced if the need arises. Patients are permitted to speak a few words after the first day. On the second day, patients are usually given one pillow, on the fourth or fifth day all dressings are removed permanently in cases of primary union, and sitting upright in bed is allowed. At the end of a week the patient should be out of bed.

The diet during this period, after the first 12 hours, when all effects of anaesthesia have disap-

peared, consists of small quantities of fluids at frequent intervals, gradually returning to full diet as the pain on swallowing subsides.

A temperature of 100° or 101° Fahr. is to be expected for the first one or two days, when the fever should cease. Other symptoms occurring during operation and after, are better considered as complications.

Complications to be borne in mind are those occurring during operation, and those postoperative conditions appearing in a few hours or days.

Sudden death from heart failure may occur. Safety requires that every patient to be operated on for goiter, should have an *x*-ray picture of the neck and upper half of the thoracic cavity, to determine the possible persistence in adult life of a thymus gland. A shadow revealing a persistent thymus is, I believe, absolute contraindication to operation. Sudden death may also occur from uncontrollable hemorrhage and shock. When the goiter is a part of a general Graves' disease, the danger from sudden death during operation is very much greater.

Perforation of the trachea is an unfortunate accident due to strong adhesion between the tracheal rings and the thyroid gland tissue, added to unwarranted vigorous manipulation on the part of the surgeon. It can be avoided when the gland does not separate with moderate traction, by cutting out with blunt scissors, a small nodule from the gland, and leaving the small piece adhering to the trachea. This remaining portion, not larger than an ordinary raspberry, will include the involved portion of the trachea. If by chance, perforation does take place, passage of air, whistling through the wound informs the surgeon of what has happened. Drying of the surrounding surfaces to prevent the entrance of blood should be immediately resorted to. Perforations having a diameter less than a split pea will take care of themselves. In several instances among the writer's cases, such small perforations have spontaneously healed, the patients coughing for a day or two, and occasionally raising a small quantity of pink-stained (blood) sputum. Keeping the patient elevated, head somewhat lower than the feet, is an added precautionary measure in this complication. If the perforation be larger than above described, suturing of the tracheal wound is indicated. This larger damaging of the trachea has fortunately never occurred to me.

Where a goiter of large size has pressed for a long period on the trachea as will have been indicated often by dyspnea and dysphagia previous to operation, collapse of the trachea to a greater or lesser degree may follow the lifting out of the offending gland. This is a rare complication. Minor degrees can take care of themselves, the flattened and partially collapsed trachea will regain its tone and shape in a few days, sufficient air space being present meanwhile for respiration.

Larger degrees of collapse of the trachea causing obstructed breathing require immediate tracheotomy, provision for which should always be at hand. Removal of the tracheotomy tube later, when the tracheal tissues have somewhat regained their tone, follows, and the subsequent treatment of the wound is on the lines laid down above.

Bruising of the recurrent laryngeal nerves will cause either paresis, or, if sufficiently severe, paralysis of the vocal cord of the corresponding side. Above is indicated the method, where local anaesthesia can be employed, of avoiding this accident. There is, however, no cause for alarm where the degree of paresis is mild. For the first few days after operation the voice remains very hoarse and feeble. Gradually its normal tone and strength return, sometimes requiring two or three months. The use of electricity over the damaged nerve has not, in my hands, hastened voice restoration. If a recurrent laryngeal nerve has been unfortunately severed, unless the ends can be recovered and sutured, of course permanent paralysis of the involved vocal cord follows. Patients submitted for examination with a severe postoperative paresis, however, and not expected to recover a well functioning vocal cord, have regain a satisfactory voice in the course of months. It is possible that in these severer pareses, hypodermatic injections of strychnine into the neck may be of service. Sometimes one sees an hysterical aphonia which must be distinguished from the above conditions as a matter of diagnosis; this complication undergoes spontaneous disappearance in a few days.

The symptom-complex known as acute hyperthyroidism, due, as has been stated above, to absorption of an excessive amount of thyroid secretion during operation, is an alarming condition. Profound unrest, jactitation, air hunger, intense nervous excitement, marked dysphagia and thirst, small rapid pulse of high tension, resembling that of severe peritonitis, with 3 to 5 degrees of fever, constitute a complication lasting from 12 to 48 hours or longer, and after a few days death may ensue, with mounting temperature, reminding one of fatal insolation.

On the other hand, lesser degrees of acute hyperthyroidism make a satisfactory recovery, the symptoms entirely disappearing. Morphine for these patients is most helpful in such quantities as are needful to sedate the nervous system. In spite of all precaution there is occasionally a grave postoperative hemorrhage which may fill completely the cavity in the neck, causing bulging and simulating the shape of the neck prior to operation. The indication is obvious. The wound must be reopened and the bleeding points found and stopped. This complication may occur even 24 hours after operation; therefore it is well to keep a sharp watch on the patient's pulse and general condition. If the hemorrhage has gone far enough the resulting shock and collapse are inevitable, and are to be combated by the usual surgical measures. Detected in time, the danger should be avoided. As is readily seen, much depends on having a nurse who is alert.

As time has passed there has come added knowledge of the conditions to be met, together with improved methods in the treatment of complications, as well as in the technique of the operation itself, and the mortality in partial thyroidectomy has proportionately decreased. In the last thirty such operations I have been fortunate, having to record no deaths. It is but fair to add that all of these were simple goiters, exophthalmic goiters being reserved for another paper.

Reference to the accompanying photographs of

a few of the patients who have undergone the operation above described, will give some idea of the cosmetic results.

CASE I.—Miss A., 18 years old, simple goiter, left lobe, size of an orange. For 3 months slowly improving and finally vanishing paresis left vocal cord. Left hospital in 10 days. Photograph 1 year after operation.

CASE II.—Miss B., 25 years old, colored, large goiter the size of a medium grape fruit, left lobe. No postoperative paresis. Uneventful recovery, left hospital on sixth day. Photograph 6 weeks after operation. Seen 4 months subsequently, the wound visible in the photograph had almost entirely disappeared; there is no keloid.

CASE III.—Mrs. C., 45 years old, large, centrally placed goiter, chiefly of the right lobe, which was removed. Recovery uneventful, no complicating symptoms, left hospital in 10 days.

CASE IV.—Miss D., 21 years old, large goiter, right lobe, of several years' duration, interfering with phonation, and causing a hoarse voice. Removal of right lobe. Uneventful recovery, except increased hoarseness for one month. Left hospital in two weeks. When seen six months later, voice was normal. Scar almost invisible.

CASE V.—Mrs. E., 37 years old. Gave history of *seven* attempts to remove the goiter. Fig. 6 shows scar and sinus following previous operations. A medium sized goiter found at operation, neither lateral lobe of the thyroid having been removed previously; left lobe found considerably enlarged and removed. Fibrous walled sinus extirpated. Incision made along the line of the old citatrix, and all fibrous tissue dissected away. Skin surface cut to make a close adjustment when sutured. Uneventful recovery; left hospital in a fortnight. Fig. 7 shows results six months after operation.

My grateful thanks are due to my chief, Dr. Lewis A. Coffin, and the members of the assistant staff of the Manhattan, Eye, Ear and Throat Hospital, for referring many patients to me suffering from goiter, and aiding me with their cooperation and advice.

17 EAST 38TH ST.

RESULTS OF TREATMENT OF TUBERCULOSIS BY MEANS OF A BACILLUS-DESTROYING COMPOUND.

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NEW YORK.

FIRST LIEUTENANT M. O. R. C., U. S. ARMY.

FOLLOWING close upon Koch's discovery of the tubercle bacillus many attempts were made to find some method of destroying the bacillus without injuring the somatic cells of the host. At that time relatively little was known of the other forms of tuberculosis, such as joint, kidney, bladder and intestinal types, hence the pulmonary type was chiefly studied and conclusions derived therefrom. An enormous number of drugs intended to act as tuberclecides were exhibited by mouth, but the gastric and general constitutional symptoms were so disturbing that nothing was gained thereby, and in many cases actual harm was done.

In recent years the quest for a "direct agent" has been fairly abandoned except in the fields of organotherapy and direct tuberculin therapy, which have been tilled with rather indifferent success. For these reasons, therefore, the most determined efforts of late have been directed against tuberculosis by increasing the body resistance, the inherent fighting power, to the maximum, and thus helping the body economy to a determined intramural struggle, so to speak, against a desperate and strongly intrenched enemy. Direct attack upon the nidus of infection has been chiefly surgical and has been limited to the relief of advanced cases for the most part, *i.e.* advanced pulmonary, advanced joint, and advanced kidney and intestinal types, the so-called surgical tuberculosis.

Doubtless many cases of incipient tuberculosis have been arrested or even permanently cured by climatic and dietetic regimen, especially where the general body resistance was already good; but it is also more than probable that a much larger number have gone on to fatal issue. The problem in the last analysis resolves itself into the question of how to kill the causative agent, the tubercle bacillus, with the least harm to the patient and in the shortest span of time.

While much has been written about the weapons we must invent and apply to destroy the tubercle bacillus, very little has been said as to those agencies which the bacillus uses to protect itself against onslaught. It is notorious that the body sites, lungs, kidneys, etc., are the favorite habitat of the tubercle bacillus. Is this possibly because of the inaccessibility of these organs to the action of bactericidal substances which might come in from the outer world? *It needs to be emphasized that the tubercle bacillus is an encapsulated organism encased in a lipoid envelope which strongly resists bactericidal and bacteriolytic substances; and, in the main, substances which proved effective in breaking through this fat capsule were, unfortunately, also active enough to destroy adjacent body cells.** With this in view, therefore, the problem becomes highly experimental in the search for that agent which will destroy the enemy without destroying his habitat to any appreciable degree, or at least to make spontaneous regeneration of normal tissue quickly possible after the battle has been won by conservative forces.

To this end a happy combination has seemingly been found in the use of two drugs which we have been employing for the past five years in tuberculosis not only of the pulmonary type, but of all other types as well. The value of this combination lies in its power to bring about a chemical disintegration of the lipoid envelope of the tubercle bacillus and its ultimate destruction. These drugs are echinacea angustifolia and inula helenium, both described in the American Dispensatory. The following epitome identifies the action of each:

Echinacea. In its physiological action, echinacea produces a feeling of intoxication, flashes of heat, headaches of a dull character, dull muscular pains, subnormal pulse and temperature, cold and numb extremities, and increase in the specific gravity of the urine. All these symptoms pass off gradually within a few hours, showing that the drug has no continuing detrimental or toxic effects. Deaths from overdoses, however large, have never occurred.

Therapeutic action. Echinacea produces direct stimulation of the catabolic processes, increase in glandular activity, and increase in the flow of saliva,

*Many of the text-books make no mention of this capsule. Park and Williams, however, in their work on "Pathogenic Microorganisms" (Lea & Febiger, 1914) say, page 389: "The bacilli have a thin capsule, shown in one way by the fact that they appear thicker when stained with fuchsin than with methylene blue."

sweat, and urine. It thus antagonizes all septic processes and facilitates the elimination of toxins from the organism.

Our laboratory researches, conducted for a period of over four years, have shown that echinacea raises the opsonic index, increases the phagocytic power of the leucocytes, and effects a shift to the right and normal in the neutrophiles ("Arneth count"), where a shift to the left had previously obtained. The leucocytes are directly stimulated by echinacea, their activity is increased, the percentage among the different classes of neutrophiles is rendered normal, and phagocytosis is thus raised to its highest protective capacity. Over 500 differential and Arneth counts were made from which the conclusions here set down were derived. Echinacea produces in the blood effects parallel with and similar to those produced by vaccines, without any of the objectionable features of the latter. Hyperleucocytosis and leucopenia are directly improved by echinacea; the proportion of white to red cells is rendered normal, as is the percentage among neutrophiles; and phagocytosis becomes very evident where formerly no sign of it could be detected under the microscope. As many as eight bacilli enclosed within one phagocyte were repeatedly counted, and this in cases where at the beginning of treatment the third class of neutrophiles had been from ten to twenty per cent. less than the second class. By favorably influencing phagocytosis the number of bacilli is also diminished.

Inula.—English and German investigators have for many years studied this drug in its active principle, inulin or helenin. The consensus of opinion among them is that the drug is of more value in treating tuberculosis than creosote preparations, but that it is extremely difficult to extract the active principle and keep it stable in the atmospheric air. A solution of 1:10,000 of helenin will inhibit the growth of a tubercle bacillus culture, the investigators report. The researches were finally abandoned because of the extreme difficulty in maintaining the chemcial stability of this substance. This fact led me to attempt to obtain a fluid preparation which should carry the active principle in a stable form.

In its physiological action, when given in overdoses, inula produces extreme dryness of mouth, pharynx and trachea, increased peristalsis with lumbar pain, much urging to urinate with scant results, nausea, and vertigo.

In therapeutic doses the action of the drug produces a stopping of night sweats, first increases and then decreases cough and expectoration, and *exerts a direct destructive action upon the tubercle bacillus.* This action upon the bacillus is evidenced by dissolution of the lipoid sheath of the bacillus which is gradually lost in consequence of the probable chemical action of inula upon this lipoid sheath; the sheath is dissolved, or disintegrates, and the granules of the bacillus are thus laid open to destruction by the defensive lysins of the body. The chemical action of inula upon the lipoid sheath is as yet not fully understood. We must for the present be satisfied with the fact that such direct action does take place. It remains for some astute chemist to determine the nature of the action of this and other drugs, such as quinine, upon microorganisms.

Laboratory. More than 2,000 sputa were examined microscopically by Dr. T. S. Schlauch and tubercle bacilli were studied both before and after the exhibition of inula. Intravenous or intramuscular administration of this drug proved that great numbers of tubercle bacilli undergo progressive destruction and annihilation. There is at first a steady, more or less speedy, decrease in the number of bacilli in a given sputum. The bacilli swell up, become thick, heavy, and granular and then appear to undergo fragmentation, only part of the lipoid sheath remaining. Finally they disintegrate until mere dots or beads, the well-known "Much's granules," are seen, and these ultimately disappear also. *These fragments or beads do not stain readily; and the usual sporoid forms show no tendency to further proliferation.* The process of destruction of the bacilli is in proportion to the severity or extension of the infection in each case.

The compound of these two drugs is a colloidal fluid preparation, containing no free alcohol, made after the original formula of Von Unruh.* In 3 c.c. of the compound inula represents 1.33 c.c. and echinacea 1.0 c.c. The compound is administered by intravenous or intramuscular injections. Intramuscular injections are given daily into the glutei or infrascapular muscles as frequently as is tolerated, each injection carrying from 3 to 8 c.c. of the compound. Intravenous injections carry from 10 to 30 c.c. of this compound, undiluted, and are given into the veins of the elbow or those of the ankle three times a week.

The compound used in this manner is absolutely non-toxic. Dilutions of the compound, 1:1,000 in distilled water, will inhibit the growth and render sterile cultures of tubercle bacilli. Inoculations of guinea pigs with cultures thus treated proved negative in every case, twenty-five animals having been used.

Reactions from the compound. (*a*) *Immediate:* Upon intravenous injections there is at once an acceleration of the respiratory rate lasting for about five minutes; also an acceleration of the pulse rate by about fifteen beats per minute; and next a rise of temperature of about one-half degree. There is also more or less pronounced flushing of the face extending to scalp and neck, and lasting for about five minutes. After intramuscular injections these symptoms are much less pronounced, though in more susceptible patients they may resemble the phenomena following intravenous injections.

(*b*) *Subsequent reactions:* In all cases intravenous injections of the compound produce increased cough and copious expectoration, which may continue for several hours, whereupon the patient feels unusually free and comfortable.

(*c*) *General untoward reactions:* These have been observed only in cases of profound systemic tuberculous intoxication, cases that are classed as far advanced. The compound will set free toxins, and so must be used with discrimination. The untoward reactions include rise of temperature of more than one degree, and the establishment of characteristic

*It seems no more than just to give full credit to the assistance of Prof. John Uri Lloyd of Cincinnati who has done a vast amount of research upon drug plants for the U. S. Government. Prof. Lloyd has been untiring in his efforts to render the I-E compound pure and stable. Indebtedness to him is hereby acknowledged.

afternoon rises in cases which have been free from these before. Further untoward effects are extreme dryness of the air passages, swelling of lips and forehead, itching and redness of the whole body surface, and most profuse cough and expectoration lasting for hours, followed by extreme exhaustion. Patients manifesting these symptoms should not receive further injections of the compound.

Animal Experiments. In a parasitic disease such as tuberculosis the host himself is not as important a factor in the study of any specific therapeutic agent as is the specific organism itself. If by our therapy this organism is destroyed or eliminated from the body of the host then we have reason to believe that we have a specific agent against that microorganism. We inoculated fifteen guinea pigs with tuberculous sputum, keeping back five others as controls. Of the fifteen animals inoculated fourteen showed the characteristic symptoms of tuberculosis. An arrest of the disease was attained in ten of the fourteen infected animals treated by injections with the compound, the dose varying between 2 and 5 c.c. for each injection. The four remaining animals died. The charts of these experiments are too lengthy to be incorporated herewith, but can be produced. Moreover, any investigator can easily duplicate these results by his experiments.

Number treated: More than two hundred cases of tuberculosis have been treated up to the present time with this compound. Of this number 150 were treated by us, the rest by other physicians in all parts of the United States. Of four glandular cases two were arrested. while two showed no improvement. In incipient pulmonary cases 100 per cent. of recoveries was obtained. Some of these required only from two to four weeks of treatment, while in others it was necessary to continue treatment for two to four months before arrest of the disease was accomplished. Of moderately advanced cases about 50 per cent. were arrested when their general intoxication was not too profound. Profoundly intoxicated cases and far advanced cases did not yield any results by this method.

Complications: Many pulmonary cases were complicated by lupus erythematosus, involvement of the genitourinary tract, influenza, etc. Some cases showing rapid or widespread progress, or those with constant and grave dyspnea were benefited, while in others of this type no improvement was observed. Far advanced cases with a continuous fever will not be improved by this method.

Time required: In cases deemed curable by present-day methods, arrests of the disease have been obtained by us in from four weeks to eighteen months. With a few exceptions these cases were ambulatory; they were not held to a special diet. Several of our cases had previously been treated by other methods without result. Some of these showed improvement and arrest after treatment with the compound, while others were not benefited.

Effect of the Compound Upon Symptoms and Signs. Night sweats, in the majority of cases, were controlled with comparative ease. In cases where the injections did not stop the sweats we have given the specific inula in fifteen drop doses by mouth, four to six times a day. In particularly obstinate cases of night sweats neither this nor any other of the usual remedies were of any avail.

Hemoptyses appear to be favorably influenced by the compound. Of our cases sixty-five had had hemorrhages before treatment; only three of these suffered further hemorrhages, in the other sixty-two no further hemorrhages occurred.

The cough is at first increased after injections, but within a week or two both cough and expectoration are materially diminished, and the sputum begins to show a distinct watery consistency where before treatment it had been tenacious and mucopurulent. In ordinary cases the cough is reduced to a minimum within two or three months, excessive expectoration occurring in the morning only.

In *joint and bone cases,* either with or without sinuses, the compound was applied in full strength locally. The result was a gradual healing of the sinus, leaving the joint unimpaired where its structural elements had not been destroyed. Out of four such open cases three went on to complete recovery, while the fourth proved beyond help. Over tuberculous joints without an open sinus, local applications of the compound were made, keeping the area well moistened; the result was a restoration of motion, decrease of swelling, and complete recovery of the joint. In all such cases intravenous or intramuscular injections were made at the same time.

Kidney, bladder, and testicle cases: Of such we have treated three, and other physicians report two cases. One of our cases had involvement of kidney, bladder, and testicle; the two others showed only bladder involvement. In these cases urethral and afterwards bladder irrigations were given with the diluted compound, 1 part to 3 parts of distilled water, and at the same time intravenous or intramuscular injections were administered. Of these five cases four went on to recovery, the fifth died. Cystoscopic examinations and cultures from the sediment established the existence of tubercle bacilli in each case before beginning treatment.

Acute cases: We have treated eight acute cases. In these the outbreak of acute pulmonary tuberculosis followed immediately upon attacks of bronchopneumonia. Here we obtained quick results, because the lesions were of quite recent development and the patients were not profoundly intoxicated. The action of the compound in this group was most gratifying. Of these eight cases seven went on to full recovery, the eighth patient died. In one case the compound was given for only seven weeks, resulting in complete clearing up of the lung. In the other cases treatment was continued for from three to nine months with resultant arrest of the tuberculous process. All these cases have been reexamined one, three, and four years after clinical arrest, but no relapse has taken place in them nor have any further untoward symptoms been observed.

It is not thought desirable to lengthen this paper unduly by a number of case reports; these will be made the subject of a future paper and will give all details. However, in order to show what can be accomplished with this method of treatment, we submit an abbreviated report of one rather remarkable case.

S. A. (first case). Female, Denmark, aged 21. March 12, 1912. Family history: mother died of pulmonary tuberculosis. Previous illness: bronchopneumonia at age of eight; ever-recurring attacks of bronchitis thereafter. History: At the age of ten the right

femoral lymph glands broke down; the glands of the left lower extremity followed the same course. At the age of fourteen the superficial and deep cervical glands on both sides became involved, broke down, and continued to suppurate for over four years. Cough and

Fig. 1.—Case 79. Female. Age 40. First examined April 4, 1915. Pleuritic adhesions in right midaxillary line, following two attacks of pleuro-pneumonia in 1910 and again in 1914. Dulness and rales over both apices and both upper lobes down to the level of the nipple. Sputum shows many tubercle bacilli. Both plates by the Knickerbocker Hospital. The plate taken April 12, 1915, shows many infiltrated areas in the apices and upper lobes of both lungs, also a few calcareous foci. Treatment with the compound begun.

expectoration was present at all times. The glands healed very slowly. At the age of sixteen, in 1907, she came to the United States. There was, at that time, and is now, scar tissue over the previously affected glands *in all regions* of the body. At the age of

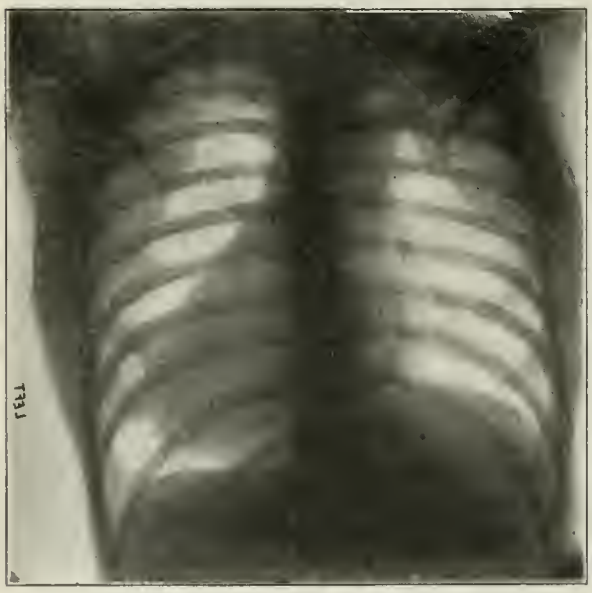

Fig. 2.—Case 79. Plate taken Sept. 21, 1915, shows both lungs fairly clear with a few additional calcareous foci. The sputum continued negative for tubercle bacilli upon repeated examination extending over a period of three months after dismissal.

twenty, in 1911, the cervical glands of both sides again became active; several of these are still open (March, 1912). At this time her right knee joint became involved, with complete loss of motion. She then went to dispensaries and clinics in this city, and finally to one of the hospitals. There she was given about sixty tuberculin injections. This was during the fall and winter of 1911-12. At the hospital her right lower extremity was put in a plaster cast, about February 25, 1912; the cast extended from just above the ankle to

Fig. 3.—Case 16. Male, age 26. First examined Nov. 8, 1913. Both lungs extensively involved, especially the left. Dulness and a few fine, crackling rales at both apices and over both upper lobes. Sputum positive for tubercle bacillus. Both plates by the late Dr. Edward Leaming, Roosevelt Hospital. The plate taken Nov. 12, 1913, shows extensive infiltration of both lungs, especially in the upper lobes. Treatment with the specific compound begun.

Fig. 4.—Case 16. Plate taken Oct. 31, 1914, shows clearing up of both lungs in a little less than one year. The peribronchial glands have undergone calcification. Sputum negative for the tubercle bacillus after repeated examinations. Patient alive and well May, 1917.

the middle of the thigh. No improvement had followed upon the tuberculin treatment. She was first seen by me on March 12, 1912. Treatment: Previous treatment of various kinds having proved unavailing, it was then decided to try the compound by injections. Her symp-

toms at the first examination were as follows: pulse, 108; temperature, 102 ; respirations, 24; night sweats present almost every night; scrofulous appearance; clubbed finger tips; constipation; scar tissue over previously suppurated glands; enormously enlarged anterior and posterior auricular glands of the right side, the posterior ones open and discharging. Smear from these showed tubercle bacilli. Right apex, dulness and moist crackling rales; cough and expectoration; sputum shows tubercle bacilli. Removing the plaster cast, the right knee was found immobile; its circumference was 6 inches larger than the sound left knee. Injections of the compound were given into the glutei muscles, on alternate sides, every day, dose from 3 to 6 c.c. There was absolutely no irritation nor any other untoward symptom in the injected areas. Over the affected knee the compound was applied full strength, on a gauze bandage, keeping this well moistened at all times; no irritation resulted. But on the fifth day the swelling seemed less hard. On the same day, March 17, 1912, the cervical glands showed decided decrease in swelling. The open sinuses of these glands had been injected with the compound, once every day, and this course was pursued until March 31, 1912, when all sinuses had closed. The cortical portions of these glands, however, remained greatly swollen, and there was never any change in this condition afterward. Microscopical examinations of the sputum were made every week. On April 25 (forty-three days after her first visit), *the sputum was found to be free from tubercle bacilli for the first time.* Subsequent weekly sputum examinations were negative. Cough is still present; expectoration in the morning only. May 21, 1912, she has gained 8 pounds in weight; weighs now 116 pounds. She sleeps well, has had no more night sweats since the second week of treatment by injections of the compound. On May 25, 1912, the right knee shows signs of returning motion, flexion and extension being possible to the extent of about 20 degrees. June 4, there being still further improvement in the motion of the knee joint, she scrubbed floors in the house of her sister, against strict orders. Has a slight hemoptysis consequent upon this undue exertion; the blood is free from tubercle bacilli. She weighs 120 pounds now. Her pulse and temperature had become normal since the third week of treatment. Slight infiltration and occasional râles continue at right apex, expectoration in the morning only. June 14, 1912, menstruation is now reestablished, there had been amenorrhea since November, 1911; she menstruates from now on regularly every twenty-eighth day. July 26, 1912, the right knee is now nearly normal in circumference; the outer bursa below the patella, however, is still swollen; motion is free and painless. From now now on injections of the compound were given only twice a week. This regimen was followed until Sept. 30, when the injections were discontinued altogether. By this time the knee was as useful as the sound left one, the bursa, before mentioned, still being swollen; no change in this condition took place hereafter. From October 1 she was given the specific inula by mouth, in 10 drop doses, four times a day, until the end of November. Her expectoration then amounted to less than one-half ounce in 24 hours, and was present only in the morning; there was no cough, the sputum being expelled by "clearing the throat." This sputum was examined under the microscope once every week, and was always free from tubercle bacilli. No infiltration being present at the right apex after December 15, her relatives took her back to Denmark about the middle of January. The only sign of disease remaining were the enlarged cervical glands; all other signs and symptoms had completely abated.

X-Ray Plates. We show four plates of two cases. In the one acute case of apparently recent origin, that of a young man, both lungs were extensively involved. After eleven months' treatment the lungs both cleared up, as shown in the plates. The second patient was a woman of forty years whose pulmonary tuberculosis was of four years' standing. She was discharged "arrested."

The *sputum reports,* mentioned under the heading of "inula," show in general that the sputum becomes negative after an average of from three to five months of treatment, unless the case be one of extreme involvement, in which instance the bacilli are completely destroyed only after a much longer time. Our sputum reports are parallel in nearly every instance with reports from local health departments, and are preserved with the full data of each case.

The general order of sequence in the *cessation of signs and symptoms* is first a reduction of temperature and pulse to normal or near-normal; next, the cough and expectoration diminish and the "Arneth count" shows return to normal. Phagocytosis is then found to be active and body weight increases. The last of all to clear up are the physical lung signs, tubercle bacilli being absent long before.

Arneth Count. As a rule, response to our method of treatment can be pretty accurately gauged by the repeated Arneth count. Whenever this count continues favorable the case will go on to recovery, unless complications intervene. Wherever there is no improvement in the Arneth count after two months of intensive treatment the case may be set down as a hopeless one. The "Arneth count" is a count of the polymorphonuclears (neutrophiles) and classifies these according to the number of nuclei they contain. Those with a single nucleus are placed in Class I, those with two in Class II, and so on. A normal count would give this approximate percentage among them: Class I, 5 per cent.; II, 35 per cent.; III, 41 per cent.; IV, 17 per cent.; V, 2 per cent. Cells of Classes I and II are younger cells and consequently not as vigorous in phagocytosis as are those of Class III, while those of Classes IV and V again are less active by reason of approaching cell division. A cell count showing the third class highest and also higher than Class I plus II, is regarded normal; a count showing the first two classes higher than the third is prognostically bad. Our studies, clinically and in the laboratory, show that even with a bad prognostic cell count the influence of the I-E compound will often reestablish a normal or nearly normal Arneth count, and raise the phagocytic index.

The table of blood examinations shows the effects of the compound upon the differential and Arneth counts. All of these were done by Dr. Schlauch.

It may be well to state here that we are not at all optimistic as to the outcome of *every* case treated under this method, especially those showing complications. We are not believers in a "consumption cure"; but we firmly believe in the discriminate medical treatment of tuberculosis. *Numerous other physicians who have used this method have reported most favorable results from it and their data are at the command of any inquirer.*

Conclusions. Our conclusions arrived at from a study of over 150 cases are as follows: The I-E compound (1) destroys tubercle bacilli; (2) increases phagocytosis; (3) favorably influences fever, reducing the temperature to normal; (4) materially asists in the elimination of toxins from the organism; (5) controls night sweats; (6) increases appetite and favors assimilation of food; (7) effects an arrest of the disease or a clinical cure in virtually all incipient cases and in about 50 per cent. of moderately advanced cases. In far advanced cases it has no appreciable effect.

BLOOD COUNT

Case R. Male.						
Feb. 21,1913	Whitecells. 6,600 Arneth count: Class	1	2	3	4	5
	Polys.....70%	8	35.9	40.5	9	2
April 12,1913	Whitecells. 7,000 Arneth count: Class	1	2	3	4	5
	Polys.....71%	5	34.5	42	17.5	1
	Small nonos..18%					
	Large monos... 6%					
	Transit..... 2%					
	Eosino..... 3%					
Oct. 30,1913	Whitecells. 7,500 Arneth count: Class	1	2	3	4	5
	Polys.....71%	5	30	44	18	3
Case X. Male.						
June 11,1913	Whitecells.18,000 Arneth count: Class	1	2	3	4	5
	Polys.....82%	10	47	33	10	0
	Small monos...11%					
	Large monos... 6%					
	Transit..... 0%					
	Eosino..... 2%					
July 18,1913	Whitecells. 8,000 Arneth count: Class	1	2	3	4	5
	Polys.....70%	6	40	43	9	2
	Small nonos...24%					
	Large monos... 4%					
	Transit..... 1%					
	Eosino..... 1%					
Nov. 9,1913	Whitecells. 7,500 Arneth count: Class	1	2	3	4	5
	Polys.....70%	5	35	42	15	3
	Small monos...21%					
	Large monos... 6%					
	Transit..... 1%					
	Eosino..... 2%					
Case Y. Female.						
Nov. 20,1913	Whitecells. 5,350 Arneth count: Class	1	2	3	4	5
	Polys.....62%	10	43	40	5	2
	Small nonos...22%					
	Large monos... 9%					
	Transit..... 2%					
	Eosino..... 5%					
Jan. 13,1914	Whitecells. 7,200 Arneth count: Class	1	2	3	4	5
	Polys.....71%	4	29	45	18.6	3.4
Case Z. Female.						
Mar. 10,1914	Whitecells. 6,500 Arneth count: Class	1	2	3	4	5
	Polys.....78%	4	44	43	9	0
	Small nonos...10%					
	Large monos... 7%					
	Transit..... 1%					
	Eosino..... 4%					
May 30,1914	Whitecells. 7,200 Arneth count: Class	1	2	3	4	5
	Polys.....71%	6	35.5	44	14.5	2

BIBLIOGRAPHY.

Münchener med. Wochenschrift, 1905, No. 9; 1912, No. 42.

Therapeutische Monatshefte, 1892, p. 145.

British Medical Journal, 1891, II, p. 838.

Merck's Bericht, 1890, p. 34.

Breslauer ärztliche Zeitschrift, 1887, No. 5.

Medizinisch-Chirurgische Rundschau, 1887, No. 8.

Pharmazeutische Zeitschrift, 1887, No. 36, p. 252.

Lancet, Korab, 1885.

M. E. Lapham: *New York Medical Journal*, September 11, 1915, "Our Present Knowledge of Tuberculosis."

D. P. Grinlew: *Archives des Sciences Biologiques*, "The Lipoids in Tuberculosis."

Arneth, J.: "Die neutrophilen weissen Blutkoerperchen in Infektions-Krankheiten," Jena, 1904.

A. Kirchenstein: Beiträge zur Klinik der Tuberkulose, "Die Entwicklung des Tuberkel Bazillus."

S. J. Maher: MEDICAL RECORD, December 27, 1913, "The Progeny of the Tubercle Bacillus."

J. Kramer: *New York Medical Journal*, June 14, 1913, "The Prognostic Value of the Arneth Count in Pulmonary Tuberculosis."

Minor and Ringer: *American Journal of the Medical Sciences*, May, 1911, "Arneth's Method of Blood Counting: Its Prognostic Value in Pulmonary Tuberculosis."

G. A. Henson: *Journal A. M. A.*, September 12, 1914, "A Study of the Arneth Formula."

S. H. Kagan: *Boston Med. and Surg. Journal*, 1910, 162, 709, "Nuclear Classification of the Neutrophile Leucocytes and Its Relation to Disease."

Gas Intoxication Syndromes.—Voivenel and Martin make three syndromes, viz.: very severe, severe and medium, and mild. The first named presents hyperacute pulmonary edema, cyanosis, rapid pulse, etc.; the second offers a less marked edema with bronchitis. The third type makes itself felt in organs of least resistance so that there are several localized types, as pulmonary, gastroenteric, and nervous, characterized respectively by tormenting cough, abdominal pains, nausea, and constipation; and headache, backache and muscular weakness.—*La Presse Médicale.*

THE VALUE OF ROENTGENOLOGY IN HEAD INJURIES.*

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It is always a satisfaction to have work associated with the neurological surgical department, for in this branch of medical science diagnosis has become most exact. Certain signs and symptoms locate a cortical lesion in a definite area; others locate it at the base, in certain nerve tracts, medulla or pons, as the case may be. It is our ambition to determine the nature of the lesion as well as its exact location.

In the last few years since the development of transformers and vacuum tubes of such quality that ready penetration of the skull by the roentgen ray has been possible, roentgen diagnosis of intracranial lesions is becoming established. We are familiar with the normal markings of the skull, such as venous channels in the diploë, the grooves for the meningeal vessels, and the suture lines. With stereoscopic plates it is possible to look into the anterior, middle, and posterior fossæ and to recognize readily the bony structure of the base of the skull. It is in these three fossæ that the roentgenologist's great interest is centered to-day in the diagnosis of intracranial lesions, and I trust the day will soon come when that diagnosis can be as definite as is possible at the present time in gastrointestinal conditions.

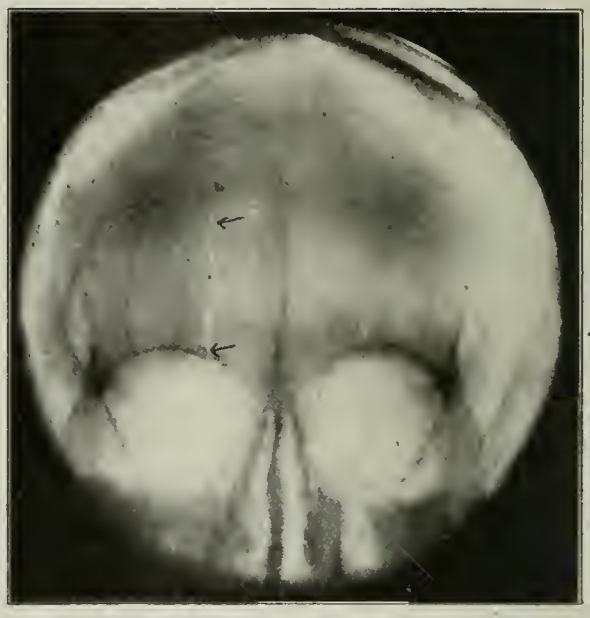

FIG. 1—Case 1. A. M., a child knocked down by an automobile, injuring his head. Longitudinal fracture of the vertical plate of the frontal bone. No pressure signs; therefore no operation.

Already much has been determined. We recognize the signs of increased intracranial pressure by the convolutional pressure atrophy of the vault, exaggeration of the markings of the vessels, and separation of the sutures in children. Characteristic changes occur in infectious processes involv-

*Read at a meeting of the Clinical Society of the New York Polyclinic Hospital on October 1, 1917.

ing the vault, tumors of the vault, chloroma for example, osteoma, osteosarcoma, and in the brain substance itself, tumors in which a deposit of lime salts has taken place.

Fig. 2—Case II. P. McC., a child, aged five years. Fell several stories injuring head. Fracture of the frontal bone extending backward and forking in the left parietal. Also separation of the saggital suture. Pressure signs developed requiring operation by Dr. Sharpe. Excellent recovery.

It is possible to differentiate tumors in the anterior fossæ giving pressure signs from the condition of internal hydrocephalus by the absence of sella changes in the former condition. Pituitary tumors show definite changes in the sella region due to direct pressure.

It is also possible to demonstrate acoustic tumors by the enlargement of the porous acusticus internus

Fig. 3—Case III. M. H., adult, showing a long oblique linear fracture through the squamous portion of the left temporal. No operation indicated.

on the affected side, as has been beautifully worked out by Dr. G. L. Carr of Boston. (See *Am. Jr. Roentgenology*, Aug., 1917.)

We are especially interested to-night in fractures of the skull. They are the most self-evident variations from the normal, the easiest to demonstrate, and their demonstration is of least value. The neurologist of to-day knows that as far as the immediate treatment of the patient is concerned, the presence or absence of linear fractures of the skull is of little moment. In head injuries, if intracranial pressure develops, and persists, this pressure has to be relieved, whether fracture is present or not.

We have had patients whose clinical pictures strongly indicated fracture, yet the roentgenograms did not confirm the diagnosis. We have also had patients with history of head injury who did not

Figs. 4 and 5—Case IV. A little child who fell several stories, injuring head. An extensive linear fracture passing in a horizontal plane from one coronal suture to the other. Operation indicated only on the third day. Excellent recovery.

have marked pressure signs, and it has always been more or less of a surprise to see the fracture lines in the roentgenograms. Fractures are much more frequent in head injuries than is commonly supposed.

The presence or absence of depressed fracture of the vault is quite another matter. It is in this type that the *x*-ray gives most helpful information as to the exact location of the defect, and the depth and extent of the depression of the inner table which necessitates an operative procedure.

Dr. Sharpe has had but one case of linear frac-

ture of the skull in which the roentgen findings were a guide to the treatment. This patient was examined the morning following an accident in which she was knocked down by an automobile. A short transverse linear fracture was located over the left

Fig. 6—Case VI. A little child who bumped her head some time ago. Recently the mother noticed a slight ridge over the right parietal region. Transverse fracture of the right parietal. This child had no special symptoms at the time of injury and has no signs of pressure at the present time, yet she has an extensive fracture of the skull; naturally no operation is indicated.

posterior parietal bone. Later, when pressure signs developed, in addition to the localizing signs demanding an operation, the decompression was done over the site of fracture instead of in the usual temporal region. An underlying extradural hemorrhage was found and removed; the patient made an uneventful recovery.

Most interesting are the cases of fracture which do not exhibit marked pressure signs, and these are the cases which do not come to operation; in this hospital, only about one patient out of every five cases of fracture of the skull is operated on.

The experience of this clinic confirms that of others that operative treatment in head injuries is determined not by the presence or absence of fractures, but by signs of increased intracranial pressure. Naturally, all depressed fractures of the vault should be elevated or removed for fear of later complications, particularly epilepsy.

A NEW METHOD OF TREATMENT OF INFANTILE PARALYSIS.

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CHICAGO.

Acute anterior poliomyelitis, while not presenting an unfavorable prognosis so far as life is concerned, remains the bête noir of the profession because in spite of modern advances in bacteriology and serology no means are known to prevent the resulting motor paralysis, atrophy, and contractures of the extremities that usually follow the cessation of the acute phenomena.

I spoke of bacteriology advisedly because in the absence of a trumatic factor one cannot conceive inflammatory disease of the spinal cord to be produced by anything else than a microorganism. So long as the causative microorganism remains unknown that long will our therapy remain empirical and symptomatic without a specific influence on the cause of the disease.

With the subsidence of the acute phenomena, however, orthopedic and operative surgery are resorted to for the purpose of restoring in a roundabout way impaired function. Well and good, if the damage is limited in extent, for then the results are comparatively good considering the gravity of the situation; when, however, the damage involves a good deal of tissue the "curative" results leave much to be desired.

Years ago the thought struck me that in infantile paralysis some hope for success may be expected from any therapy likely to effect a regeneration of the affected structures, provided, of course, the entire cord has not been destroyed. With the central lesion restored to a more or less normal condition, the peripheral effects will disappear, if not spontaneously, certainly after a while, under the influence of measures to aid tone and nutrition of nerves and muscles, *e.g.* massage, exercise, baths, electricity, etc.

Bearing the pathology of poliomyelitis in mind it seemed plausible to me, at least theoretically, that in the absence of complete sclerosis of the cornua with

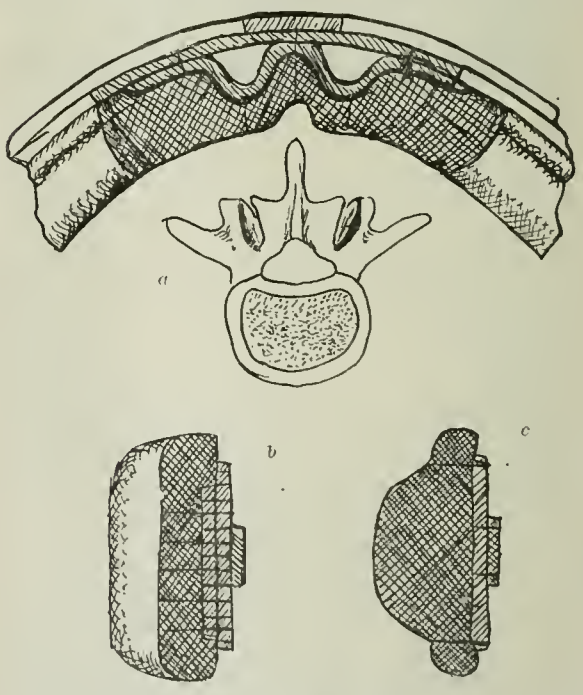

Fig. 1.—*a*, broken longitudinal sectional view of the appliance with sectional view of spinal column, showing body section of heavy leather, 4 in. wide, of a length sufficient approximately to encircle the body of the patient; a buckle-equipped strap permits of the appliance being fastened in position around the patient. Secured to the inner side of the body section is a strip of stiff leather bent in convoluted form—so formed as to present a recess midway between the ends of body section, opposite to which the padding is slightly depressed. The portion of the spinal column which is most susceptible to injury, *i.e.* the posterior process, is thus protected by the recess in the belt. The convolutions forming the recess cause the weight of the patient to be borne by those portions of the spinal column which extend at opposite sides of the posterior process, thus preventing undue pressure against the ribs. Four-inch padding of soft wool or other suitable material extends over the inner surface, held in place by cloth covering. *b*, cross section, center; *c*, cross-section, side.

total disappearance of the ganglion cells, regeneration of the structures may be possible by a physiological remedy, which was but recently restored to citizenship by Bier of Bonn (now of Berlin), namely, hyperemia.

The difficulty that presented itself seemed great, for one would have to produce a local hyperemia at two inaccessible places, viz., the cervical and lumbar enlargements.

The well known means of obtaining hyperemia in an accessible part of the body could not possibly be applied to the cord. Experiments with intense dry heat convinced me that even this powerful agent for hyperemization of tissues could not be depended upon to affect more than the superficial musculature and possibly the vertebral column. To reach the cord other methods would have to be brought into play.

Gradually I evolved a mechanical method, about to be described. Actual experiments with the consent of the persons concerned were undertaken creepingly and cautiously and only after repeated observations have I become convinced of the harmlessness of the procedure and its therapeutic efficacy. Later I ventured to demonstrate to a number of local and visiting colleagues that restoration of lost function by causing hyperemia of the cord after the subsidence of the acute phenomena cannot be doubted any more. In other words a therapy has been demonstrated that is not aimed at the peripheral results only but at the central causative factor itself.

Since then several physicians as well as myself have had ample opportunity to follow up a number of cases and no doubt being left as regards the permanency of the results, I feel free in describing my method with the hope that the profession will make equally good use of it in suitable cases.

Technique.—My first series of treatments were accomplished without anything save the physician's hands. The entire procedure consists of suspending the little patient between the hands of the physician and producing a number of rhythmic swingings calculated to put the spinal column on the stretch and to flood with blood the lumbar or cervical enlargement.

Simple as is this procedure, it was soon found to present certain difficulties, especially in larger children. In adults the weight of the patient would render the treatment physically impossible.

To obviate the possibility of error with reference to placing the leverage at the right place as well as to enable the physician to practice the swinging in a most convenient manner I have devised a simple suspension appliance, as shown in Fig. 2.

The patient when suspended therein for a minute or two is undergoing extension and relaxation of the spine without any effort on the part of the attendant. The appliance naturally leaves the physician's hands free to perform the swingings in a proper manner, the fulcrum being supplied by the appliance.

The treatment proper is carried out as follows: The patient is placed in the appliance of a size chosen for the special case. For the first two minutes the patient should be allowed to remain suspended undisturbed for the purpose of obtaining relaxation of the spinal column. This step is always to be taken at the beginning of all future séances.

The patient is now swung forward and backward with a jerk, somewhat in a manner used to bring down the mercury in a fever thermometer. If this maneuver is properly executed the lower extremities will invariably swing back in an opposite direction at the moment each movement has been completed. This simple procedure is executed fifteen to twenty-five times, depending on the tolerance of the patient.

The séance lasts about three minutes. Treatments may be given every other day or even oftener, all depending upon the reaction. It is noteworthy that when a reaction occurs it assumes in a mild form the phenomena of an acute anterior poliomyelitis.

In cases of paralysis of the upper extremities the physician will have to assist during the rhythmic swingings by supporting the extension with the palm of the right hand placed over the cervical enlargement and the left hand under the patient's chin, for it has been impossible to devise a suspension ring which will prove serviceable.

Fig. 2.—Suspension appliance.

In the event that both upper and lower extremities are involved treatments of the lower extremities should be given for some time and then followed by those directed against the upper paralysis.

A word of caution may not be amiss. Experience has shown that the suspension ring, which acts as a fulcrum, must be placed exactly over the largest part of either enlargement, as the case may be.

It will be recalled that the dorsal enlargement will

be found at the juncture of the XIth and XIIth dorsal, and the cervical enlargement at the juncture of the Vth and VIth cervical vertebrae. In all cases of the improper application of the fulcrum the results have not been satisfactory.

The astonishing results that have followed this simple treatment can be explained only by the fact that a hyperemia is produced in the affected portion of the cord. That whatever adhesions may be present will be broken up by the procedure described I have no doubt.

At this time it is scarcely necessary to enter into a detailed discussion of the therapeutic merits of artifically producing hyperemia. We owe it to the genius of August Bier that we have to-day a rational conception of its therapeutic indications and contraindications.

Hyperemia has above all a nutritive effect on cells. It is, of course, impossible to restore dead cells, but where atrophy and degeneration have not progressed far enough to destroy an organ completely, regeneration has been demonstrated so often as to need no further proof. While absolute proof is demonstrated only by histological methods, we have no other way to explain the clinical results.

After all, our greatest aim is to cure. The explanation of the cure may safely remain an academic problem. The gravity of infantile paralysis is serious enough to merit thorough investigation even on a purely empiric basis.

I append a few cases briefly described. As this is merely a preliminary paper.

Case I.—Agnes K., æt. 2 years 6 months, acute attack September 20, 1911. Previous history negative. Both arms and legs paralyzed. Treatment begun November 21, 1911. Slight motion appeared after the third treatment. Walked with some aid after the twelfth treatment. In this case the arms responded first. Discharged cured January 1, 1912.

Case II.—Julia M., æt. 18, attack January 6, 1913, both legs being involved. Treatment begun eight days later. In this case the muscles of the right leg and both gluteal groups had become very atrophic. The patient was discharged cured April 18. With complete functional restoration and disappearance of the muscular atrophy.

Case III.—T. B. B., female æt. 3, attack September 8, 1912. About a week later she was sent to Cook County Hospital where she remained until October 28. Motion was noticed November 11. In another three weeks the child walked about without any assistance.

Case IV.—Catherine E., æt. 11, had her attack in 1907 and was since treated by several physicians and irregular practitioners without any benefit. When I saw her on January 25, 1913, she had extensive atrophy of the leg, talipes and lateral curvature, and both arms and hands were involved. This case looked very promising on account of the length of time since the acute attack. It required only sixteen séances to bring about the most astonishing restoration of the disturbed functions. The atrophy and deformity of the foot disappeared and when she was discharged (April 12) she could jump the rope like any healthy child.

It would take up too much space to cite other cases, all of which seemed to respond uniformly. In recent cases very few séances were necessary to demonstrate even to the parents that functional improvement was present; in cases, however, in which the acute attack dated back some years, several weeks would elapse before decided improvement was noticeable. Once improvement was noticed the recovery proceeded very rapidly.

A few days ago (January, 1917) I got in touch with all the patients who have been away from my observation for several years. The reports I have received are so gratifying that I feel justified in saying that cures by this mechanophysiological method are also permament.

4721 Champlain Avenue.

A PLEA FOR MORE CESAREAN SECTIONS IN SELECTED CASES. THIRTY-FOUR CONSECUTIVE CASES WITHOUT MORTALITY TO MOTHER OR CHILD.*

By G. P. COOPERNAIL, M.D., F.A.C.S.,

BEDFORD, N. Y.

Only a few years ago cesarean section was looked upon as a rare and very difficult operation. In 1870 it was performed as the last and only hope of saving the mother. In 1880 the maternal mortality was 85 per cent. For the last ten years it is less than 10 per cent.

In clean, uncomplicated cases, A. B. Davis gives it as 2 per cent. In the summer of 1914 Prof. Karl Franz of Berlin gave us at one of his clinics a list of 150 consecutive cases with only three deaths. One case was complicated with pyosalpinx, the second was a bad case of endocarditis, the third was infected before she was operated upon.

By far the most common indication for this operation is contracted or deformed pelvis. The next in order is eclampsia and toxemia of pregnancy with convulsions at term with rigid cervix: then, placenta previa, with a central implantation with rigid cervix at term, neoplasms, and last of all for ruptured uterus during labor.

Are there not two border line cases where a cesarean section should be the operative procedure of choice?

First, the cases of moderately contracted pelvis, with a child with large head above the brim that does not engage, or after hours of labor may partly engage. The question is of relative relation between the fetal head and the pelvic diameters.

One of the most difficult and dangerous operations to both mother and child is the high forceps operation. Trying to extract a large head through a smaller bony outlet is far from being good surgery.

When there is no engagement of the head a high forceps operation is contraindicated. It is bound to result in more or less injury to the cervix, many lacerations of greater or less extent in the vaginal mucosa, and perineal tears. All are avenues of infection, not to speak of the injury to the child's brain from pressure, which may not become manifest until later years.

With a cesarean section in a clean case there should be no danger of the abdominal wound becoming infected and there is no danger of iniuring the child. Think of the hours of untold suffering the mother is subjected to before the birth of the child necessitates a high forceps operation. In these cases "let nature take its course" should be a thing of the past.

The second class which should come under the so-

*Read before the Westchester County (N. Y.) Medical Society, September, 1917.

called borderline cases are a certain number of breech presentations, with a pelvis that does not measure up to the normal standard.

Breech extractions are especially dangerous to the infant. The mortality is given as from 10 to 30 per cent. In private practice this is far too low. This is due not so much to the physician's lack of skill as to his being placed at a great disadvantage by surroundings and lack of trained assistants.

We are no longer justified in doing a craniotomy on a living child in order to deliver it through a contracted pelvis. The child's rights demand a cesarean section.

In a measure, does not the same question often come up in high forceps and breech cases? The breech presentations are abnormal ones, and necessitate operative interference. Leaving out the fetal mortality, consider the injury to the mother in rapid extraction of a breech presentation, such as multiple lacerations, and more or less hemorrhage, with perhaps hours of suffering, and later the danger of infection and prolapse. The cases with a large, roomy pelvis do not come under the borderline class.

The danger from cesarean section to the child should be nil. If we could determine the outcome of many of these borderline cases we would have many more sections than we do. No mother would refuse to submit to any operation in order to save her child's life, not to speak of her own suffering.

Placenta previa treated by tamponade and bags for dilation give a fetal mortality of about 80 per cent. By the Braxton-Hicks method you expect to lose the baby. Pankow gives a series of eight cases of placenta previa treated by cesarean section without a mortality to either mother or child.

The abdominal route is preferred by most surgeons, nearly all doing the low operation, that is making the incision below the umbilicus. A few men in this country make the incision above the umbilicus, but practically all the operators in Europe make the incision below.

Some of the advantages of the lower incision are as follows:

It is easier to control bleeding, especially if one should decide to amputate the uterus for a neoplasm. The abdomen can be protected more readily from the uterine contents. When membranes have been ruptured several hours and repeated examinations have been made, there is danger of infection.

In some cases there is a hernia of the uterus between the rectus muscles. The sheaths may be opened and the muscles sutured together. The Mayo's advise this method of closing the abdomen in midline incisions below the umbilicus in order to add strength to the abdominal wound.

In the series of cases ether was given by the drop without the preliminary hypo of morphine, as morphine tends to induce fetal asphyxia. A word of warning in regard to giving morphine previous to cesarean section. Out of the series of cases there was no trouble in resuscitating any of the babies, except in three cases where the mothers had been given a hypo of morphine, one-quarter grain, within two hours of the operation. In these three cases they were resuscitated only with the greatest difficulty. Atrophine sulphate gr. 1/150 was given one-half hour before operation to lessen bronchial secretions.

All incisions were made below the umbilicus in the median line. As soon as the incision was started a hypo of pituitrin was given. In making the incision keep in mind that during pregnancy all the abdominal layers are attenuated. Do not try to slash through with one stroke of the scalpel. There may be a loop of the intestine between the abdominal wall and the uterus. Make the incision large enough to deliver the child readily.

After the abdomen is opened two towels wet in saline are packed around the uterus, one on each side, which helps keep the fluid contents of the uterus from getting into the abdominal cavity. An assistant draws the upper end of the abdominal incision as far up as possible with a retractor. This is to enable one to start the incision in the uterus as high up on the fundus as possible. Incision can be readily made if the uterus is first delivered through the abdominal wound, but in order to do this it requires a much longer incision and takes more time. Always make the incision in the uterus in the median line, as there will be less hemorrhage. If we go through the uterus as high up as possible, after an opening is made large enough to admit two fingers, this can be readily extended downward between the two fingers just as one would extend an incision in the peritoneum. Avoid going too far in the lower uterine segment as one is apt to get severe hemorrhage there.

The incision in the uterus should be large enough not to tear the uterus in delivering the child; 12 to 14 cm. in most cases is sufficient. As soon as the uterine incision is made, grasp the child by one or both feet and delivery can be quickly made. It is not necessary to use forceps for delivery through the uterine incision.

After the first three cases, the uterus was not delivered before being incised.

Most of the children can be resuscitated by holding them by the feet, and applying friction to the spine, or by a few slaps on the buttocks. One-third of the infants had to be resuscitated by artificial respiration (the case where the mothers had been given morphine previous to the section). In most of the cases we did not clamp the cord until the child started to breathe. If, after applying friction to spine or slapping the buttocks they do not start to breathe, it is better to clamp the cord and start in with artificial respiration.

After the cord is cut, the uterus and placenta are lifted out of the abdomen, the soiled towels removed and clean ones placed under the uterus, the placenta is peeled out. If bleeding is excessive a towel is wrung out of boiling hot water and placed in the uterus for a few minutes. This is unnecessary, except in a very small percentage of cases.

If the cervix is not opened it is better to leave it and not try to dilate it with the fingers. The uterine contractions will dilate it in a few hours.

It was not necessary to ligate any of the vessels cut in the uterine incision. Bleeding can be quickly controlled by putting in five or six mattress sutures of No. 2 ten day chromic catgut. These sutures are of great importance in making a quick and easy closure of the uterus. Starting at the lower angle of the incision, be sure to put in the first suture at the extreme end or a little distance beyond the incision. The idea of this is to include all cut vessels. Place the suture about 2 cm. from the edge

of the wound going through to the mucosa. All text books caution about including the mucosa in your suture, but it will do no harm if one accidentally goes through it.

All the mattress sutures should be placed before tying. Tie them tight enough to control bleeding but not so tight so as to leach the tissues included in the suture. After they are tied, the edges of the wound will be slightly everted; these are brought together by placing sutures of No. 2 plain catgut in the center and between each of the mattress sutures.

If all raw edges are carefully tucked in, there will be no adhesions to the line of incision and in a few months the scar will be scarcely perceptible. There does not seem to be any rational reason why the uterine incision should be closed in layers like one closes an abdominal incision, for the structures in the uterine wall are the same all the way through, there being no layers of different tissue. It also takes more time in putting in three layers of sutures. If the abdomen has been well protected by towels, it is better not to mop it out and run the danger of destroying the integrity of the peritoneum.

Abdomen closed in layers, using interrupted chromic catgut for aponeurosis. Strap abdomen well with adhesive. The Boldt type of binder gives good support, and all cases are given a hypo of ¼ gr. morphia before leaving the table.

The question of ligating the tubes, or in the light of our present knowledge, the excision of a wedge-shaped section from each cornu of the uterus followed by careful closure of the opening to prevent future pregnancy, should be left to the discretion of the surgeon. A good rule to go by, providing the woman is otherwise in good condition, is to ligate the tubes after the second section. There is the question of losing the first child.

Out of the 34 cases all were for contracted pelvis except four. One a placenta previa, one a bad case of myomata, and the other two for eclampsia. All made good recoveries with primary union except one that developed ether pneumonia and got her dressings soiled. At the time of her operation she had a bronchitis and should have had local or spinal anesthesia.

The pneumonia, myomata, and eclampsia cases were the only anxious cases out of the series.

The woman with myomata was a negress. She had a large one impacted in Douglas' cul-de-sac; there were many others like knobs all over the body of the uterus. It was almost impossible to cut between them to get an incision large enough to deliver the child. The bleeding was very profuse, but in spite of the loss of blood she made an uninterrupted recovery. It would have been much better to have amputated the uterus, but both she and husband refused removal of the uterus.

The eclampsia cases were both at term without labor pains and with rigid cervix. Both cases had several convulsions before the operation. One case had as many as a dozen postoperative convulsions, and things looked pretty bad for the first 12 hours; from that time she made an uneventful recovery.

In three cases the placental site was under the line of incision, and it was necessary to go through the placenta and grasp the child's legs. No time should be lost in these cases.

One case had a second section. No special difficulties were encountered; there were no adhesions to the old uterine incision.

One of the patients operated upon would come under the so-called borderline cases. By giving you a short history, you may judge which is the better: To let nature take its course, and after hours of the most agonizing pain mortal is called upon to endure, to finish up with a high forceps operation or version, or do a clean cesarean section.

Mrs. C. B., age 37, born U. S. A. The conjugate diameter of brim measured about 3 inches. First child born 12 years ago. Was in labor 60 hours, then had to be delivered by high forceps. Eight-pound boy. Second child 2 years later; in labor 48 hours; head did not engage; child was delivered by podalic version; a 9-pound boy. Third child 1 year later; in labor 50 hours; head did not engage; delivered by podalic version; 9-pound boy. One of his arms was broken during the delivery. Fourth child born 2 years later; in labor about 48 hours: was delivered by high forceps; 8½-pound boy. Fifth child born a year later after 50 hours in labor; was delivered by high forceps; 8-pound boy. Had a severe infection following this labor. Was in bed 7 weeks and had phlebitis in left leg that gave her trouble for several months. She was too sick to nurse the baby or give it good care. Baby died when 4 months old. Two years later was delivered by a cesarean section of a 7-pound girl. At the time of her operation she was in poor condition, having been in poor health from the time of her last confinement. In spite of this she made an uninterrupted recovery. Mother and child both living and doing well.

The patient, a most grateful one, states that this is the only way she would give birth to children in the future. Her previous pregnancies were a constant nightmare to her, dreading the coming ordeal.

Cesarean section for one doing major surgery is far from being a difficult operation. Nevertheless, it is a serious operation for the patient, and should be advised only after careful consideration of all the facts presented in the case at hand.

It is well to keep in mind the saying that once a cesarean section, always a second cesarean. Mason shows that the theory that once a cesarean section always a cesarean section is a fallacy. That is, if the section is properly done for some cause other than a pelvic indication, the patient may safely go through labor as far as the cesarean scar is concerned. He cites a number of cases delivered normally after having been delivered previously by cesarean section—some two or three times. It is also well to consider the maternal mortality as given by conservative operators as being from one-half to 4 per cent. In regard to emboli, you may get them in a normal labor. On the other hand, it is a wonderful operation with sure indications.

War Eclampsia.—Franz seems satisfied that war diet cuts down eclampsia and that excessive protein and fat favor its appearance. He is not so sure about the enforced continence of war times as a preventive of the disease.—*Zentralblatt für Gynakologie.*

Peculiar Edema.—Maase and Zondek saw at Charité Hospital Medical Clinic, Berlin, from 30 to 40 cases of a peculiar type of edema in men between 45 and 60. The extremities, face, genitals, serous sacs, etc., were attacked. Patients also presented diarrhea, polyneuritis and cardiac disorders. Naturally, no one patient suffered from all of these accidents. All known types of edema could be excluded. The affection may have been due to defective alimentation for several patients at once recovered when fat was fed to them. Similar edema has been seen in nurslings fed on flour exclusively and in diabetics on the oatmeal cure.—*Deutsche medizinische Wochenschrift.*

Military Medicine.

THE SOLDIER'S HEART.

SOME months ago, the condition to which was given the term "soldier's heart" or the irritable heart of soldiers was discussed very freely in Great Britain by the first authorities on heart affections. Among those who ventured the opinion that the condition might be a manifestation of hyperthyroidism was Sir James Barr, who first in the *British Medical Journal* of April 15, 1916, and again in *American Medicine* for September, 1916, published papers on the soldier's heart and its relation to thyroidism. In these papers the writer attributed the so-called irritable hearts of soldiers to disorders of the thyroid secretion. However, the view was not generally held and it is therefore interesting to read in a paper contained in the *British Medical Journal* of September 29, 1917, contributed by Dr. Arthur F. Hurst that in his opinion hyperthyroidism and hyperadrenalism do produce disordered action of the heart. Hurst designates this condition the "harmonic type of soldier's heart." Any strong emotion, and particularly anger and fear, if not given the natural vent, in the case of anger by fight and of fear by flight, will give rise to abnormal suprarenal and thyroid activity. Hurst thinks that while the patient suffering in this way presents a picture of Graves' disease, the activity of the suprarenal glands is probably of greater importance, though less easily recognized than that of the thyroid. It will be observed that Hurst does not refer to hypothyroidism in this connection, nor did Barr mention the influence of the suprarenal glands, but the point is that they both ascribe to ductless glands the causation of many cases of irritable heart among soldiers.

The main symptoms are as follows: The pulse is rapid and the heart may be slightly enlarged. The blood-pressure of the average soldier in the front-line trenches is slightly subnormal, but in these cases it is always raised. The condition is accompanied by a very characteristic reaction which is present in no other; on moving the finger over the skin of the chest so lightly that in normal individuals no local reaction would occur, a pilomotor reflex is almost instantaneously produced. Goose skin is obvious and occasionally the hair can actually be seen to stand on end over the area touched by the finger and for some distance on each side. After about five seconds the pilomotor reflex fades away and is at once replaced by a vasodilator reflex; the blush, which may have a white border on each side, often lasts for several minutes. As improvement occurs the vasomotor reflex disappears, but the pilomotor reflex generally persists for a few weeks longer. Excessive sweating often occurs, sometimes in paroxysms, especially over the palms of the hands and soles of the feet, and the patient loses weight. The hands and occasionally the eyelids are tremulous, and the patient is highly nervous and excitable. The eyes are often slightly prominent and von Graefe's sign may be obtained. The thyroid gland, though overactive, is generally not obviously enlarged, but in some cases moderate enlargement is present.

As for treatment the patient must be isolated, at first, from the other patients in the ward by screens and should see only such visitors as the physician believes will allay rather than increase his nervous irritability. Mental activity and restlessness are lessened by small doses of opium (this, according to Hurst, being the only war neurosis in which the drug can be safely employed), and also by suggestion, especially when some special source of worry is present. The thyroid and adrenal secretions are kept in check by belladonna. Both Hurst and Barr are chary of employing *x*-ray treatment for such cases, as it is impossible to regulate the destructive action of the rays with sufficient accuracy for perfect safety.

ANTITOXIN FOR GAS BACILLUS INFECTION.

INFECTION due to *Bacillus welchii*, or the gas bacillus, as it is commonly called, is quite frequent in the present war and carries with it a high mortality. This fact has stimulated investigation anew, with the aim of developing, if possible, a prophylactic and therapeutic serum. Bull, experimenting on rabbits and guinea-pigs (*Journal of Experimental Medicine*, July and October, 1917), obtained a bacteria-free toxin from cultures of the organism, possessing the properties of an exotoxin. Animals injected with this toxin develop an immune serum which neutralizes *in vitro* the pathogenic effects of the toxin, and also has the power of preventing and controlling infections with the bacilli. These experiments put the gas bacillus in the same class with diphtheria and tetanus bacilli. When an antitoxin prepared in the horse was employed it was possible to confer on guinea-pigs a passive immunity of two weeks' duration, and, furthermore, guinea-pigs which had received a prophylactic injection of the antitoxin exhibited pronounced resistance to infection with the virulent bacilli for a period of twelve days. Established infections in guinea-pigs were arrested and controlled by treatment with the antitoxin. Bull believes that it will be possible to prevent gas bacillus infection in man through the prophylactic use of the antitoxin, and that developed cases of the infection may be controlled by therapeutic injections of the same agent. The antitoxin in man should be administered intravenously and probably locally about the wound.

Observations on the Etiology and Treatment of War Neuroses.—Life in the trenches is always accompanied by a state of nervous tension. Danger is ever present, and during periods of activity the night may only bring increased responsibility and anxiety instead of rest. Although most men become gradually accustomed to the sights and sounds, according to Arthur F. Hurst, unless regular periods of rest from the mental strain are given the majority of men gradually become irritable, restless, and unable to perform their duties satisfactorily.

He states that the sanitation of the army in France has been so efficient that the second great cause of neurasthenia—acute and chronic infections—has been less prominent than in any previous campaign. Aside from infections, prolonged mental and physical strain, toxemia, and severe pain lead to exhaustion by their direct action upon

the nervous system, and indirectly by their action upon the suprarenal glands, together with the liver and probably the thyroid. Prolonged muscular exertion and great emotions, especially fear and anger, have been shown to produce chromatolysis of the brain cells, together with definite changes in the suprarenal glands and liver.

The symptoms of neurasthenia in soldiers is about the same as that found in civil life. The symptoms described under the name of "soldier's heart" may be prominent. In most cases the blood pressure is low, corresponding with the fact that the blood pressure of the average tired soldier in front line trenches is slightly subnormal.

The treatment consists first of complete physical and mental rest. In most cases a small dose of bromide, such as gr. v, is given two or three times a day. Opium must be avoided, as it often aggravates the symptoms and increases the excitability and restlessness of the patient. No alcohol should be allowed; it is very badly tolerated by almost all patients suffering from war neuroses, and especially from true shell shock. A quantity which formerly produced no ill effect is often sufficient to intoxicate. Recovery is greatly accelerated by combating insomnia, as the exhaustion cannot disappear so long as the patient sleeps no more than three or four out of the twenty-four hours. Hurst has found that sodium diethyl-barbiturate (medinal) with acetyl salicylic acid (aspiran) gr. xv the best combination. The dose of the former should be between 10 and 15 grains the first two nights, after which it should be reduced by one grain every other night until only the latter (aspirin) is given, and the dose of this can then be gradually reduced. In intractable cases, especially if nightmares are present, suggestion under hypnosis is very effective. As soon as the patient is well enough to get up he should begin to help in the ward, and a few days later he should be given employment out of doors, for

The cure for this ill is not to sit still
And frowst with a book by the fire;
But to take a large hoe, and a shovel also,
And dig till you gently perspire.

The amount of exercise should be gradually increased, and the patient should not be discharged from hospital until he can do moderately heavy work, such as digging, without undue fatigue.

The emotion produced by a very horrible incident, such as seeing a friend killed whilst talking with him is sometimes sufficient to give rise to nervous symptoms. More commonly, however, such an event is only the culmination of a long series of emotional storms. In most cases, indeed, the final breakdown is not due to a definite incident, but is the result of the cumulative effect of fear, which gives rise to symptoms sooner or later or not at all, according to the temperament and the physical condition of the individual. It is often impossible to obtain an accurate history of the onset until the patient is convalescent, as in the early stages of his illness he is generally unwilling to talk about his experiences. Even after complete recovery, a horrible incident which was the exciting cause may remain obliterated from the memory, although it may have returned in dreams, or its nature may have been elicited from the patient during hypnosis.

The stress and strain of active service not infrequently result in a condition of mild confusion which may merge into deep stupor. The onset is often gradual and complete amnesia may result together with the stupor. Exactly the same condition may follow actual shell shock, but many of these cases are diagnosed as the result of shell shock when the mental stupor is really the result of emotion. It may also follow simple exhaustion, or it may represent an epileptic attack. In severe cases the patient lies inert, and involuntary micturition and defecation are frequently present during the first few hours. Complete insensibility is often followed by a dazed condition, in which automatic complex acts may be performed. The duration of stupor varies from a few minutes to several days, but it rarely lasts more than a week. It may suddenly pass away, the patient having no recollection of what occurred between the onset and the moment of recovery. More frequently, however, improvement is gradual.

Psychasthenia may be another result of prolonged mental strain, as represented by nightmares and day-dreams; obsessions and phobias are less common; tics are curiously rare. Nightmares are very common, and many men live through their most terrifying experiences night after night in their dreams. The dream may be forgotten, the patient only recollecting that he woke with a start and found himself in a cold sweat. Headaches usually follow, which disappear towards evening, and profound exhaustion occurs, with depression and loss of appetite.

The general treatment for psychasthenia is identical with the treatment for neurasthenia. In some cases the more prominent psychasthenic symptoms require special treatment. The nightmares may be stopped by the medinal-aspirin treatment, but when a dream has persisted for any length of time, nothing but hypnotism will remove it. This should, if possible, be practised at night so that the patient can pass from the hypnotic state into natural sleep, the suggestion being repeatedly made that he will not dream. A single treatment is often sufficient and it is rarely necessary to repeat it more than five or six times. Phobias and obsessions sometimes disappear after rest and "therapeutic conversations," in which the cause of the symptoms is explained to the patient, and he is encouraged to hope that they will quickly disappear as his general condition improves. It is of the utmost importance that his confidence should be gained and that he should feel that he can discuss his troubles with perfect freedom and without any fear of being misunderstood. In the severe cases suggestion under hypnosis should be employed without delay. The result, according to Hurst, is very satisfactory, and improvement often occurs with remarkable rapidity.

Tics are more resistant to treatment and reeducation is the most valuable treatment. Regular exercises are given for the affected muscles, and in order to gain that complete control over them the patient is made to inhibit the movements several times every day by an effort of will for a certain period, the duration of which should be slowly increased. Hurst cites the examples of soldiers with aerophagy and eructation tics, who were

cured by clenching a stick between the teeth whenever the desire to eructate was felt.—*British Medical Journal*, Sept. 29, 1917.

Postseric Tetanus.—Lumière has laid down ten dicta in respect to failure of serum to prevent the development of tetanus. 1. The action of serum in preventing tetanus is not absolute. 2. The duration of immunity cannot be estimated with precision because of a certain battle which goes on within the organism between the mischievous and defensive forces. 3. Postseric tetanus appears to be due to two principal causes, (a) superabundance of toxin formed in the wound over amounts of prophylactic serum which rearh the latter, and (b) liberation of latent tetanus spores either by a secondary surgical intervention or traumatism after the activity of the antitoxin has been exhausted (this refers to late postseric tetanus). 4. Early postseric tetanus, on the other hand, is chiefly due to imperfect sterilization of recent wounds and should be largely preventable; further, it may be well to repeat the injection in suitable cases. 5. Late postseric tetanus may be prevented in over one-half of the cases by an injection of serum before every secondary intervention. 6. In postseric tetanus serotherapy may be seen to modify notably the course of the disease. 7. In 15 cases out of 54 seroprophylaxis prevented the anchoring of the toxin to the nervous centers, so that only the motor nerves of the wounded limb suffered. 8. In 13 cases out of 54 the bulbomedullary centers were only partly protected. Late or incomplete trismus was then present with localized contractures. The prognosis in these cases is none too good. 9. When antitoxin has not protected the nervous centers trismus appears early and the prognosis is grave (26 in 54 cases). 10. Postseric tetanus must be treated by large injections of antitoxin given at the earliest possible moment plus symptomatic treatment. Contractures resist therapy but the paroxysms may be controlled by chloral, morphine, sulphate of magnesia, and persulphate of soda.—Lumière in *Annales de l'Institut Pasteur*, January, 1917.

Care of Soldiers' Feet and Regulations Affecting Organization in the Army.—The War Department has published regulations governing the orthopedic work of the Army. Medical officers in medical officers' training camps are required to have at least three periods of instruction of not less than an hour each in orthopedic work. Medical officers who elect orthopedic service will have intensive instruction in orthopedic surgery, and for men untrained in this branch the course will be of about six weeks' duration in a university. Line officers and candidates for admission will be instructed in the care of the foot and its coverings and the general principles of body posture. The simpler facts with regard to joint injuries will be given each candidate for a commission at officers' training camps. All enlisted men are given at least one hour's instruction in the care of the feet and its coverings and the treatment of minor injuries. A course of instruction will be given special enlisted men at the training camps and other stations to fit them for rendering proper assistance in shoe fitting and the treatment of minor orthopedic affections. Particular attention will be given by medical officers to the condition of the feet of enlisted men at the regular semi-monthly physical examination. An orthopedic surgeon will act as consultant in doubtful cases.

The Early Treatment of Gunshot Fractures of the Thigh.—C. Max Page and A. B. Le Mesurier, writing in the *British Journal of Surgery* for July, 1917, states that the primary operative procedure in gunshot wounds of the thigh, should be the establishment in all cases of satisfactory drainage once and for all and at the earliest possible moment after the injury. Repeated anesthetics and operations during the early period are to be deprecated in the treatment of these cases. The necessary procedure should therefore be effected at the casualty clearing station, where in any case the patient is anesthetized for cleaning up and the application of a splint. If practicable, the surface of the whole wound tract should be excised; excision on incision of the skin wounds alone is a useless procedure. All fragments of bone lying loose should be removed; if left, they are a frequent source of persistent local infection; and there appears to be no doubt that so long as the periosteum is not unduly damaged perfect union results, despite the loss of considerable amounts of compact bone. The writers prefer to pack the wounds so treated with dry sterile gauze. In the earlier cases of the series they employed tube drainage down to the bone from the posterior wound, but the limitation of infection seems to be better effected with the simple gauze pack. If the original wound or wounds do not furnish posterior drainage, a 4-inch incision should be made on the postero external aspect of the limb, and access gained to the seat of fracture along the line of cleavage between the outer hamstrings and the vastus externus, a part of the latter will have to be cut away in order to make the opening a free one. The gauze pack should be left undisturbed for two or three days, in the absence of signs of spreading infection; it should be removed and lightly renewed at intervals for a week or so, at the end of this period, in favorable cases, no further mechanism to keep the wound open will be necessary. A tube drain through the posterior hole down to the bone should be employed when there is evidence of continued osteitis and retention of discharge. In these latter cases a considerable saving in outside dressings may be frequently effected by passing the tube between two support slings and allowing the discharge to drip into a porringer. The outside dressings should be changed every twenty-four hours while acute infection is still active. During all processes the limb should be moved as little as possible, and it should never be necessary to roll the patient on his side for any purpose.

United States Medical Units Attached to French and British Forces.—There are 3180 medical officers, nurses, and members of ambulance sections of the United States Army now attached to the British and French forces. This total includes 870 medical officers and 470 nurses with the British forces and 40 ambulance sections, each of 46 officers and men (a total of 1840) with the French Army. This American personnel is only loaned subject to

recall and can, if the War Department so decides, be assigned to duty with the American forces. All wear the uniforms of the United States Army. Provision has been made for the training of 120 more ambulance sections at Allentown, Pa., all for eventual service with the French Army. A British Surgeon General, in commenting on the American medical officers, has said: "We are greatly impressed with the American medical officers; their keenness, energy, and quick perception are a positive tonic."

Health of Soldiers in Camps.—Col. Weston P. Chamberlain of the Surgeon General's Office, general sanitary inspector, has just returned from an inspcetion trip of American camps. He reports that the percentage of sick, practically all of whom are under treatment in cantonment hospitals, ranges from below one per cent. to slightly below two per cent. except at Camp Pike, where it is considerably higher as the result of measles among the men. It is pointed out that in this estimate are included all men in the hospitals and that in the Army a man is classed as sick and sent to the hospital for even the slightest indisposition, such as a cold, a mild tonsillitis, slight injury, etc. The only serious illness found at any of the camps was pneumonia. At Camp Sherman there were 43 cases in October in a command with an average strength of 19,000 men. Of these cases only three had died during the month, a mortality of seven per cent., against an average mortality for pneumonia in civil life of 15 to 20 per cent. The serum treatment for pneumonia is used at all the camps. The sanitary conditions in the camps far excels those generally pertaining in civil life and this is advantageously reflected in the health statistics of the Army. Each camp hospital has sufficient wards in operation to accommodate all the sick in the camp.

Order of Elks Gives War Hospital.—The Elks' War Relief Commission announces that the United States Government has accepted a gift of $250,000 from the Elks to provide for a large reconstruction hospital. This will be the first large reconstruction hospital in the United States where crippled and disfigured American soldiers will receive not only the best of expert medical attention but also instruction in various occupations which will aid in reestablishing them in civil life. The site of this hospital will be on Parker Hill, Boston, contiguous to the Robert Brigham Hospital.

Reception to Colonel Sir Berkeley Moynihan and Major Crile.—On the evening of November 9, 1500 physicians and their wives, belonging to the American medical services, met at the Waldorf Astoria under the auspices of the New York State Committee, Medical Section of the Council on National Defense, and listened to Sir Berkeley Moynihan, Senior Consulting Surgeon of the Royal Army Medical Corps of the British Army, discuss the war situation in general and the work of the medical service in particular. He stated that in the beginning of the war there were 30,000 doctors in England and that 10,000 of them had donned the khaki. Addresses were also made by Major George W. Crile, director of Base Hospital No. 4 in France, who has just returned from a six-months service at the front. Dr. Franklin Martin stated that the United States now had about 23,000 medical officers enrolled and about 14,000 commissioned. He predicted that about 35,000 medical men would be needed. Dr. George D. Stewart presided at the meeting.

Golf Tournament Swells Ambulance Fund.—The "Liberty Tournament," held by the United States Golf Association last July, has netted $72,275, which is to be used for the purchase of ambulances for the French front.

Allied War Losses Growing Smaller.—In response to a request that an official statement be made regarding casualties in the war to refute the lies spread abroad by the pro-Germans and pacifists in this country to discourage American patriots, Secretary Baker states that the ratio of losses sustained by all of the British expeditionary forces sent to France up to the present time has been less than seven men per 100. It is not expected that American losses will reach this percentage. The losses of the French are about in the same proportion. It is further stated that the losses are less to-day than in the earlier months of the war because of improved tactics and the swiftly amounting allied superiority in artillery.

Red Cross Appropriations for Relief Work.—In accordance with its new policy, the American Red Cross has made public a statement regarding its finances. The Red Cross had received up to November 1, $79,895,355.68 to be applied to its war funds. Of this amount $19,581,240.47 has been apportioned to relief work in France. The total appropriations from the war fund up to November 1, amounted to $40,851,259, of which $26,934,416 was for foreign relief. The foreign relief appropriations were apportioned as follows: France, $19,581,240.47; Belgium, $720,000; Russia, $4,428,040; Serbia, $493,203; Roumania, $1,518,398; Italy, $214,000; Great Britain, $1,066,520; foreign miscellaneous, $113,012; Armenian and Syrian Relief, $1,800,000. There was appropriated to United States supplies, etc., to United States forces, $2,448,729; for United States hospital work, $379,500; for United States sanitary service, about cantonments, $183,500; for United States miscellaneous items, $108,487. Other appropriations advanced for hospital funds amounted to $220,000. Of the collection made, $9,129,389 has been reserved for return to Red Cross Chapters to be spent for war relief work. In addition to the above, the Red Cross has handled $1,417,625 which has been appropriated for specifically stated purposes.

German Criminals Again Attack Hospital.—German aviators dropped bombs on the French Hospital at Zuydcoote on November 9. Eleven persons belonging to the hospital staff were killed and nine were wounded.

Alcedo's Surgeon Saved.—Dr. Paul Andreae who was a surgeon on the U. S. patrol steamship *Alcedo*, which was sunk by a U-boat a couple of weeks ago, has cabled to his father in Jersey City that he was among those who escaped drowning. Dr. Andreae entered the naval medical reserve corps immediately after the declaration of war.

MEDICAL RECORD.

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TRAUMATIC INTRAPERICARDIAL HEMORRHAGE.

PENETRATING wounds of the heart and pericardium that reach the operating table are rather rare; hence the report of two cases operated upon by Rhodes (*Annals of Surgery*, July, 1917) seem worthy of mention. Rhodes says very truly that few traumatic lesions of the thorax demand operative relief, but in cases in which there is profuse hemorrhage into the pericardial sac, interference must be prompt, and no considerations such as the critical condition of the patient must be allowed to prevent operation.

The first patient whose case he records had been stabbed with the large blade of a pocket knife, which had cut through the left fourth costal cartilage and had been driven into the chest the full length of the blade. There had been free bleeding at first but later the flow decreased. When the patient reached the hospital there was severe dyspnea with gradually increasing cyanosis of the lips. The heart sounds were barely audible. A rectangular osteoplastic flap gave an excellent exposure and was made in the following manner: A vertical incision was made over the middle of the sternum, extending from the second to the fifth costal cartilage. From each end of this incision, five inch horizontal incisions were made, the soft tissues were reflected outward and the cartilages of the third and fifth ribs were divided subperichondrially, the fourth already having been divided at the time of injury. The upper and lower intercostal spaces of this area were then incised and the whole osteoplastic flap bent backwards, breaking the ribs at the outer portion of the wound. It was found that the stab wound involved pleura and pericardium and that the pericardial sac was filled with blood from a wounded pericardial vessel, but the heart itself had not been injured. The patient's condition improved remarkably as soon as the imprisoned blood escaped from the pericardial sac and the pressure on the heart was relieved. Rhodes then realized that he had been dealing with a case of heart tamponnade and that the respiratory and circulatory symptoms were due to that and not to pneumothorax. The bleeding vessel was tied and, after free irrigation of the cavity with salt solution, the pericardium was closed without drainage. The patient left the hospital with normal heart and lung action on the nineteenth day.

The second patient had also been stabbed in the chest shortly before admission and was almost moribund. He had lost a large amount of blood, the pulse was very bad, heart sounds were inaudible over the pericardium, there was very pronounced pneumothorax, with moderate dyspnea and slight cyanosis. Immediate operation was performed by the same technique as in the previous case. Free incision of the pericardium was followed by a gush of blood and the patient's condition improved temporarily. No bleeding point was found on the pericardium or anterior surface of the heart; but blood continued to well up, keeping the sac fairly full in spite of vigorous sponging. Upon lifting the heart forward a rent was found in its posterior surface. An attempt was made to suture the wound but this was found to be impossible, as the heart ceased to beat whenever it was rotated or lifted up sufficiently to expose the field. Death occurred within half an hour. The remarkable feature of this case was that the wound appeared to be on the posterior surface of the heart. Autopsy showed that this was due to the fact that the extensive pneumothorax had resulted in a partial rotation of the heart on its longitudinal axis, and that the surface which had been anterior at the time of the receipt of the injury had become posterior by the time of operation; yet attempts to rotate the heart back to its normal position in order to place the sutures had resulted in the cessation of its pulsations.

From the study of these two cases Rhodes reaches the conclusion that in all cases of stab wound of this nature extreme symptoms of respiratory embarrassment should be considered as caused by heart tamponnade and not by the pneumothorax alone, and that this tamponnade must be relieved immediately.

THE HISTORY OF SMALLPOX.

FROM the first mention of this disease in the history of medicine, it has always been described as one of the great scourges of mankind. Moore in his "History of the Smallpox" refers to the singularity of the happening "that the smallpox, the measles and Mahomet should all spring up in the same year in Arabia for the disturbance of the world." The year was A. D. 570, also the date of the war of the elephant. According to Mohammedan legendary history, in this year Abrahah, the Abyssinian viceroy of Yemen, as a reprisal for the profanation of the Christian church he had built in the capital, Saana, by emissaries from Mecca, whose holy place, the Kaaba, was being beglected, advanced with a large army against Mecca; he was mounted on a huge elephant, which, according to the story, refused to go forward, while at the

same time a flock of enormous birds came over from the sea, each with three small stones, one in the bill and two in the talons, which they dropped on the Abyssinian army, and wherever the stones struck wounds and pustules broke out, and the entire host was destroyed.

As to the case of smallpox, while Creighton and his followers contend that it is a skin disease of the nature of lichen turned pustular, this theory of causation is not in accordance with the views of the majority of pathologists who have made a special study of the disease. These will agree rather with the opinions given by Dr. A. E. Cope in the *Medical Officer* of September 29, 1917, and which are as follows: In the first place the whole of the facts are in favor of the smallpox group of diseases being primarily and ultimately infective; not primarily constitutional diseases of non-infective type, and only secondarily communicable by contagious inoculation or infection, but right throughout as truly infectious diseases as all the other exanthemata. The sole difficulty, as Creighton well realizes, is the pustular nature of existing smallpox, and when he speaks of lichen turned pustular and later becoming contagious, Cope's suggestion is that the epidemic element was primary and essential, but that in the course of development it had grafted upon it a pustular element which, while at first casual and secondary, became ultimately almost inseparable from it. The clinical history of smallpox affords further evidence in the same direction. Therefore, although there is a good deal to be said for smallpox having been originally an infectious exanthem very like measles, but with a secondary pustular element which may or may not have been constantly associated with it from the commencement of its history, there seems to be little to support Creighton's view, that a simple lichenous non-infectious skin rash took on pustular and at the same time infectious properties in the year A. D. 570 or thereabouts and has maintained the same type ever since. The mass of evidence points to the belief that smallpox must have been *ab initio* a general rather than a local disease.

Moore brings forth a considerable amount of testimony to show that smallpox had been known in India and China from very remote times. He explains the failure of the disease to spread from these countries by the fact that the separation of India, and much more of China, from Europe was rendered very complete at that time by the existing necessity for journeys across deserts or over sea and, in consequence, the time taken in the journey would itself wear out any smallpox infection before the transit was made. It was only when the Persians overcame their repugnance to maritime commerce that they acted as intermediaries between West and East, and with their coasting trade in silks, muslins, spices, pearls, and other precious commodities would easily bring smallpox to the Arabian and Egyptian shores.

Ahron or Aaron, an Arabian physician, was the first to write concerning smallpox. His works are lost, and all we know of them is from references to them by the famous physician and clinician of Baghdad, Rhazes, who lived at the end of the ninth and early part of the tenth centuries, and who quotes from Ahron's treatise on smallpox. Rhazes' description of smallpox, therefore, is the first written description extant of the disease, and notwithstanding that he somewhat confuses smallpox and measles, is the earliest clear account of smallpox, and reproduces all its well known characteristics. It must be borne in mind, however, that between Ahron and Rhazes a period of 300 years had elapsed, during which time the disease had made extraordinary strides.

NASOPHARYNGEAL SURGERY.

PERHAPS no other form of special surgery results in such immediate and permanent improvement as the surgery of the nasopharynx. In children especially operations on this tract for the removal of the common respiratory obstructions cause so much improvement in the general health and development of the body, but especially of the mind, as to be almost miraculous. In the young the removal of these obstructions to free breathing changes the entire bony contour of the face and jaw bones, as well as increasing the depth of the chest. In the case of the chest this increase in depth is brought about by the freedom of motion given to the chest walls and auxiliary muscles of respiration. While the results in the adult are not nearly so striking as in the young, the general benefits from appropriate and well-advised nasopharyngeal surgery are so marked that treatment by the rhinologist is deemed as necessary, and is therefore almost as universal, as treatment by the dentist. But as is to be expected in so new and prolific a field the work is often taken up after inadequate training and by incompetent persons. Bad results, therefore, are not justly placed at the door of the limitations in this particular field but rather to poor technique or inadvised selection of cases. It must be remembered that nasopharyngeal operations are undertaken in a field that lies very close to and only poorly separated from the brain and from the large blood-vessels going thereto. One is always in danger of infecting or wounding these structures unless great care is taken with asepsis or a thorough understanding is had of anatomical relations. This entire field is either in an almost inaccessible place or is exceedingly restricted in area. In order to do good work the operator must have a special temperament and attain special skill for work in these miniature fields.

In nearly every other branch of major surgery the field of operation is free and accessible, aseptic precautions are easily taken, and the control of hemorrhage is not a chance matter. In the nasopharynx on the other hand, while these require-

ments are as great if not greater, aseptic precautions are impossible to carry out, hemorrhage is difficult to control, and the field of operation is at a distance from the operator, to be reached only by instruments. The disinfection of the field is out of the question, and the only aseptic precautions are those possible with the instruments and with the person of the operator. The question of anesthesia is always a disturbing one. Local anesthesia for adults is the usual choice, although, because of the greater delicacy of the operation, more control of the patient would be desired than is obtainable under local anesthesia. In other major surgical operations the place for such operations is usually in a hospital with all the advantages that a hospital offers. Nasopharyngeal operations are usually carried out in a freelance fashion without any of the usual surgical necessities of major operations. Naturally, there is no control of the patients and no opportunity to study or to keep track of after effects or even of the mortality of these operations. Until recently the mortality factor of these operations received no consideration. Fatal hemorrhage sometimes occurs, meningeal infection is not excessively rare, and permanent injury to some portion of the bony portions of the face, such as septal perforation, destruction of the bridge of the nose, antrum infection, etc., is not unknown. Moreover, while general surgery is never undertaken without a thorough study of the patient's constitution in order that the surgical risk may not be increased by operating on unsuitable cases, in nasopharyngeal operations such precautions are often omitted because the operations are not considered major ones. Yet while general surgery has a dash that this apparently petty surgery has not, the latter has all the dangers of the former while at the same time calling for greater delicacy of technique. The decision for surgical interference must be as mature here as elsewhere, if fatalities are to be avoided. It is this judgment that distinguishes the surgeon from the operator.

PHYSIOLOGY OF ENDOGENOUS URIC ACID.

ENDOGENOUS uric acid is formed by some sort of synthesis in the body, as is shown when the subject is placed on a purin-free diet. As with most questions which seem simple, the nature of the synthesis has been the theme of much controversy, which has been due in part to contrary finds.

Host has recently published an interesting contribution to this study ("Bidrag til den Endogene Urinsyres Fysiologi," Kristiania, 1917) which which seems to open up a new line of investigation. Researches were carried out on 17 persons, two of whom were quite normal, while the others were either convalescents or patients who were free from any taint of arthritis urica. This material was controlled for a long period for study of the fluctuations in the uric acid content of the blood and urine. In no subject was the elimination constant from day to day. Upon a fixed diet this figure did exhibit constancy in a few subjects, but in the majority there was marked fluctuation—either extreme irregularity or a variation of up to 80 per cent. from day to day. Even in subjects with a certain regularity the latter was dependent on various factors of which the chief was the composition of the food. An increase or decrease in the latter was shown in the urine; that is, with an increase of food calories of 20 to 30 per cent., uric acid was increased in the same proportion. The source of the calories, whether protein, carbohydrates, or fat, did not affect the general result, although when albumin was given more of the acid was eliminated. The largest amount of acid was excreted in the morning or first part of the forenoon and the least during the afternoon and night. In the two first periods of the day the amount of acid rose after meals. Diuresis and the hydrogen-ion concentration were without influence on elimination of endogenous acid. Increase of temperature and certain drugs, notably asperin, caused notable increase in excretion. The amount of endogenous acid in the blood varied from a minimum of 0.5 to a maximum of 2.68 mg. per 100 c.c. of that fluid. In 70 per cent. of the material the amount was between 0.01 and 0.02 per 1,000.

The blood content was constant for certain individuals, but in others there were marked fluctuations, as there are between different subjects as a result of individual peculiarities. The conflicting results and views on this problem must be due largely to the two types of individual who show respectively constant, or nearly constant, formation and excretion of acid, and great fluctuations in the same.

TETANOPHOBIA.

THE phenomenon of tetanophobia, *i.e.* a general fear of lockjaw, is not new, for it is supposed to prevail in any large community after a series of tetanus deaths. It is not surprising, therefore, to find an account of tetanophobia in the fighting forces in Europe and according to Couteaud, writing of the vicinity of Cherbourg, this fear has extended to the civilian population. It apparently is by no means in direct proportion to the number of victims, especially those with insignificant wounds. To-day everyone with an abrasion demands an injection of antitoxin and it is becoming increasingly difficult to dispose of these demands. The agriculturists are relatively spared, contrary to what one might expect; they are always injuring themselves, yet pay no attention to their slight knocks. To explain this fact the author assumes the possibility of minimal infections leading to artificial immunisation. In the Cherbourg section about 60,000 wounded have been treated since the beginning of the war, and of this number 58 only developed tetanus, with 37 deaths. It is difficult with such a record to understand the general fear of the disease. This is due perhaps to the cases occurring early in the war, yet most of these cases developed in the severely wounded. It is difficult to understand how one case per 1,000 wounded could cause a panicky state of feeling in

a community. The history of Fourth of July tetanus in the United States shows that the public itself can be quite indifferent to the dangers of a disease which formerly claimed many hundreds of victims annually.

BABY KILLING.

A CHICAGO euthanasiac has broken into the newspapers with an improved scheme of taking life. He first entered the limelight a year or two ago upon announcing to the world that he would not perform an operation on a monster in order to prolong its life for a few days. As this abstention from a useless operation was not a heinous crime, and would be approved by many medical men, the notoriety achieved was only moderate. The next venture was a plea for shortening the nursing curriculum; this fell flat, and didn't get even a three-line notice on the inside page. But now he is getting real headlines and an occasional editorial reference for an open attempt on the life of an unoffending baby who had the bad karma, as the Hindus say, of being born hydrocephalic. The new arbiter of human destiny megaphones to an otherwise occupied world that he is giving the infant a mysterious drug which will gradually sap its vitality and finally shove it across the Styx. Why, if he is really working the philanthropy racket, he doesn't kill it at once with a good dose of morphine, or a cord round the neck, is not revealed; it wouldn't take so long, and the newspaper sob stuff would be shorter—but of course that's not the reason. When the baby dies, and the coroner makes inquiries, we shall perhaps get fuller particulars of this latest frill in infanticide.

News of the Week.

Life Insurance Company Offers Statistics to Physicians.—The Statistical Bureau of the Metropolitan Life Insurance Company announces that in view of the cooperation which the medical profession has given them in the collection of data, they desire, now that their statistics have been compiled, to place them at the disposal of the medical profession. These statistics present the principal causes of death among white and colored wage earners in the United States and Canada. The material covers over ten million individuals for each of the six years from 1911 to 1916. Death rates are available for each race, by sex and by age periods. The company hopes in this way to aid in the study of disease and disability among wage-earners. It desires to stimulate medical investigation and research. These statistics are available to physicians, public health, and social workers. All inquiries should be addressed to the Statistical Bureau, Metropolitan Life Insurance Company, 1 Madison Avenue, New York City.

Are Physicians Reporting Tuberculosis?—The statistics of the New York Health Department with reference to tuberculosis in the second quarter of the present year show a slight decrease in the death rate from pulmonary tuberculosis and for other forms of disease as well, while there is a marked decline in the number of new cases reported. The Health Department states that this would be a source of great satisfaction did it not have evidence for the belief that this decrease can be accounted for to a certain extent by the failure of physicians to report to the Health Department cases of tuberculosis under their care. Delinquent physicians are reminded that failure to report cases of tuberculosis is a violation of the Sanitary Code, that is, a misdemeanor and subjects the offender to criminal prosecution.

"War Whiskey" Fatal.—The death of five men and the serious illness of two others who had been living in a Mills Hotel in Bleecker Street, were reported on one day last week. Investigation revealed the fact that they had obtained a substitute for whiskey at a Bleecker Street saloon. The symptoms of the victims pointed to wood alcohol poisoning. An autopsy has been performed on the body of one of the victims and further investigations are in progress.

High Price of Milk and the Poor of New York.—In order to determine how the high price of milk is affecting the people of New York, the Department of Health, in cooperation with the New York Association for Improving the Condition of the Poor, and the Mayor's Committee on Milk, has made a survey representing all the boroughs. The information was collected from 2200 families by 250 field workers. The 2,200 families visited represented 12,439 individuals. of which 4,467 were adults, 2,534 children from six to sixteen years of age, and 5,438 children under six years. The total amount of milk purchased by these families at this time was 3,193 quarts daily, as compared with 4,797 quarts daily a year ago. Though this decrease is slightly offset by the consumption of condensed milk, the amount falls short of the estimated requirement for this number of people, which, according to the estimates of physiologists and pediatricians, would be 8,194 quarts daily.

White Mice Wanted.—The laboratory of the New York Health Department is suffering from a shortage of white mice as the result of war conditions and the increased cost of breeding animals. Dr. William H. Park, director of the laboratories, is advertising for all who have white mice for sale to communicate with the Research Laboratory, foot of West Sixteenth Street, New York. Unless a new supply of white mice is furnished the Health Department will be forced to discontinue testing pneumonia germs for the physicians of the city.

Progress in the Prevention of Blindness.—Recently published statistics concerning the occurrence of ophthalmia neonatorum in the schools for the blind throughout the United States show that altogether 3336 pupils were enrolled in these schools during 1916-1917, and that nearly one-quarter of them were blind as the result of ophthalmia neonatorum. The records of the past ten years show that in 1907-1908 26 per cent. of those admitted to these schools were blind as the result of ophthalmia neonatorum and that each succeeding year has shown a slight decrease in the number of cases of blindness due to this cause until in 1916-1917 but 18.4 per cent. of those admitted were blind as a result of ophthalmia neonatorum. Of these 3336 children admitted to schools for

the blind in 1916-1917, 341 were blind from accident, 121 from progressive nearsightedness, 56 from trachoma, 189 from interstitial keratitis, 334 from optic nerve atrophy, 947 from other congenital defects and one from wood alcohol poisoning.

Commission Conducts Hearing on Care of Insane.—The Hospital Development Commission, which was created by the last Legislature of the State of New York to formulate a plan for the systematic enlargement of the State institutions for the insane and feeble-minded, conducted a hearing at the New York Academy of Medicine, on November 7 and 8. The Commission has been engaged since last July in visiting and investigating the state hospitals for the insane in this and other states, particularly Massachusetts, in the endeavor to devise a method of handling the insane in State and municipal institutions, and to evolve a plan which will provide for the expansion of the state hospital system without requests for appropriations at each session of the Legislature. The immediate establishment of psychopathic hospitals was advocated. These could care for many patients who did not need State Hospital care and would serve as a clearing house for sifting out the cases that were hopeless and belonged in hospitals for the insane from those who needed only temporary care. The hearing brought out the opinion that the care of the insane should be exclusively a state function, as municipal governments were too liable to shift.

The Yorkville Medical Society of the City of New York will hold a stated meeting at the Hotel Bon Ray, Madison Avenue and Ninety-second Street, on Monday evening, November 19, at 9 o'clock. There will be a symposium on tuberculosis, with papers by Drs. I. Seth Hirsch, A. F. Shrier, Jacob Heckmann, and Fritz Neumann.

The Medical Association of the Greater City of New York will hold a stated meeting at the New York Academy of Medicine on Monday, November 19, at 8.30 P. M. There will be a series of "Practical Talks on the Diagnosis and Treatment of Infectious Diseases" by Drs. Harry Louis Abramson, Josephine Bicknell Neal, and Samuel Dana Hubbard, followed by a discussion by Drs. William Lang Sommerset, John Randolph Graham, Louis I. Harris, Charles H. Nammack, and Aaron Silkman.

Dr. William M. Leszynsky has been appointed neurologist to the Manhattan State Hospital, New York City.

Prof. F. de Quervain has been appointed to the surgical chair held by the late Professor Kocher at the University of Berne, Switzerland.

The Joint Meeting of the New England Pediatric Society, the Philadelphia Pediatric Society and the Section on Pediatrics of the New York Academy of Medicine, was held in New York on November 8. A purely scientific session, such as has been held in former years, was dispensed with. The day was spent in visiting clinics, among which were the following: Children's Wards of Bellevue Hospital, a Clinic by Dr. Linnaeus E. LaFetra, Dr. Herbert E. Wilcox, Dr. Charles Hendee Smith, and Dr. Oscar M. Schloss; Neurological Institute, A Clinic on "Newer Methods of Diagnosis and Treatment of Hydrocephalus," by Dr. Charles A. Elsberg, and a Clinic on the "Surgical Treatment of Birth Palsy," by Alfred S. Taylor; Babies' Hospital, a Clinic by Dr. L. Emmet Holt; Vanderbilt Clinic, a "Dermatological Clinic," by Dr. George M. MacKee; Department of Pathology, College of Physicians and Surgeons, "A Demonstration of Pathological Material," by Adrian V. S. Lambert, and a "Neurological Clinic," by Dr. Frederick Tilney. A dinner was given at the Harvard Club which was followed by after dinner addresses on the "Pediatricians' Part in the War." Dr. Herman M. Biggs described the conditions among the civil population of France—the low birth rate, the increase in tuberculosis, and the losses incident to the war—that make it imperative that every effort should be made to conserve infant life. For the work to be done along these lines they were largely dependent upon American physicians. Dr. Samuel McC. Hammill and Dr. Richard M. Pearce described the work that was being done to conserve infant and child life in Pennsylvania and Dr. Fritz B. Talbot told of the work that was being done along similar lines in Massachusetts.

New York Food Cabinet Organizes.—Dr. Henry Moschowitz, the City Market Commissioner, has organized a group of representatives of the various city departments which is to meet once each week to discuss ways and means of establishing the control of food in New York City. The first of these meetings was held on November 7, when a plan of campaign was outlined. The task of the Health Department of the City is to make a study of the wholesale and retail prices of the essential commodities and the relation of these prices to the factors of distribution of trade. The Department of Public Charities is to study the relation of present prices to income.

The Jamaica Hospital, Borough of Queens, New York City, announces the instalment of a thoroughly equipped *x*-ray laboratory and states that it is prepared to make *x*-ray examinations and report upon them to physicians referring cases to it.

Publication to Aid Orphans of the War.—The Association of Orphans of the War announces that it has founded a magazine bearing the title, "The Orphans of the War," which is to be a universal magazine of French propaganda. The object of the publication is to form a link between the orphans of the war and their friends who will thus be able to support them in their daily life and to aid in rearing a healthy and strong generation of men and women who will work for the greatness of France and the progress of Humanity.

Distinctive Bottles for Poison.—A recent bulletin issued from the Surgeon General's office at Washington states that every year, on an average, five thousand people take poison accidentally. To prevent these mistakes a bottle has been invented which has the skull and cross-bones molded deep in the glass, so that when the bottle is taken up in the dark it can be easily distinguished by the sense of touch. If the label from such a bottle is lost the fact that it contains poison will still be obvious.

Charitable Bequests.—Among sixty-eight beneficiaries of the will of the late Mrs. Mary Warden Harkness are the following hospitals: Morristown

Memorial Hospital, $100,000; Flagler Hospital, $100,000; Germantown Dispensary and Hospital, $100,000; Babies' Hospital and St. Mary's Free Hospital for Children, New York, each $100,000; St. Bartholomew's Clinic, New York, $10,000; St. John's Guild, New York, $50,000.

St. John's Guild and the Hebrew Orphan Asylum, New York, have each received $500 under the will of Joseph Morningstar.

Dr. Katherine B. Davis has been reappointed chairman of the Parole Board of New York City for a term of ten years by Mayor Mitchel, at a salary of $7,500 a year.

Obituary Notes.—Dr. CHARLES H. A. DAVIS of Meriden, Conn., died at the State Hospital, Middletown, Conn., on November 8, aged 77 years. He was a graduate of New York University Medical College, in 1865, a former member of the Legislature, and twice Mayor of Meriden.

Dr. BASIL M. WOOLLEY, a graduate of the Atlanta Medical College, in 1882, and a Confederate veteran, died at his home in Atlanta, Ga., on October 28, aged 83 years.

Dr. JOSIAH JACKSON HARRISON, a graduate of the University of Nashville Medical Department, in 1854, and a practitioner of medicine for over sixty years, died at his home in Loudon, Tenn., on October 24, aged 83 years.

Dr. JEFFERSON A. DAVIS, a graduate of the Medico-Chirurgical College of Kansas City, in 1902, died at his home in Kansas City, Kas., on October 28, aged 54 years.

Dr. CARL FULDA of Brooklyn died at Pepperell, Mass., on October 8, aged 39 years. He was a graduate of the College of Physicians and Surgeons, Columbia University, in 1900, and a member of the second surgical staff of the German Hospital, Brooklyn.

Dr. HANS KUDLICH died at his home in Hoboken, on November 10, at the age of 94 years. He studied medicine in Berlin and Switzerland and was banished from his country for having taken part in an abortive revolution in Germany. He was one of the founders of the Hoboken Academy of Medicine.

Dr. LOUIS ARTHUR WELLES ALLEMAN died at his home in Geneva, N. Y., on November 3, aged 51 years. He was a graduate of Jefferson Medical College, Philadelphia, in 1886, and formerly professor of ophthalmology at the Long Island College Hospital, Brooklyn.

Correspondence.

OSTEOPATHY.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In his note on Osteopathy to the MEDICAL RECORD of Oct. 27, it is quite evident that Dr. Beverly Robinson is not aware of the fact that at all of our large hospitals there is a corps of masseurs and masseuses doing better work than he ever dreamed of from such a source.

An excellent masseuse from a neighboring city called on me a short time ago and said, "The doctors in our town will not recommend massage, and their patients who need it go to the osteopaths." The inevitable result of this is that when the patients are benefited, as they sometimes are, their physicians are denounced for a conservative lot of old fogies, who do not want their patients cured in any other way than by the use of drugs; whereas they might just as well have had the honor and glory of the cure by advising massage at the proper time and seeing that it was correctly done. But many times patients do not ask advice of their physicians about such matters, and when they receive no benefit or are injured, then they come back to the fold of their own good shepherd much better sheep than when they departed. Especially is this the case with many of the patients of the orthopedic surgeons, who often have their spinal columns yanked in a most unmerciful manner by the osteopaths, when they ought to be kept quiet, and then they return meeker than Moses, and require a much more prolonged course of immobilization. Indeed, I am not so sure but that some of my orthopedic friends are highly tickled over this, though they say not a word. But what shall we say of the physician who is so lacking in backbone as quietly and placidly to look on while his patient is being treated by an osteopath? Surely he ought to know that in some cases valuable time is being lost; in others, that his patient is liable to be injured. We are told everything that the osteopath does is scientific, very scientific. Some even claim that it is nothing but scientific massage. Unfortunately for the patient, however, the result is too often *sigh-entific.*

Osteopathy is a word that has long been in use to signify disease of bone. It is the worst possible term that could have been cribbed for any form of manual treatment whatsoever. In the MEDICAL RECORD of August 16, 1879, I described all these people before they were conceived or begotten and while as yet there was none of them. Here are the words: "In almost every city of the United States, and, indeed, of the whole civilized world there may be found individuals claiming mysterious and magical powers of curing disease, setting bones or relieving pain by the immediate application of their hands. Some of these boldly assert that their art, or want of art, is a gift from Heaven, due to some unknown power which they call magnetism, while others designate it by some peculiar word ending with *pathy,* or cure; and it is often astonishing how much credit they get for their supposed genius by many of the most learned as well as by the most ignorant people."

Osteopathy is nothing but a crude, rough, awkward sort of massage or movement done by people who know little or nothing about either, and who assume to know everything and who shut their eyes to all that has ever gone before them in the way of manual treatment. It is doubly true what Dr. John K. Mitchell has said: "That if physicians had only been wideawake to the value of massage in suitable cases, the osteopath would never have had a chance." When osteopathy continues to thrive as it does now, it is time the general practitioner studied medicine. said a writer in the *St. Louis Courier of Medicine.*

DOUGLAS GRAHAM, M.D.

BOSTON, MASS.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

PRESS CENSORSHIP—REPRESSION OF QUASI-MEDICAL MISINFORMATION—ARTIFICIAL PROTEIN—GLYCERIN FROM WASTE MATERIALS.

LONDON, October 12, 1917.

A PRESS censorship is a provocative subject, though with many it is treated as a simple necessity, its function being to prevent the dissemination of false and alarmist news and to suppress facts of which the knowledge might prove injurious. In matters of scientific and medical importance, such censorship might well be extended to the lay press when it proposes to deal with such matters; for the public forms its views, often lasting ones, from this press, which is its chief and frequently its sole source of information. Some astonishing statements are continually put forth, and give rise to as much amusement as instruction. A recent daily told its readers that "bottled blushes" could be purchased, and descanted thereanent on capsules of amyl nitrite! An equally noteworthy example is the extravagant claim for flavrine put forward by one whose ignorance of scientific matters is likely to do harm by promoting self-medication, with explosive compounds made at home. In view, therefore, of the dissemination of false or at least dangerously incomplete and inaccurate knowledge through the medium of the lay press, a censorship has been thought by some to be worth thinking about.

Science is being plumbed to its depths for agents to take the place of others which are fast disappearing. The demands of war on some classes of substances are stupendous, and spell exhaustion in different directions. Protein foodstuffs have been produced by the fermentation of solutions of sugar and ammonium sulphate, by the agency of yeast. Another noteworthy achievement is the production of glycerin from camp waste. Considerable quantities of this commodity have been obtained from waste fats and bones. It has been estimated that 14 pounds of household bones will yield enough glycerin to provide the charge for a shell of 18 pounds, and the quantity of glycerin recovered up to date is well over one thousand tons. When peaceful times return they should witness the cheapening of glycerin and several other medicinal substances, as the outcome of necessitous war-time research.

OUR LETTER FROM PARIS.

(From Our Regular Correspondent.)

RED CROSS CANTEEN AT THE GARE DE L'EST—THE PROBLEM OF ABORTION—SURGICAL USES OF RUBBER—NEW Y. M. C. A. HOTEL FOR SOLDIERS.

PARIS, October 8, 1917.

THE night canteen No. 1, "Les Deux Drapeaux," operated by the American Red Cross in cooperation with Mlle. Richard, which has been opened at the Gare de l'Est, has proved itself an instantaneous success. The first night it was opened, men arriving close to midnight from Lengres and Belfort had passed ten hours in the train and arrived in Paris to find all restaurants closed.

The American Red Cross canteen, however, was open in the railway station, and they showed themselves most appreciative of the fact. The military authorities had advised Red Cross officials that perhaps there would be between thirty-five and fifty poilus who would avail themselves of the canteen, but, as a matter of fact, those in charge of the canteen served hot and comforting drinks to nearly 400 soldiers.

For a long time, just how long I would hesitate to say, the Academy of Medicine has been occupied with the study and discussion of the depopulation of France, not by the war, but by abortion. Many savants have taken part in this discussion and their suggestions and recommendations give evidence of the earnestness and profundity of their analysis, but the situation demands something more than discussion. One strong man with the will and determination to accomplish results would do more to resolve the situation than a dozen academicians.

The causes underlying the great increase in abortion are multiple and complex. Moral, social, economic, outside of such causes as alcoholism, syphilis, and tuberculosis. I do not pretend to have a solution to offer, but I do know that to achieve success measures must be taken that will fairly cause a social revolution; centuries of custom and usage that have slowly formed the basis of the evil that now threatens the life of the nation cannot be cured by palliative measures; the disease is deadly and the measures looking to a cure must be radical.

It has been suggested that the Government make a monetary provision for each child born out of wedlock, which is well, but what can they do to protect the mother socially? If the Government could pension every woman consenting to bear an illegitimate child to the extent that she would not be wholly dependent upon the good will of the community for the opportunity to earn her living; in other words, guarantee her against want, I venture to say the birth rate would be advanced to surprising proportions; but could the nation afford this burden?

Professor Delbet made a highly interesting communication to the academy respecting his experiences in the surgical use of rubber. He has employed elastic rubber to replace aponeuroses and muscular tissues and hard rubber to replace bone. He reported the case of a man in whom he resected 15 cm. of the upper part of the humerus, including the head, and replaced it with hard rubber, and the man is now using his arm.

All the comforts of home, all the conveniences of an American hotel—right here in Paris, for the American soldier and sailor. That is the description deserved by the Hotel du Pavillon, at 36 rue de l'Echiquier, as it is now being operated by the Y. M. C. A. Prices have been cut to a point to cover expenses. The price of a room with two beds and bath attached, which cost 20 fr. a day before the Y. M. C. A. took the hotel over, has been reduced to 10 fr.; a large single bedroom, for which the old price was 7 fr., now goes for 4 fr. to the soldier or sailor. For 3 fr. a day he can have a small single bedroom that formerly cost 5 fr.

There are 110 modern rooms, with hot and cold running water, telephones, and electric clocks, that are available at 4 fr. and up—and not so far up—in price. There are 110 rooms with everything but the running water that are to be had at 3 fr. and

up. Included in the furniture of every room is a Morris chair.

The man who does not rent a room with bath has a big bathroom within a few steps of his door.

Then, when he's all dressed up with no place to go, he has, on the first floor, lounge with pianos, phonograph, and easy-chairs; writing room with stationery and American and English magazines; billiard room with a real billiard table, and the dining room which has only to be seen to be appreciated.

Already sailors and soldiers from "somewhere in France" are making this first of Y. M. C. A. hotels their headquarters in Paris. Among the first arrivals were two young pigeons, which took up their residence outside the window of room 300. A waste basket now provides them with one of the conveniences of the hotel.

And, last but not least, there's an elevator—and it will carry you down as well as up, which is more than can be said for the average Paris "lift."

146 Avenue des Champs Elysées.

Progress of Medical Science.

Boston Medical and Surgical Journal.

November 1, 1917.

1. The Use of Normal Blood Serum, Particularly with Reference to the Treatment of Wounds. Studies in Serum Therapy II. Timothy Leary.
2. The Preparation of Blood Serum for Use. Studies in Serum Therapy III. Timothy Leary and Frank H. Dunbar.
3. Anaphylactic Reactions to Normal Sera. Studies in Serum Therapy IV. Timothy Leary, Frank H. Dunbar, and John W. Watson.
4. A Case of Streptococcus Meningitis Successfully Treated with Normal (Human) Serum. Studies in Serum Therapy V. Francis P. McCarthy.
5. The Treatment of Wounds with Normal (Beef) Serum. Studies in Serum Therapy VI. Joseph H. Shortell, William F. Cotting, and Timothy Leary.
6. Physical Examination of Factory Employees: Two Thousand Consecutive Cases and the Defects Found. Raymond W. Cutler.

3. Anaphylactic Reactions to Normal Sera. Studies in Serum Therapy IV.—Timothy Leary, Frank H. Dunbar, and John W. Watson decided to carry out a series of skin tests on normal human beings, in order to determine human susceptibility to the local application of various animal proteids. This method seemed particularly applicable, first, because it was recognized that the toxic character of beef serum is exhibited in non-fatal doses in laboratory animals at the point of inoculation; and secondly, because in wounds the serum would be applied in most cases locally. Various substances used in the test were normal saline solution (control), human, beef, sheep, pig, goat, and rabbit sera were used, as well as horse and fowl sera, egg white (diluted 1—10), and milk. The sera and milk were fresh, undiluted, and unheated. Tests were made on 113 individuals. Some individuals gave skin reactions to most of the agents used, excepting the saline and human serum. The occurrence of a reaction to human serum in a small number of cases is interesting, but agrees with the finding of isolysins in human and other sera. Although precautions were taken to make the scratches as nearly alike as possible, an error from this source, due to variation in the traumatism, cannot be excluded. Notable is the grouping of the other sera, excepting that of the fowl. It will be observed that the reactions to beef, sheep, pig, and goat sera correspond, within the limits of error, to those obtained with horse serum, 16 slight, 15 moderate, and 2 marked. Chicken serum and egg white gave a high percentage of reactions, as would be expected from the recorded cases of egg poisoning. They refer to the work of Dr. Edwin Place, physician in chief, South Department, Boston City Hospital, who in a personal communication of unpublished work states that in preparation for the use of antitoxin in individuals who were known to be hypersusceptible to horse serum, he carried out a series of injections (1 to 10 cc. in arm or back) of antitoxic beef serum in over one hundred cases. Practically 90 per cent. of the cases exhibited a local reaction marked by the appearance within 24 hours of redness, swelling and tenderness about the site of the injection. This, though oftentimes extensive, subsided in all cases without local after-effects in two or three days. None of the children exhibited any other anaphylactic reaction, i.e. the reaction was purely local, in no case becoming generalized. This is in contrast to the reaction to horse serum, which, when it occurs, is usually delayed and general, marked by urticarias, etc.; rarely is there exhibited a purely local reaction. The antitoxic effect, as was to be expected, corresponded to the effect of using antidiphtherial horse serum. Their conclusions are drawn as follows: The results of these observations indicate that the skin reactions to unheated beef serum correspond closely to the reactions obtained with the sera of the other higher domestic herbivora, including the horse. The work of Dr. Place justifies a belief that beef serum, unheated, has only minor local toxicity, if any, in human beings, and can be used from this standpoint almost as safely as can horse serum. The observations of Dr. Place indicate that beef serum is safer than horse serum with reference to delayed anaphylactic responses, which follow so frequently the use of horse serum. The clinical application of beef serum in the treatment of wounds has been followed by no anaphylactic phenomena when the serum has been applied to wound surfaces. In six cases injections of serum were made, either subcutaneously or into the deep tissue. The amount injected was about 15 cc. In three of these cases chills occurred within two hours of the injection. In only one case was the chill marked, the temperature reaching 103°. In no case did a delayed anaphylactic reaction appear.

5. The Treatment of Wounds with Normal (Beef) Serum. Studies in Serum Therapy VI.—Joseph H. Shortell, William F. Cotting, and Timothy Leary employed a definite technique in the application of normal (beef) serum to the treatment of wounds of various types. Cellulitis, infected wounds, acute osteomyelitis, septic, ulcers, burns, and skin grafts were handled by this method and they state that the results justify the following conclusions: (1) Serum will control a septic process, wherever contact is made between the serum dressing and the infected tissue. (2) It is absolutely harmless to normal tissue. (3) As a prophylactic agent in fresh wounds it is of value. (4) Serum is a most marked stimulant of granulations. Grafting can and should be practiced earlier following the use of serum than under any other agent. (5) Injections of unheated beef serum are followed by rises in temperature, usually slight, perhaps with chill, but the reactions are short and not severe. Used as a dressing to wounds, no matter how large the surfaces are, it gives rise to no anaphylactic response.

New York Medical Journal.

November 3, 1917.

1. Antitoxin for Gaseous Gangrene. Carroll G. Bull.
2. Weight of Clothing and Its Relation to Weight of the Child in the First Five Years of Life. J. P. Crozier Griffith.
3. Diaphragamatic Breathing. Irwin H. Hance.
4. Influence of Labor on the Brain Development of the Child. Maximilian P. E. Groszmann.
5. Maniac Depressive Psychoses Associated with Malignant Conditions. Samuel L. Immerman.
6. A New Type of Rotary Mesh Filler for Use in Deep Roentgen Therapy with Special Reference to Vesical Neoplasms. William H. Meyer.
7. Phlebitis of the Deep Dorsal Vein of the Penis. E. Newton Turkus.
8. Diverticulitis of the Cecum. William R. Jackson.

1. Antitoxin for Gaseous Gangrene.—Carroll G. Bull gives the results of experimental work from the laboratories of the Rockefeller Institute for Medical Research on the production of antitoxin for gaseous gangrene. He states that it is a well-known fact that individual strains of the *Bacillus welchii* group may possess widely different morphological and cultural properties, and, according to previous work, a great majority of the strains are immunologically individualistic. From the point of view of developing a specific immune therapy, twenty-nine strans of the gas bacillus have been col-

lected from widely different sources and tested for toxin production, considering especially the character and severity of the lesions on animal inoculations, as well as the effect of a monovalent antitoxic serum on their pathological action. Twelve of the strains were isolated from cases of gaseous gangrene occurring among the wounded on the Western battle front; two were obtained from cases of gaseous gangrene in New York City, while the others were isolated from local saprophytic sources—milk, garden soil, feces, etc. The results were that each strain so far studied secretes a toxin which is neutralized by an antitoxic serum obtained by immunizing animals with the toxin from any individual strain. The toxins were qualitatively indistinguishable, varying, however, in potency. From the results obtained it is fair to conclude, therefore, that the same toxin is common to all members of the *Bacillus welchii* group. The results obtained with the preventive and therapeutic applications are very encouraging. They derive significance, in the first place, from the fact that gas bacillus infections in guinea pigs and other susceptible animals are comparable with infections with this organism in man. The experimental infections in the guinea pig differ, however, from the natural infections in man, since man possesses a higher natural resistance to infection with this organism, and such massive infections do not occur in nature. The protected guinea pigs manifested perfect immunity to hundreds of lethal doses of the bacilli several days after the antitoxin had been administered. It seems reasonable, therefore, to predict that the infection in man will not develop as long as his body fluids and tissues contain an adequate quantity of the antitoxin. The possibilities of passive prophylaxis, the author maintains, have certain natural limits of time, depending upon the rapidity of elimination of the foreign serum. The experimental data presented and practical experience with antidiphtheritic and antitetanic antitoxins indicate that, in all probability, a passive immunity to Bacillus welchii infection of at least two weeks' duration can be conferred upon man. An immunity of ten days' duration from the time of exposure to infection will be sufficient in the great majority of instances, since only sporadic cases of Bacillus welchii infection arise after this time, the greatest number occurring forty-eight hours after exposure. In the light of the results obtained in treating the infection in guinea pigs, it is reasonable to hope that the antitoxin will be of value also as a therapeutic agent. The indications are that early infections can be readily arrested and the more advanced and severe ones ameliorated, if not wholly checked, so that surgical interference may be resorted to with greater possibilities of effectiveness. It can be stated here, parenthetically, (1) that the antitoxin is being prepared on a large scale in horses, and that very potent serums have been obtained; (2) that a few cases of gaseous gangrene in man have already been treated, in which the efficacy of the antitoxin was unmistakable. The antitoxin was administered intravenously and locally about the wound. Bull summarizes the results of his work as follows: (1) Twenty-nine strains of the Bacillus welchii group have been found to produce toxins which are qualitatively indistinguishable. (2) It has been possible to confer on guinea pigs a passive immunity of about two weeks' duration to Bacillus welchii toxin through a protective administration of the antitoxin. (3) Guinea pigs which had received a prophylactic dose of Bacillus welchii antitoxin exhibited pronounced resistance to infection with the virulent bacilli for a period of twelve days. (4) The opinion has been expressed that it will be possible to prevent gas bacillus infections in man through a protective use of the antitoxin, and that developed cases of the infection may be controlled by therapeutic application of the same agent. (5) A few cases of gaseous gangrene in man have been treated in which the efficacy of the antitoxin was unmistakable.

Journal of the American Medical Association.

November 3, 1917.

1. The Section on Gastroenterology and Proctology: Retrospect and Prospect. Dwight H. Murray.
2. "Truth About Intraspinal Injections in Treatment of Syphilis of Nervous System": A Reply. John A. Fordyce.
3. Roentgenographic Examinations of the Urinary Tract: Review of a Series of About 500 Cases. E. W. Caldwell.
4. Clinical Diagnosis of Lithiasis of the Upper Urinary Tract. Edward L. Young, Jr.
5. A Clinical Study of Lithiasis Based on a Series of One Hundred and Ninety-eight Cases. Henry G. Bugbee.
6. Spinal Puncture in Diabetes Insipidus. Evarts A. Graham.
7. Anal and Rectal Fistula. J. Rawson Pennington.
8. The Value of Making Leukocyte Counts on the Urine in Infections of the Kidney. Herman L. Kretschmer.
9. Insolubility of Soft Gelatin Capsules: Experiments Showing that Soft Capsules Are Relatively Insoluble in the Stomach. F. W. Dershimer.
10. Quinine and Urea in the Treatment of Hemorrhoids. Supplementary Report. E. H. Terrell.
11. Autointoxication in Chronic Constipation. Horace W. Soper.
12. Enterocolonic Conditions in Chronic Constipation. Granville S. Hanes.
13. Rectal Conditions in Chronic Constipation. Alois B. Graham.

2. **"Truth About Intraspinal Injections in Treatment of Syphilis of Nervous System." A Reply.**—John A. Fordyce takes exception to some of the statements made in an address by the chairman of the Section on Nervous and Mental Diseases, Dr. Bernard Sachs, read at the Sixty-eighth Annual Session of the American Medical Association entitled "Truth About Intraspinal Injections in Treatment of Syphilis of the Nervous System." He states that if the statements contained in that article are accepted by the medical profession as a final and correct judgment of this new therapeutic procedure, an enormous amount of harm will result in that numerous victims of syphilis of the nervous system will be deprived of their only chance to regain health and economic efficiency. The attempt to discredit the value of serologic examination of the spinal fluid as a diagnostic procedure and guide to treatment should not be permitted to gain credence without a word of protest. In the address in question there are several statements that are entirely at variance with the experience of his colleagues and himself, who have employed the method over a period of years in the manner they consider technically correct. They have seen numerous patients, treated for months intensively by salvarsan given intravenously with little or no clinical improvement, entirely relieved of tabetic pains, crises, bladder symptoms and sexual impotence, and with a marked improvement in their ataxic gait after the institution of intraspinal treatment. Six case histories are given showing the results obtained by the correct employment of the intraspinal injections of salvarsan. Fordyce sums up his objections to the statements in the first article, as follows: (1) In tabes, certain types of cerebrospinal syphilis like mentingitis, meningo-myelitis, meningo-encephalitis and in optic atrophy with positive findings in the fluid, intraspinal treatment succeeds in relieving or curing the conditions after failure of intravenous and other treatment. (2) It is the only procedure that can be employed after the intravenous treatment fails or when the patient develops an intolerance to arsenic. (3) With proper technique and experience, it is less dangerous than intensive intravenous treatment. (4) In paresis with stigmata of degeneration, the most to be hoped for is temporary arrest of the encephalitis. There are borderline cases of meningo-encephalitis which simulate paresis and which are curable by the treatment in question. (5) The criticism of the method is based largely on the results following imperfect technic and by its employment in cases without clear indications afforded by spinal fluid examination. Aside from these reasons, it has been condemned after short and imperfect trials. In some cases the existing lesions are activated by early injections and cured by persistence in the treatment. (6) The author's statement that it is regrettable that changes in biologic findings should be made the criterion of the efficiency of any therapeutic method is unfortunate from the standpoint of the patient as well as the investigator. With the exceptions noted in the body of the article in paresis and preparetic conditions, when a temporary remission may occur and not be indicated in the fluid, there is an intimate relationship between the clinical symptoms and the fluid findings. It is not difficult to select individual cases in which the Wassermann and globulin reactions are unchanged after prolonged treatment; but conclusions based on such exceptional cases are one-sided, unfair, and fail entirely to interpret or correlate the fundamental principles involved. If reliance is placed on

clinical improvement alone as a criterion of the action of our remedies and the fluid changes disregarded, few, if any, permanent cures will be achieved, and sooner or later the patient's condition will relapse. There is as much reason for basing the efficiency of a therapeutic procedure on the changes in the biology of the fluid as there is in using the blood Wassermann as a test of the value of treatment of syphilis in general. If we were to discard the positive knowledge acquired in the past few years as a result of systematic examination of spinal fluids in syphilis, we should have vague ideas as to the time the fluid is infected, no clear conception of the difference between active and abortive tabes, and no method of differentiating early paresis from conditions that simulate it. Neurasthenic states, headaches, phobias, vague changes in mentality, crises, or impairment in the sexual function are constantly overlooked or wrongly diagnosed by the pure clinician. Arteriosclerosis, chronic alcoholism, and diabetes may cause symptoms easily mistaken for the syphilitic syndrome. (7) The future of the syphilitic individual and the hope of anticipating or arresting the incurable degeneration is largely dependent on early and systematic examination of the spinal fluid.

British Medical Journal.

October 13, 1917.

1. The Canadian Army Medical Service. J. T. Fotheringham.
2. On the Etiology of Trench Fever. Alwin H. Pappenheimer, H. N. Vermilye, and J. H. Mueller.
3. A Method to Facilitate the Isolation of the Cholera Vibrio and Other Organisms. Aldo Castellani.
4. Adaptation of Thomas and Jones Splints to Obtain Fixation of the Arm in an Abducted Position while the Patient Is Ambulatory. Robert B. Osgood.
5. A Splint for the Treatment of Gunshot Wounds Involving the Shoulder Joint. J. Campbell.
6. Pneumococcal Meningitis. C. Worster-Drought and Alexander Mills Kennedy.
7. An Inquest on a Leg. Norman Porritt.

6. Pneumococcal Meningitis. — C. Worster-Drought and Alexander Mills Kennedy based their observations upon a study of nine cases of pneumococcal meningitis which came under their direct care, the ages of the patients varying between the wide limits of three months and forty-nine years. In five cases the disease was the so called primary form—that is, no lesion conceivably due to active pneumococcal infection was discovered elsewhere. This diagnosis, in three cases, was confirmed by postmortem examination; in the remaining two an autopsy was not obtainable, but, clinically, no other lesion could be detected. In four cases meningitis occurred as a secondary infection. From the day of onset the course of the disease varied from three to fifteen days' duration in different cases. With two adults, aged twenty-two and forty-one, both cases of the primary form confirmed by postmortem examination, the course of meningitis was extremely acute, lasting only three days; the temperatures were never below 101°, and often reached 104°. Five other cases were also acute; the one in which, postmortem, the sphenoidal sinus was found filled with pus died four days after the commencement of headache. Both the children in whom meningitis occurred secondarily to lobar pneumonia lived only two days after the appearance of meningeal symptoms. In none of the above cases did any lasting improvement follow the evacuation of cerebrospinal fluid from the intrathecal space. A man, aged twenty-three, in whom meningitis occurred secondarily to otitis media, ran a course of nine days' duration, being continually delirious in spite of the daily withdrawal of 55 to 100 c.c. of cerebrospinal fluid, before sinking into coma. An infant of three months also continued for eight days acutely ill and with occasional convulsions. The courses of two other cases, both primary forms, were somewhat subacute; one was an infant, aged four months, who lived for twelve days with retracted head, arched spine, and occasional vomiting. Towards the end convulsions were frequent. The second subacute case is deserving of special mention. Meningitis having been diagnosed by the rigidity of the neck muscles, Kernig's sign, etc., its causative organism can only be determined by bacteriological examination of the cerebrospinal fluid. Even in the presence of pneumonia meningitis is not necessarily pneumococcal, as, in occasional cases of cerebrospinal fever, a bronchopneumonia may at first mask the meningeal symptoms. The majority of the cases described above were sent into hospital with a diagnosis of cerebrospinal fever; it was only upon finding pneumococci in the cerebrospinal fluid that their true nature was revealed. It is frequently possible to diagnose tuberculous meningitis clinically but, at the present time, it is safer to regard any other examples of meningitis as meningococcal until proved otherwise. The treatment of pneumococcal meningitis is at present most unsatisfactory. The nine cases recorded here serve to demonstrate the failure of repeated lumbar puncture. Each patient was punctured at least once daily, and in some cases every twelve hours, the subarachnoid space being drained on each occasion, until practically no more fluid would flow. As a result of the drainage the symptoms were occasionally alleviated for a time, but the ultimate result was not affected. Vaccines may be of value, but it is seldom that a case lasts sufficiently long for vaccine therapy to have an effect. They found hexamine of no value in the treatment of meningitis. Since the chief therapeutic properties of the drug appear to be due to its oxidation into formaldehyde, which takes place only in an acid medium, it probably has little or no action in meningitis. In the course of the chemical examination of numerous samples of cerebrospinal fluid from cases of meningitis, they found less than 2 per cent. giving a very faintly acid reaction. The fluid is usually faintly alkaline, but occasionally neutral; the indicators used were litmus, phenolphthalein and methyl orange. Hexamine can be detected in the cerebrospinal fluid within an hour of administration by the mouth, but the Burnam-Ramini test fails to demonstrate the presence of free formaldehyde. Lamar, working with monkeys, showed that sodium oleate attacked and dissolved pneumococci, and, when combined with a specific anti-pneumococcic serum had a decided therapeutic effect on pneumococcal meningitis, even when the organisms were multiplying in the blood stream. The action, however, is restricted to the particular type of pneumococcus from which has been produced the immune serum in the mixture of serum and sodium oleate. When the infecting pneumococcus was different in type from that represented by the immune serum no therapeutic action resulted. When, therefore, a satisfactory polyvalent immune serum is forthcoming the most promising method of treatment would seem to consist in the intrathecal injection of the antipneumococcic serum mixed with a solution of sodium oleate.

Le Progrés Mèdical.

September 15, 1917.

Medical Relations Between Latin-America and France.—M. G. states that the penetration of German science into the Latin countries has never been more than superficial, quoting from an address by Roger delivered last year. The Western countries of Continental Europe and the South American states comprise an ethnic group having a common origin, aspirations, ideas, and culture. This intellectual unity is maintained by a constant exchange of scientific books and publications. French works always have a good market in Latin-America, while German works circulate only in translation, French, and to some extent Italian. Since French is readily understood throughout South America, and French works are truly representative of Latin culture, German literature is much more an exotic even in translation. Naturally in the exchange of books and periodicals the French give much more than they receive. Paris exchanges theses with the Universities of Buenos Aires and Rio. All official publications from the universities of Brazil, Argentine, Uruguay and Cuba are also received in France along with certain publications from Mexico, Paraguay, Bolivia, Caracas and Montevideo. This service should be improved. At present there are from 60 to 70 South American students in the University of Paris, and there are at this moment 16 former internes of Paris hospitals engaged in practice in South and Central America. But aside from the student contingent many graduates in medicine come to Europe to complete their studies. As a matter of fact, Latin-America has facilities for teaching her undergraduates, but is less well equipped for post-graduate

work. The graduates have never been organized, and statistics concerning them are lacking. It is to be hoped that after the war is over this omission will be rectified. The French Institute for Colonial Medicine registered 224 pupils during 1902-1913. About a third of these were South Americans by birth. There is also in France a Society of Colonial Medicine, and another of Exotic Pathology, both of which have among their correspondents a number of eminent South American savants. It is highly desirable that the custom of exchange of university professors between the two hemispheres be inaugurated. This holds good for all sciences. Closer contact between the two hemispheres would perhaps have caused it to be known that an obscure health officer at Guadaloupe was the real pioneer in the demonstration of the mosquito transmission of yellow fever. Carlos Finlay took up the matter and saw it through. Further, several Frenchmen sent on a mission to Brazil proved after four years' work that the offending mosquito was the stegomyia. The indirect outcome of this work of Marchoux, Salimbini and Simond was the great prophylactic movement which culminated in the foundation of the Oswaldo Cruz Institute in Rio, the transactions of which appear simultaneously in Portuguese and French. The French and South Americans have collaborated in the warfare against poisonous serpents. It is to be regretted that certain epoch-making labors like those of Chagas on trypanosomiasis and of Crawell and Herrera Vegas on echimococcus disease have not yet appeared in French.

Norsk Magazin for Laegevidenskaben.

September, 1917.

Periarteritis Nodosa (Non-Syphilitic).—Harbitz reports a case of this affection naturally with autopsy. This disease was first described in 1866 in a patient with a complication of diseases of supposed syphilitic nature or origin although there were no characteristic lesions of that affection. In the fifty years which have elapsed some 35 cases have come to autopsy chiefly in German, Austrian, and Italian clinics. It is noteworthy that not a case has yet been reported in the English language. The author is able to add one to the few known Scandinavian cases. Patient was a male of 22. The initial symptoms were pains in the feet which were associated with muscular weakness. In the military hospital he received salicylic acid and KI. A general examination showed a normal thorax and abdomen. The feet were not swollen but presented tender points, which were also elicited along the back of the legs and thighs and over the head of the fibula. Patient who had never been ill in his life, was referred to the neurological department where the cranial nerves and those of the upper extremities were pronounced normal. The lower extremities showed no motor anomalies save for slight muscular weakness. All movements could be performed normally. Aside from sensitiveness of the muscle bellies there were tender pressure points. The bones were not tender in the shafts but the fibula heads and external malleoli were sensitive to pressure. The gait was paretic. There was a daily subfebrile temperature rise. Under treatment there was some improvement but several weeks later headache appeared with paresthesiæ in the upper extremities. The Wassermann was negative with positive Pirquet. Next there was a more rapid pulse, palpitation, and a blood pressure of 160. The urine, at first normal, had now become nephritic. The patient had now been ill for six months. At this juncture new symptoms developed—epigastric tenderness, vomiting, jaundice, dyspnea, edema, diarrhea, hemoptysis, ascites. The heart had been slowly enlarging, impulse now two or three finger breadths outside of mamillary line. Pulse became irregular and unequal. Death occurred after vomiting of blood and passage of same per rectum. Autopsy: the encephalon presented nothing abnormal, the arteries at the basis cranii being found intact. The heart was markedly hypertrophic in both ventricles with general dilatation of all cavities. The valves were normal, myocardium showed evidence of a peculiar form of degeneration, coronary arteries normal but the smaller branches were the seat of certain circumscribed thickenings of the intima. There was fluid in both pleuræ. The autopsy diagnosis was periarteritis nodosa affecting chiefly the arteries of the omentum (greater and less). The same process was beginning in the coronaries and arteries of the stomach and kidneys. There was degeneration and necrosis of the myocardium, hemorrhagic nephritis, necrotic areas with hemorrhage in the stomach and intestine. The unknown infection by attacking some of the smaller arteries had led to ischemic and degenerative changes in important viscera.

Annali d'Igiene.

August 31, 1917.

Alimentation of Italian Soldiers.—The present number of the Annali contains three articles on this subject. Rho, after quoting from authorities as to the number of grams of protein requirement per kilo of body weight, refers to another method of computation, viz., the number of protein calories for a man weighing 154 pounds. This has been fixed as low as 257 calories, but little over 60 gm. by weight. The Italian daily war ration has been 375 gm. of meat, equivalent to 151 gm. protein. This is nearly double the peace allowance. It is, of course, not to be understood straightway that the soldier actually consumes that amount, but in any case such an allowance of protein is not in harmony with modern teaching, for we know that for hard, sustained labor fuel food is required in amounts proportioned to the work of the machine. Luciani, the great Italian physiologist, has accepted the low protein requirement fixed by Chittenden, Hindhede, and others. The possible ill effects of the excessive consumption of meat may be left out of consideration in comparison with the fact that 30,000 head of slaughter animals are perhaps being wasted every month. The Italian peasant, moreover, has been raised without much animal protein, and it seems bad judgment to place him on a diet relatively rich in that food element. The number of daily calories necessary for the Italian soldier should not exceed 3000, which number should perhaps comprise 257 of protein for a man of 154 pounds. Baglioni states that the protein requirement is the only debatable subject. At the beginning of the war the soldier was allotted 200 gm. lean beef daily. This was made into beef stew, in which the soldier dipped his bread. The beef fat extracted by boiling remained in the stew and averaged 80 gm. Rice or macaroni was added and the ration called for canned tomatoes. The daily bread amounted to 750 gm. This ration proved very monotonous, and on one day in the week 100 gm. of cheese were given. Later, on alternate days, the beef was partly replaced by pork, mutton, or fish, while the rice and macaroni were also in part replaced by legumes and potatoes. As the active war ration called for extra meat the original 375 gm. were cut down to 250 and the difference made up with legumes, macaroni, or cheese, according to the particular day of the week.

Belli gives the minimum daily allowance of the sailors as follows: Total calories, 2700-2800; protein, about 90 gm. (of which 26 to 38 in the form of animal protein). The total protein consumed weekly is 600 gm.; of fats, 25 to 28 gm. The total daily consumption of carbohydrates is 500 to 600 gm. The actual quantity of daily bread is 550 gm. These figures were reached by experiments on a diet squad of marines.

Lymphatism and Suicide.—The recent claim that young suicides are apt to be of lymphatic constitution has been investigated by Hammar, who examined eighteen suicides aged from 17 to 35, with seventeen victims of accidents of the same span for controls. The thymus was found to be actually smaller on an average in the suicide series.—*Vierteljahresschrift für gerichtliche Medizin.*

Failure of the Wassermann in Certain Syphilitics.—Oestreicher cites a certain type of syphilitic who appears to be in vigorous health with healthy wife and children, has no suspicion of infection, has never been treated. The lesions, of the tuberculo serpiginous type, yield readily to potassium iodide. These subjects may give a negative Wassermann.—*Deutsche medizinische Wochenschrift.*

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Stated Meeting, Held October 11, 1917.

DR. ROGER H. DENNETT IN THE CHAIR.

Amaurotic Family Idiocy. — Dr. SARA WELT-KAKELS presented this patient, a female infant that came under her observation in March, 1916, at which time she was five months of age. The child showed the usual picture of amaurotic family idiocy, and also contractures of the limbs, especially of the upper extremities. As there was nothing in the family or personal history that gave a clue to the etiology of the disease, and in view of the theory that this condition might be due to some form of toxemia, some of the spinal fluid was withdrawn from the spinal canal of the child and injected into animals. After some weeks the brain and spinal cords of these animals were examined, but no changes had taken place.

Dr. HENRY KOPLIK said that he had seen over one hundred cases of amaurotic family idiocy, but he had never seen a case with this form of contracture, which might be taken for Little's contracture. Spasticity was not uncommon, but it was uncommon to find this form of contracture in the upper extremities. As the majority of these cases of amaurotic family idiocy were breast fed, it was difficult to account for them except on the theory that they were due to toxemia and it was for this reason that the spinal fluid from this case was injected into animals. Although the results of these experiments were negative, they, nevertheless, marked an advance in their knowledge of this condition. Dr. Koplik said that he was inclined to believe with Hirsch that the condition was congenital and that possibly it was a toxemia; it was a question whether it might not be a form of toxemia of pregnancy.

Chronic Internal Hydrocephalus; the Newer Methods for Its Recognition and Treatment.—Dr. CHARLES A. ELSBERG presented this paper, which was based upon a study of forty cases of hydrocephalus in infants and young children at the Neurological Institute and Mount Sinai Hospital. After reviewing recent investigations with reference to the secretion and circulation of the cerebrospinal fluid, he stated that these investigations had taught us that there were three different types of hydrocephalus—namely, that due to obstruction in the aqueduct of Sylvius or in the foramina of Magendie and Luschka, that due to diminished absorption, and that due to hypersecretion, or a combination of these. For a differentiation of these types from one another, Dandy and Blackfan, and Frazier and Peet had devised a method in which phenolsulphonephthalein was used as an indicator. After introduction into the ventricles phenolsulphonephthalein appeared in the urine in from two to twelve minutes; from 12 to 20 per cent. was excreted within two hours. When introduced into the subarachnoid space the dye appeared in the urine in from six to eight minutes, and from 35 to 60 per cent. was excreted in two hours. The dye passed rapidly from the ventricles into the subarachnoid space and appeared in the spinal fluid in from one to three minutes. As an indication of the amount of absorption from the arachnoid space neutralized phenolsulphonephthalein solution was employed. After examination had shown that the kidneys functionated normally, a lumbar puncture was done, a cubic centimeter of fluid withdrawn, and a cubic centimeter of the neutral phenolsulphonephthalein (6 milligrams) was injected. It was important that the solution be neutralized, as the alkaline solution was irritating to the central nervous system. All the urine secreted during the succeeding two hours was collected and examined. If less than 30 per cent. of the phenolsulphonephthalein had been excreted, there was diminished absorption from the subarachnoid space. In the majority of cases in which the absorption was below normal they had obtained values between 2 and 14 per cent. If after introduction of the dye into the ventricles, the puncture being made through the lateral angle of the fontanelle, the dye failed to appear in the lumbar puncture fluid within ten minutes, the case was one of obstructive hydrocephalus, and if the patient was under anesthesia, the proper operative interference, puncture of the corpus callosum, could be done at once through the trephine opening, which was made for the purpose of giving the injection. The trephine opening should always be made near the median line, just behind the coronal suture. In infants the injection could be made through the lateral angle of the anterior fontanelle. If these examinations showed that the normal communication between the ventricles and the subarachnoid space existed, and that there was either a normal or a subnormal absorption of fluid from the arachnoid space, the next step was to determine whether the secretion of the spinal fluid was greater than normal. A lumbar puncture was done every day or every other day. Where the secretion of the fluid was normal, the quantity of fluid obtained at each puncture and the pressure of the fluid became steadily less after the first two or three punctures. In hypersecretion, however, the amount of fluid obtained and the pressure under which it escaped remained constant for long periods. The occurrence of unilateral obstructive hydrocephalus might be determined by separate injections of phenolsulphonephthalein into each lateral ventricle. Of the forty cases of chronic hydrocephalus in this series, ten were obstructive, thirty nonobstructive, eighteen nonobstructive with diminished absorption, six nonobstructive with hypersecretion, and six nonobstructive with diminished absorption and hypersecretion. In hydrocephalus due to obstruction in the aqueduct of Sylvius or the foramina of Magendie and Luschka a new channel between the ventricles and the subarachnoid space should be made by puncture of the corpus callosum. By a simple, technically easy operation, a small opening was made near the median line, the dura incised, and the cannula passed by the side of the falx cerebri, through the corpus callosum, into a lateral ventricle. The opening was then enlarged by manipulation of the cannula, which was then withdrawn and the dura and scalp closed by suture. In properly selected cases, in which actual obstruction had been demonstrated, the results of this little operation were very satisfactory, and a complete cure might be effected. This was the most favorable variety of hydrocephalus for treatment up to the present time. There was some evidence to show that puncture of the callosum might be worthwhile trying in patients with obstructive hydrocephalus in whom subarachnoid absorption had been demonstrated to be below normal. In cases of hydrocephalus due to hypersecretion, a lumbar puncture should be done every day and the patient should be given thyroid extract in doses up to the physiological limit. From 15 to 30 c.c. of cerebrospinal fluid should be withdrawn at each puncture. The improvement would begin only after several months of treatment, and when the lumbar puncture demonstrated a diminished secretory activity of the choroid plexus. In hydrocephalus due to hypersecretion a certain number of satisfactory results could be obtained by a combination of thyroid feeding and repeated lumbar puncture. Hydrocephalus due to diminished absorption was the type most unfavorable for treatment. Repeated lumbar puncture and thyroid feeding might be tried, but in their experience had resulted in very little improvement. They had not tried to drain the fluid into any of the cavities of the body, as they felt convinced that real success could not be expected from any of the methods thus far devised. In those who had had chronic hydrocephalus the size of the head would always remain larger than normal, but if there was papilledema, this would rapidly subside under successful treatment and there would be improvement in the eyegrounds and vision. If ataxia had been of long standing it would require years for its complete disappearance, though marked improvement would occur within a few weeks after operation.

Dr. HENRY KOPLIK said he had been watching the progress of Dr. Elsberg's work and had learned a great deal from it during the last few years. He did not think any great advance could be made in the treatment of hydrocephalus until we knew more of its etiology. If the choroid plexus played the part it was supposed to play in the production of hydrocephalus it

must have undergone certain changes, but still we had no explanation of why some children suddenly got hydrocephalus or why other children should be born with hydrocephalus. In order to get at the bottom of this question these cases should come under observation earlier than they did. Some of the cases were very advanced at the time of birth and others developed the condition gradually, and it was the latter cases that should be placed in the hands of the surgeon earlier. It was very disquieting to read the reports in European journals of repeated lumbar puncture as a cure of this condition; in his experience this procedure had not been attended with very brilliant results either in the obstructive or the nonobstructive forms of hydrocephalus. There were a certain number of cases of hydrocephalus that made spontaneous recoveries and some of the cases that did not get well under operative treatment recovered at the time the skull ossified. In other cases the process seemed to stop before ossification, so that we did not know why the process came to a standstill. Children that seemed to have an inflammatory process of the brain or meninges should be watched from birth. The results of puncturing the corpus callosum had not been as satisfactory in the congenital cases as one might wish.

Dr. WILLIAM SHARPE said that personally he had studied many cases of hydrocephalus and had made a report of forty-one cases to the Neurological Society in February, 1917. Of this series only fifteen were of the internal type of hydrocephalus, that was, cases in which the ventricles were blocked. Autopsy made on each of the cases that died (fourteen out of the total of forty-one cases operated on at that time), together with observations at operation, led him to believe that most cases of hydrocephalus were due to a former meningitis and a blocking of the stomata of exit of the cerebrospinal fluid in the cortical veins and sinuses and possibly lymphatics. If the iter or the foramina of Magendie and Luschka were blocked, that was merely an incident in the diffused process, as there were still other stomata of exit in the cortical veins and sinuses which were blocked, so that he felt that merely connecting the ventricles with the subarachnoid space by a callosal puncture was simply changing an internal into an external type of hydrocephalus and, therefore, little if any improvement could be expected. As Dr. Elsberg had demonstrated in the pictures, we might have the ventricles dilated with fluid when the iter was not blocked, so that merely puncturing the corpus callosum would surely not allow the fluid to get out of the spinal canal. The fluid must be given an exit beyond the cerebrospinal canal, that was, through the dura or into the blood stream itself. He was using a method of drainage for both the external and internal types of hydrocephalus through the dura into the subcutaneous areas of the scalp, by means of linen strands, the results of which had been very successful and seemed to demonstrate that the cerebrospinal fluid was absorbed in the subcutaneous tissues of the scalp. In his series of fifty-eight cases operated on by this method there were only seventeen deaths. The subject of hydrocephalus, however, was still in its infancy, and any procedure, even though it gave negative results, should be given consideration.

Dr. ISRAEL STRAUS said that in discussing this paper he thought it might be well to review the facts that had really been established. In the first place, he took exception to the statement that we did not know what the spinal fluid really was. Halliburton's article in a recent number of *Brain* showed the composition of the spinal fluid and that it was secreted by the cells of the choroid plexus. From the work of Cushman and Weed we knew that a certain amount of the fluid was of periganglionic origin and was poured into the subarachnoid space, but this amount was small. From these investigators it could be learned that the chief pathway of absorption was through the arachnoid villi into the superior longitudinal sinus. Dr. Elsberg had spoken of the obstructive form of hydrocephalus as being due to obstruction of the aqueduct of Sylvius. Schlapp and Gere stated in a recent paper that they had found an obstruction in the aqueduct of Sylvius which macroscopically consisted of tubercle-like swellings of the ependyma. We knew that under the ependyma was a layer of glia which was of the same embryonic origin as the lining of the spinal canal, the substantia gelatinosa centralis. It was simply the lining of the spinal canal and when changes occurred in it they were called central glyosis syringomyelia. Both of these processes had their origin in developmental changes, and it was the speaker's belief that similar changes occurred in the glia of the iter and caused the obstruction described by Schlapp and Gere. The reason Dr. Elsberg got some benefit from the procedure he had adopted in these cases was that it allowed more fluid to get into the subarachnoid space, where it might be absorbed by the villi into the longitudinal sinus. It seemed that the improvement that took place must be accounted for an physiological grounds. Dr. Straus also called attention to a form of hydrocephalus of infectious origin, an internal hydrocephalus, which might be due to a cerebrospinal meningitis which had led to a closure of the foramina of Magendie and Luschka. He believed that in such cases we should operate, for he did not believe that lumbar puncture would help them. He did not see why the pediatrician did not turn these cases over to the surgeon as early as possible, so that an opening could be made in the thickened meninges over the foramina of Magendie. Here he agreed with Dr. Sharpe that where we had a meningitic process the absorption through the arachnoid villi might be very poor. There were unquestionably cases of hydrocephalus in which no obstruction could be demonstrated by the physician and which were followed by early blindness and optic neuritis. These were generally of infectious origin, and in these every effort should be made to preserve the eyesight by surgical procedures.

Dr. GODFREY R. PISEK said that Dr. Elsberg had put the subject of hydrocephalus on a scientific basis, which was something that was needed. Many of the operative methods devised for the relief of hydrocephalus had failed and some had caused death because they disturbed the heat centers, were followed by a rapid rise of temperature, and a fatal ending. There was no doubt that by finding out the type of hydrocephalus by the various tests that might now be employed we would come to some type of operation that would benefit the patient. He had been impressed for a long time with the seeming groping in the dark in their treatment of hydrocephalus. They had felt obliged to resort to *some* method of treatment and had employed lumbar puncture, and some cases had apparently been cured by lumbar puncture; now they were in a position to decide what type of cases would be helped by this procedure. Dr. Koplik had referred to the fact that a certain number of cases were cured spontaneously and that this took place at the time of ossification. The speaker had taken measurements of the head in many cases of hydrocephalus and had noticed that the increase in size only subsided when ossification began. Dr. Elsberg did not speak of the mentality. To place the operation on the right plane it must be one that would improve not only the physical condition, but the mental condition as well.

Dr. ELSBERG, in closing the discussion, said he had excluded all varieties of inflammatory hydrocephalus from his paper because they formed an entirely different class of cases. He had not discussed the cause of hypersecretion, obstruction, or nonobstruction, but had only stated some of the facts brought out by recent investigations that showed that there were three different types of hydrocephalus. In eighteen out of forty cases diminished absorption from the arachnoid space was very marked and in such cases there was no reason for doing a puncture of the corpus callosum. The question that came up was how the absorptive power of the subarachnoid villi might be increased and that would be considered at another time. The fact that we could expect no benefit from a puncture of the corpus callosum in a case of hydrocephalus due to diminished absorption was the reason why we must determine whether a given case was due to obstruction or to lack of absorption. If it was due to obstruction at the iter, it might be benefited by puncture of the corpus callosum. When there was hypersecretion the only thing to be done was to relieve it by frequent punctures.

X-Ray and Radium in the Treatment of Skin Diseases in Children.—Dr. GEORGE M. MACKEE made this pres-

entation, which consisted of a lantern slide exhibit showing the effect of the *x*-ray and radium upon certain of the skin diseases of infancy and childhood. He stated that there were not many skin diseases peculiar to infancy and childhood that were amenable to treatment by these agents. One of the conditions frequently met with by pediatricians was favus or ringworm. This was a disease that had given a great deal of trouble in different parts of the world. It was much more difficult to treat in early life than when it occurred at the time of puberty. It had been almost eradicated in London and other European cities by the use of the *x*-ray and it seemed a pity that this method of treating it had not been more generally employed in the United States. Dr. Fordyce's clinic was the only free clinic in this city, so far as the speaker knew, in which the *x*-ray was employed in the treatment of ringworm, but every hospital and dispensary should be equipped to give this treatment; it could be given by a nurse under supervision. It was possible where there was but a single lesion to treat only the diseased area, it not being always necessary to depilate the entire scalp. In order to avoid scattering the hairs and thus the infection when depilation occurred, the lesion might be covered with zinc plaster after giving the treatment. Three weeks later the hair would fall out and by removing the plaster at that time the hair would be found adherent to it. In treating ringworm with the *x*-ray the dosage must be very accurately measured. It took a certain amount of *x*-ray to make the hair come out and a very little more to prevent its ever coming in again, so the limits of the dosage were not very wide. They had treated some 300 or more cases, the treatment being administered by three different men, and there had been no instance of permanent alopecia. In order that equally powerful *x*-ray treatment might be applied to all points on the surface of the skull, Adamson devised the method of mapping the skull into five areas and applying the *x*-ray to each of these areas successively. Protection was used for the face, ears, and neck. It took from one-half hour to forty-five minutes to treat the entire scalp. It was not necessary to treat all the areas on the same day or to apply a full depilating dose at one sitting; one might give a fractional part of the dose each day until the total dose was administered. If the correct dose was given the hair fell out in three weeks. The treatment could not be used in very young children, but only because they could not be kept still. A child of two or three years, however, might be treated very easily. The *x*-ray must not be applied to the scalp for several weeks after the application of irritating chemicals, and such chemicals must not be used for several weeks after the *x*-ray has been employed, because if this warning was disregarded permanent depilation might result. Other conditions that responded well to the *x*-ray were blastomycosis and actinomycosis. In vascular nevi good results were obtained with radium, but not so good with the *x*-ray. Cavernous angioma could be cured by the *x*-ray, but only by persistent treatment, and such persistent treatment was not advisable. In vascular nevi it was probably to the beta rays of the radium that the therapeutic results could be attributed. The radium tube, however, was not as satisfactory as the radium plaque, as it produced a reticulated effect. Portwine marks did not respond to the *x*-ray or radium. Pigmented nevi likewise did not do well under this treatment. Hairy nevi, on the other hand, responded well to *x*-ray treatment, as did also acne, though in the latter condition it was neither necessary nor advisable to resort to this method unless ordinary methods of treatment failed. In all forms of keloid both the *x*-ray and radium were very efficacious. The common wart, verruca vulgaris, was very amenable to treatment by the *x*-ray, one treatment with either one sufficing as a rule to effect a cure. The small, flat, juvenile warts did not do so well, while plantar warts which were not very satisfactorily treated by other methods responded well to the *x*-ray, and the speaker had never known a case so treated to relapse. Sarcoma was curable by this method if attacked early enough, that was, before metastasis had occurred. Dr. MacKee showed illustrations of several cases in which sarcoma was cured that had not recurred after periods of three years. Speaking of eczema, he said he did not wish to be understood as advocating the use of the *x*-ray as a routine method of treatment but in squamnous eczema it caused the lesion to disappear and it required only small doses to produce this result. However, he used the *x*-ray only in obstinate cases that failed to respond to the ordinary methods of treatment. Psoriasis occurred frequently in children and was easy to treat by means of the *x*-ray and radium; chrysarobin was, however, usually satisfactory. Lichen planus usually responded to ordinary methods of treatment. When it was limited to small areas, the *x*-ray or radium was indicated. Lupus vulgaris of hypertrophic or ulcerative type yielded well to treatment by the *x*-ray or radium. The atrophic type was very recalcitrant. If properly applied the *x*-ray gave good results in tuberculous adenitis and scrofuloderma might also be successfully treated in this way. There were a few more diseases in which the *x*-ray and radium were an aid, but, as they were comparatively rare, they would not be considered at this time.

Dr. Fred Wise said that in regard to the *x*-ray in the treatment of tinea favosa and ringworm, it might be said that if the *x*-ray had accomplished nothing else than to cure ringworm, it would be entitled to the greatest respect as a therapeutic agent. To cure ringworm in one-half hour, when by other methods of treatment, even under the care of the best nurses and dermatologists, it took two and one-half years, was certainly an achievement worthy of note. With regard to nevi, all pediatricians saw these lesions and knew that some nevi got well without treatment. At the dispensary the first question they asked when they got a case of nevus was whether it was getting larger or smaller. If it was not increasing in size, they told the mother to let it alone and return in a year; this advice did not apply to portwine stain. Phenol or trichloracetic acid was sometimes as good as radium or the *x*-ray and perhaps better for the portwine stain, but the best treatment was carbon-dioxide snow. Keloids, as the speaker said, were amenable only to treatment by the *x*-ray. The case of warts in the elbow flexure ought to be of interest to the pediatrician. This was an ordinary lichen planus simplex or lichen chronicus circumscriptus, an exanthematous eruption frequently limited to the neck and the elbow and knee flexures. Later on these peculiar warty formations developed at the site of the lichen in children. Dr. Wise said he had seen two cases of sarcoma cured by the *x*-ray. As to psoriasis, he seldom had occasion to employ the *x*-ray. The lesions of lupus vulgaris and scrofuloderma were due to the presence of the tubercle bacilli and were difficult to cure. The Finsen light had been used extensively in Europe and the *x*-ray probably accomplished more good in some forms of tuberculous lesions than all other forms of therapeutic measures hitherto devised. It was difficult to cure prurigo and chronic papular urticaria; occasionally divided doses of *x*-ray applied to the extremities would do more good than any form of dietetic treatment, and these cases should be treated locally, that was, those that did not respond to dietetic treatment. Certain affections, such as xeroderma pigmentosum and a few other rare conditions sometimes seen in children, had responded favorably to *x*-ray treatment.

Dr. Bowleslaw Lapowski said he had been in favor of establishing clinics such as had been suggested for the treatment of ringworm and had suggested this to Dr. Emerson, but the finances of the Health Department would not permit of the establishment of such clinics at the present time. He had never treated psoriasis with the *x*-ray. It was not a question of making the lesions disappear for the time being, but of producing permanent cure. He thought the *x*-ray treatment as likely to be followed by relapse which would be very resistant to treatment. The *x*-ray had a place in surgical diseases. Etiologically eczema was not a dermatosis and the *x*-ray was not indicated as the logical treatment. In the treatment of nevi or any skin disease in children he thought it was not well to draw conclusions until later in life, for we did not know what the subsequent developments might be.

Dr. Sidney V. Haas said he wished merely to say that there was one more clinic such as Dr. MacKee had suggested in New York City and that was at the Home for Hebrew Children.

Dr. MacKee said that he agreed with Dr. Lapowski's insinuations to the effect that the *x*-ray might produce harmful results in after years. The speaker said that all roentgenologists were acquainted with the various complications and sequelæ of the *x*-ray and knew how they could be avoided. Radium and the *x*-ray should not be employed excepting by experts and they should not be used when other remedies sufficed to effect a cure. Dr. Lapowski expressed himself as opposed to the use of the *x*-ray and radium in eczema and psoriasis because he thought the diseases were made more rebellious thereby. The speaker had never encountered such a phenomenon, but, nevertheless, these agents should not be employed in such diseases unless other methods of treatment failed.

SECTION ON MEDICINE.

Stated Meeting, Held October 16, 1917.

Dr. Harlow Brooks in the Chair.

This program was from the Base Hospital, 77th Division, National Army, Camp Upton, Long Island.

The Administration of an Army Base Hospital.—Major J. D. Whitman made this contribution. He said that the subject was a rather difficult one to discuss at the present time owing to the fact that the entire organization of the Army was in a transitional stage. We were by degrees adopting the organization and methods of our British and French allies. No information had been furnished them at this time of the exact personnel which the base hospital which they were establishing would have. The administration of a base hospital was carried on through two divisions: one administrative, the other professional. The administrative division was subdivided into an adjutant's office, registrar's office, quartermaster's office, the hospital mess, the office of the commanding officer of the detachment of the medical department, the officer of the day, the officer of the guard, and the chaplain. The adjutant's office, normally in charge of the major of the Medical Corps, had charge of the administrative records and correspondence, the telegraph office, the telephone exchange, and the postoffice. It was through the adjutant that the commanding officer communicated with the officers and men of his command. He was the representative of the commanding officer and the executive officer of the hospital. The registrar's office had charge of the medical and surgical records of all patients treated in the hospital. The office was also charged with the proper care of the money and valuables of the patients. The quartermaster's office had charge of all quartermaster, medical ordnance, and signal corps property and funds, the construction and repair of buildings, of transportation, the police, and care of the grounds, disinfecting, laundry, heating, lighting, ice plants, and the clothing and baggage room of patients. The quartermaster's department was directly responsible for every article of property which the hospital had. The hospital mess included the kitchens, bakery, and special diet service. It was administered by a captain or a lieutenant of the Medical Corps, with a large number of cooks and female dieticians. The mess officer was accountable to the commanding officer. The commanding officer of the detachment of the Medical Department acted in the capacity of company commander for the detachment on duty at the hospital. He was responsible for all records, returns, and muster rolls pertaining to his detachment and was over all matters of discipline. The officer of the day was detailed each day from the roster of medical officers and was in charge of the guard, receiving office, the roster of patients, the ambulance, emergency and fire alarm service, and the information office of the hospital. The tour of duty of the officer of the day was twenty-four hours, and during that time he must always be accessible for cases of emergency. In time of peace the hospital was guarded usually by medical department men detailed as watchmen; in time of war such guard duty was ordinarily performed by a permanent detail of sanitary troops. The professional division of a base hospital was divided into the various services with a major of the Medical Corps known as the chief of the medical service; the surgical service with its chief; a section of surgery of the head with its chief, and various other services, as the laboratory, *x*-ray, dental, and nursing services. Great efforts were being made to secure for this work as many specialists in all branches for duty at base hospitals as it is possible to obtain. The section on surgery of the head was again divided into an eye service and an otolaryngological service. There are also sections charged with psychiatry, with neurology, with genitourinary diseases, and in some instances a section devoted to diseases of the skin. In addition to these, base hospitals would have the services of visiting specialists on diseases of the lungs, cardiovascular system, orthopedics, and other branches. Every effort was being made to obtain efficient male and female nurses, orderlies, experienced pharmacists, laboratory assistants, dieticians, etc. Many of these were found among the members of the National Army, but the task of organizing and assigning these enlisted men was a very difficult one. In the hospital under construction at Camp Upton there were seventy buildings. At present the hospital was occupying barracks which they had subdivided into wards and offices. There was every reason to feel proud of the success that had attended the efforts of the medical department of the Army to supply medical and surgical supplies for our great camps. A physician entering the military service was compelled through necessity to do without many drugs and surgical appliances which he had been accustomed to use in his practice, but the base hospitals as equipped at present throughout the United States had all the essentials necessary for careful and thorough study and efficient treatment of all patients.

First Psychiatric Experiences at the National Army Cantonment at Camp Upton, Long Island, N. Y.—Dr. A. J. Rosanoff read this paper, in which he called attention to the way in which the scope of psychiatry had broadened within the last decade or two. It was formerly thought that the work of the psychiatrist was confined almost entirely to institutions for the insane and mentally defective, whereas it was now realized, at least by psychiatrists, that the material which reached an institution was but a small part of the whole. The most urgent and practical problems of prevention and treatment in psychiatry were not to be solved in institutions, but in the community at large. The experiment of conscription had caused a prompt cropping out of cases that arranged themselves in three main groups: (1) Drug and alcohol habitués coming to light within a day or two following arrival at the camps, through symptoms of abstinence. (2) Cases of epilepsy observed in convulsions at the camps. (3) Various types of constitutional inferiority coming to light through hysteroid manifestations and through malingering, or perhaps more correctly semi-malingering. The drug cases were almost exclusively heroine cases. The draft constituted an unrivalled opportunity of obtaining with full accuracy the prevalence of drug habits in the male population of draft ages in the districts from which the Camp Upton troops had been supplied. In the writer's opinion the great majority of users of alcohol were not drug habitués in the specific sense of that term, but he had long suspected that in some cases true addiction developed, followed by typical symptoms of abstinence, a state characterized by restlessness, insomnia, sweats, chilly sensations, intense craving, and perhaps fatal attack of delirium tremens. The cases of epilepsy among drafted men required no comment as they were soon discovered and weeded out. Malingering was common, and attention was given these cases as possible simulation of mental disorders. In the cases of semi-malingering, the question was not how much of the condition was due to malingering nor even what degree of true abnormality existed, but whether or not the recruit was fit for military service. The writer said he knew of no test or system of tests whereby this question could be determined, with full protection against error, either to the service or to the individual, other than the test of actual service. It might be a surprise to the audience to hear that they had already had a number of cases of shell shock among the recruits, though most of them had not seen a shell. Shell shock was a handy term applied to a host of heterogeneous conditions many of which had little or nothing to do with the explosion of shells. Perhaps the best justification for using this term was in

connection with acute recoverable, hysteriform attacks, actually determined by the fright or other upsetting effect of shell explosions. Exactly the same kinds of attacks had been witnessed by our own medical officers in the course of physical examinations. The new environment, the bewildering effect of the numerous procedures, the apprehension of what was to follow, etc., being responsible. These cases were not necessarily rejected at the outset, but were often submitted to the test of service which would usually reveal real and permanent unfitness in many of them. It was equally true that in some the effect of routine discipline and training would be one of gradual adjustment and the ultimate development a good soldier. To put the matter in a nutshell, the aim of the psychiatrist in examining recruits was not, as in civil life, a finesse of diagnosis, but to reach trustworthy judgments as to mental fitness for active military service.

Dr. HARLOW BROOKS said that it had been perfectly astonishing the amount of psychiatric material that had come out in the camp which would not have been recognized in the course of routine office practice in civil life. At present he was much interested in seeing what was going to become of a number of cases that had been taken in temporarily.

The Interpretation of the Schick Reaction in Recruits for the National Army.—Dr. ABRAHAM ZINGHER made this contribution, in which he said that the work with the Schick test had now been carried on for about four years and was generally accepted as a reliable test of the susceptibility of children to diphtheria. In children one was not confused by the socalled pseudoreaction, but in adults a large number showed a pseudoreaction. This pseudoreaction was not due to the toxins of the diphtheria bacilli but to the protein contained in the solution. In order to determine whether a reaction was a true reaction or a pseudoreaction the following procedure had been adopted: Heating the diphtheria toxin to 75° C. destroyed the diphtheria toxin but did not appreciably affect the autolysed protein of the diphtheria bacilli, and it was the latter which caused the pseudoreaction. The outfit for controlling the positive, pseudo, and combined reactions was similar to the Schick test outfit, with the exception that the toxin in the capillary tube had been heated to 75° C. The dose, as was well known, was one-fiftieth the lethal dose for a guinea pig in one-fifth of a cubic centimeter of salt solution. The Schick test was made in the usual way on the right forearm and at the same time the test for the pseudoreaction was made on the left forearm. In an individual who gave a positive reaction only, the control test with the heated toxin would be negative. Where there was a pseudoreaction the control reaction would be of about the same size and appearance, and pass through the same clinical course as the original reaction; both reactions reached their height in twenty-four hours and disappeared in ninety-six hours. In an individual who gave a combined reaction, both the positive and the pseudoreaction might be detected. The positive reaction became manifest at the end of three or four days, when the pseudoelement had disappeared. At Camp Upton they had made the original Schick test and the control tests on 1,165 men and found the proportion of negative reactions was 72.8 per cent. A pseudoreaction occurred in 12.2 per cent.; in other words, 85 per cent. of this series of men were immune to diphtheria and 15 per cent. were susceptible. Another series of 1,483 men subjected to the same tests gave very much the same results. The point he especially wished to bring out was that the pseudoreaction could be very definitely awakened by using the heated toxin on the left arm and the regular toxin on the right arm. The question of diphtheria in adults had to be considered in view of the fact that outbreaks of diphtheria had been reported from European camps and there had recently been an outbreak of this disease among the troops at Newport. It was of great value to have a method of determining which soldiers were protected against diphtheria, as this information would result in a great saving of antitoxin, since it would be necessary to immunize only 15 per cent. of the men and one would not need to worry about the remaining 85 per cent. There was some question as to whether this general application of the Schick test would be practical in view of the fact that there was already such a large amount of vaccination to be done in the army. But when one recalled that in New York City there were from 1,300 to 1,500 deaths from diphtheria every year and the population of the United States was about twenty times that of New York City, so that the mortality from diphtheria in the United States was probably from 2,500 to 3,000 a year, it was evident that the control of diphtheria was still in its infancy. Dr. Zingher said there were interesting problems in connection with natural immunity. In a series of 11 mothers who gave a negative test and were immune to diphtheria just after the birth of their infants, a second Schick test six months later showed them still negative and still immune. The 11 children of these mothers also gave a negative reaction to the Schick test just after birth, but at the second test, six months later, they all gave a positive reaction, that was, they had lost the immunity which they had brought over from the mother. These children were given the three doses of toxin antitoxin for the purpose of immunizing them and after that they all gave a negative reaction and were immune. Other experiments showed that when the mother was susceptible to diphtheria the infant was also susceptible just after birth, but if both mother and child were given the immunizing dose of toxin antitoxin, both developed negative reactions and were immune to diphtheria. From their observations they might conclude that practically all children under one year of age were susceptible to diphtheria, even though they gave a negative reaction to the Schick test at the time of birth. Children not susceptible at the time of birth become so later. The mortality from diphtheria greatly increased at the age of six to nine months, being greatest at nine months; from this age up to the second year laryngeal diphtheria was especially frequent. The immunization of young children might be greatly simplified by leaving out the Schick test entirely and giving instead the immunizing doses of toxin antitoxin. The general immunization of young children against diphtheria was a matter that depended upon the general practitioner. He must recognize its value and recommend it if it was to become popular. The local and constitutional reaction from the administration of the toxin antitoxin was less in infancy and became more marked with increasing age. Dr. Zingher said he had gone into the subject of immunization in infancy simply to show how the population might be protected against diphtheria. It has been found that 95 per cent. of those who gave a positive Schick test could be actively immunized against diphtheria and retained their immunity afterwards. Among the men in the army camps there was a good deal of tonsillitis and other throat infections, and if they knew that a soldier was immune to diphtheria that disease could be excluded even without a bacteriological examination.

Dr. CHARLES F. COLLINS said he would like to ask a few questions. One might have diphtheria carriers and yet the Schick test would always be negative. In St. Luke's Hospital they had not had a single case of diphtheria arise in a subject who had given a negative Schick test on admission. They had had one adult under their care who gave a negative Schick test and five months afterward developed diphtheria and had a severe type of the disease. They also had another case of diphtheria in a person who had given a negative Schick test, so the question he would like to ask was whether these persons who gave negative Schick tests were also carriers. So far as he was concerned he would not hesitate to keep a child who gave a negative Schick test in a ward with diphtheria, though, of course, hospital authorities did not permit this and as soon as a case of diphtheria developed it was quarantined. Personally, however, he believed that a child with a negative Schick reaction would not develop diphtheria unless he was also a carrier. Another question he would like to ask was how long one might depend upon a negative Schick persisting? Personally he understood the test should be made once a year; he tested himself once every eight or ten months to learn whether he kept his immunity.

Dr. ZINGHER, in closing, said that at the Willard Parker Hospital during the last four years they had tested every child with scarlet fever; 1,200 children with scarlet fever gave a negative Schick test and not

one of these developed diphtheria, although 15 or 20 per cent. of them became carriers. The test was perfectly reliable if a uniform technique was used and standard solutions of toxin, and a uniform interpretation of the test was applied. If under these conditions the child gave a negative Schick reaction one could come to a decisive conclusion as to whether an exudate was diphtheritic or not. We might have an individual who was constitutionally protected against diphtheria and who was still a carrier; such an individual would not develop the disease unless the local resistance was broken down, which might happen as the result of a tonsillectomy or of an operation on the nose, or a cold, when he might develop diphtheria. This would show that we must have a local as well as a constitutional protection. The duration of the immunity conferred by the toxin antitoxin injections was a very important matter, and whether we could depend upon a single course of immunizing doses to confer permanent immunity. He believed that we could depend upon the permanency of such immunization. After a child had become susceptible and then developed immunity he always showed a persistently negative Schick reaction. If we examined the blood serum we would find an almost constant amount of antitoxin and we would find this amount persistent in subsequent tests. It was of extreme value to be able to immunize physicians and nurses in contagious disease hospitals with the three doses of toxin antitoxin.

Dr. HARLOW BROOKS said it was surprising how little contagious disease they had in the camp. They had had about ten cases of measles, but no secondary infections. They had had one case of pertussis and one case of leprosy. There were quite a number of cases of tuberculosis, but they had come to the camp with the disease; it had not been developed in the camp. At the present time they had 128 cases in the base hospital out of a camp population of 28,000, which he thought was a remarkably good showing.

The Reactions Produced by Prophylactic Inoculation with So-Called Triple Typhoid Vaccine.—Captain RUSSELL L. CECIL, Director of the Laboratory at Camp Upton, made this presentation. He stated that during the last three weeks 30,000 recruits had been inoculated with the so-called triple vaccines of typhoid, paratyphoid-A and paratyphoid-B, the mixture consisting of equal parts of these bacteria. The reason the paratyphoid vaccine had been added was because in the recent mobilization of the troops on the Mexican Border there was considerable paratyphoid fever among them. The vaccination with the typhoid vaccine had been so successful that there was every reason to believe the paratyphoid vaccination would be just as successful. While the opportunity of trying out the paratyphoid vaccine in Texas and Mexico was not large, the results were so successful that it was decided to introduce the paratyphoid vaccine into the National Army. In Texas and Mexico only the paratyphoid "A" vaccine was used, as paratyphoid "A" was the type which occurred. The triple vaccine was prepared at the Army Medical School in Washington in the usual way. The number of bacteria was estimated, the bacteria killed by heat, and the vaccine preserved in 0.5 per cent. phenol. One-half a cubic centimeter, or 500 million killed bacteria, were used for the first dose and twice that number for the second and third doses. One might think that in giving the triple vaccines, containing three times as many killed bacteria as the typhoid vaccine alone, there would be a much more marked reaction than with the plain typhoid vaccine alone, but this was not the case. As to the technique used, the recruits were lined up as they came through the room, stripped to the waist, and an assistant swabbed the area in the posterior axillary fold with tincture of iodine. Another assistant filled a 5 c. c. Record syringe with vaccine. The needle was not sterilized after giving each injection but was wiped off with 95 per cent. alcohol. As to the reactions, Dr. Cecil said that he had seen only 38 patients with a reaction sufficiently severe to make them come into the hospital. The local reactions were almost identical with that of the typhoid vaccine. There was a small indurated area, hot and swollen, and sometimes an enlargement of the axillary lymph glands. Just a little more than one out of every 1,000 men became sufficiently ill to be sent to the hospital; if the others had any constitutional reaction it was not sufficient to require medical attention. In looking over the records it seemed that the most prominent symptom was fever, which occurred in 66 per cent. of the cases; in only 33 per cent. did the temperature rise over 100° F. Prostration was present in practically all of these cases. The next symptom in frequency was headache, which was present in 44 per cent.; there was muscular pain in 34 per cent. and backache was almost as frequent. Nausea was quite common, particularly after the second inoculation. Dizziness and chilliness occurred less frequently. There were only two cases with definite chills. It might be said that as a rule the after effects of the vaccines were so small as to be negligible. Colonel Craig studied 50 cases in which he used the same vaccine as was now being used at Camp Upton, and he found that 32 per cent. of those inoculated showed a rise in temperature after the first inoculation, 86 per cent. after the second and only 18 per cent. after the third. Twenty per cent. complained of headache. Craig also made agglutination tests after the inoculation; 28 days after the first inoculation he found high agglutination titres for all three organisms. From his experience at Camp Upton, Dr. Cecil could advocate the use of the triple vaccine. Many of the men who came to the hospital with reactions after the inoculations were able to go out after 24 hours as the symptoms disappeared very rapidly after rest in bed. Another question which interested them was what the effect of the inoculation was on those who had been tuberculous. It had been claimed that the inoculations sometimes lighted up an old tuberculous process or some other infection. No case of this kind had come under their observation as yet, but the inoculations had been instrumental in bringing on an attack in a case of epilepsy. They had used the triple vaccines only in men under 45 years of age; in the older men they had used only the paratyphoid vaccines. In conclusion it might be said that from the practical standpoint there was every reason to believe that the paratyphoid vaccines would be just as effective against paratyphoid fevers as the typhoid vaccine had been against typhoid fever.

Dr. HARLOW BROOKS said he had been interested in the typhoid vaccinations at Camp Whitman. There they had a much smaller group of men and the reactions were more numerous and more severe with the typhoid vaccination alone than they had been at Camp Upton with the triple vaccines.

Dr. ALFRED MEYER said he would like to ask Dr. Cecil if he had had any skin lesions as a result of the vaccinations with the triple vaccines. In one large hospital it was reported that the nurses decided to oppose typhoid vaccination among themselves because a number of them had had eruptions and skin lesions after inoculation and they claimed that the inoculations were responsible. When the work of inoculating the nurses was to be begun at Mount Sinai Hospital Dr. Meyer said he was appointed to speak to the nurses on the subject, as there was some opposition to the inoculations on these grounds. Personally, Dr. Meyer said he had had no experience of that kind, in spite of the fact that the work has gone on for some years, and he would like to know whether any such lesions had occurred among the soldiers.

Dr. CECIL, in closing, said that he had not seen any case of skin disease develop as the result of the typhoid vaccines. He recalled one case which occurred in Philadelphia of a nurse who developed a peculiar eruption after the second inoculation; it was thought at first that she had a septicemia, but it proved not to be, and the patient recovered.

Dr. MEYER asked Dr. Brooks whether there was any modified form of emetine used on the cases of amebic dysentery which Dr. Murphy was to have reported. He was interested in knowing whether Dr. Murphy had tried the modified form of emetine known as emetine bismuth iodide. Personally, he had tried this preparation in but one case that had frequently relapsed after emetine hydrochloride, but thus far after the bismuth iodide there had been no relapse in four months. This was the reason he was interested in learning whether Dr. Murphy had had any experience with this new preparation.

Dr. BROOKS said that it was to be regretted that Dr.

Murphy could not be present, as he had some very interesting experiences with amebic dysentery. They had used the preparation mentioned with precisely the results that Dr. Meyer had spoken of. They were at first apparently brilliant, but later there would be relapses.

Books Received.

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Therapeutic Hints.

Internal Treatment of Psoriasis.—P. Duret offers the following combination to be administered by intramuscular injections for the treatment of psoriasis:

℞ Precipitated sulphur (washed)..0.002 g.
Guaiacol (crystallized) .....0.10 g.
Camphor (refined) .....0.10 g.
Eucalyptol .....0.20 g.
Olive oil (purified and sterilized to make .....1 cc.

The sulphur is dissolved in the oil by mild heat, and while warm this is poured into the mixture previously made of the camphor and guaiacol, and then the eucalyptol added. The sulphur solution must not cool until the mixture is completed, in order to prevent precipitation. This preparation remains stable at ordinary temperatures, and an injection of 3 c.c., afterward 5 c.c., is practically painless. This is due to the analgesic effect of the combination of camphor and guaiacol, and the rise of temperature following the injection is controlled by the antipyretic effect of the guaiacol.—*Journal des Practiciens*, July 21, 1917.

Treatment for Chilblains.—J. B. Anderson gives the following treatment for this unruly condition; Apply a coating of linseed oil for three successive nights, letting the oil dry in the skin, and then putting on a pair of stockings to protect the bedding. On the fourth night, bathe the feet in hot water. He further states that thereafter there will be no trouble with chilblains.

Mistura Antifebrifuga.—Children's Hospital Fever Mixture is prepared as follows:

℞ Potassium citrate.....4 gm.
Spirit of nitrous ether.....15 mils.
Syrup of lemon.....15 mils.
Solution of ammonium acetate....60 mils.
Distilled water to make .....100 mils.

M. Sig.—Teaspoonful every two or three hours. —*Journal American Pharmaceutical Association.*

Relief for Dyspepsia.—While the following pill is not new, its age speaks for the beneficial effects of the combination. It acts both as an aperient and stomachic tonic, at the same time stimulating gastric secretion:

℞ Ipecac. pulv.....gr. ss.
Extract. rhei.....gr. ij.
Extract. nucis vomicæ.....gr. ss.

M. et Sig.—To be taken half an hour before food, two or three times daily.

Vomiting of Pregnancy.—Shaw has had beneficial results from the following in this condition:

℞ Menthol .....℥j.
Alcohol .....℥j.

M. Sig.—Five drops every one, two or three hours as required.—*Ellingwood's Therapeutics.*

Neuralgia.—N. F. Howard offers the following formula for relief in all forms of neuralgia:

℞ Ammon. muriat.....℥iij.
Tinct. belladonna.....℥j.
Tinct. hyoscyami.....℥ij.
Aq. menth. piperit.....℥iv.
Aq. camphor.....℥x.

M. et Sig.—One-half to one teaspoonful in a little sweetened water every two or three hours.

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Original Articles.

SHOULD CERTAIN TUBERCULOUS PATIENTS WORK?*

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DISCUSSING the treatment of tuberculosis, the classical authors speak of exercise in the open air, hill climbing, long sea voyages, and working generally, as beneficial for consumptives.

Perfect rest for the tuberculous was not advocated as beneficial for every patient by Morton, Laennec, Louis, Trousseau, Sydenham, Stokes, Lebert, Walshe, Brehmer and most of other pioneers in the clinical study of tuberculosis. And they were excellent physicians; their clinical observations on the symptomatology, course and physical signs of the disease are periodically rediscovered by modern specialists. And just as I find their clinical observations useful to-day, so I am willing to accept their opinions on the effects of certain methods of treatment on the course of phthisis. Moreover, they treated active tuberculosis, not the sort which we at present call "early" or "incipient" cases, a large proportion of whom are not at all sick with active tuberculous disease. Yet they observed that in many cases exercises were beneficial in the treatment of phthisis. Indeed, from the statistics they published, it appears that the percentage of recoveries among their patients was not much lower than we attain at present using the modern method of rest cure.

Brehmer was apparently the last to advocate walking exercises and hill climbing as excellent adjuvants in the treatment of phthisis. But his pupil Dettweiler introduced the rest cure *(Liegekur, Kadaverruhe)*, and during the past thirty years it has been the method applied in nearly all sanatoriums in Germany, and from there it has spread all over the civilized world, to every country where attempts have been made to treat tuberculosis methodically and effectively.

The "rest cure" has become a dogma in modern phthisiotherapy, and it is carried out more or less rigorously in nearly all sanatoriums. As is usual with medical dogmas, this has been completely adopted by the laity, and, with the proclivities common to the sick, tuberculous patients fear exercises more than any other real or alleged deleterious agent.

*Read before the New Jersey Joint Conference on Tuberculosis, Nov. 9, 1917.

Acute exacerbations, extension of the disease process, fever, hemoptysis, cough, anorexia, etc., are each and all often attributed to exercise, be it ever so mild, and for this reason it is shunned religiously by all who have been in institutions, and by many for many years after the focus in the lungs has cicatrized. As a result we meet with numerous patients in sanatoriums who are to all external appearances healthy, well fed and often quite vigorous, yet they idle away their days for months in the institutions, and when finally discharged as cured, or with the disease arrested, they indefinitely remain fearful of work. As Hermann Biggs puts it tersely, the sanatoriums often convert sick workmen into healthy loafers.

Reaction Against the Indiscriminate Application of the Rest Cure.—One of the most important reasons for the universality of the rest treatment as a panacea in phthisis is undoubtedly the fact that it is simple, and when applied in all cases a great deal of the work which individualization in therapeutics might entail is done away with. The superintendent who applies the rest cure indiscriminately has solved the most difficult problem of treatment to his own satisfaction and well being, and has an easy time in running his institution smoothly.

But at present an important complication has arisen which compels executive officers of public sanatoriums to take stock again and to inquire whether some of the tuberculous patients in their care may not be made to do some useful and productive work with benefit to themselves, the institutions and the communities. The shortage in labor during the past three years is felt everywhere, and sanatoriums find it hard, often impossible to obtain sufficient help to run institutions properly. To solve this problem many have attempted to induce some of their patients to do some work in the wards and grounds of the institutions. It appears, however, that in the majority of cases the superintendents have failed in their efforts along these lines. In some sanatoriums a large proportion of the patients, when told that they can and must do some work, leave soon after admission; in others there have been strikes—the patients united and refused to do anything.

In one sanatorium, in which I recently investigated this problem, some patients told me that if they were really fit for work they would rather do it in the city where they would be paid for their labor; others told me that they were convinced that fever, hemoptysis, etc., would follow the slightest exertion. In fact, they volunteered to produce cases which were thus adversely influenced by work. I should mention right here that in many

respects these patients were right when refusing to work. The order of the superintendent was to the effect that one-half the patients in each ward should do certain tasks one day, and the other half the next day. Here again, when attempting to place patients to work, no attempt was made at individualization, and if it had been carried out considerable harm might have resulted to some patients.

This reaction against the universal rest treatment of phthisis is, however, bearing fruit of late, Many voices are heard from physicians entitled to authoritative opinion against its abuses; the dangers to the individual patients, and the burdens it imposes on the community are beginning to be appreciated. We now read articles published in medical journals in Europe and America that it is time that our tuberculous patients should be individualized in regard to rest and exercise. In England Paterson and Inman have introduced the method of "graduated labor"; in France the *cure de travail* is strongly urged, and even in Germany *Uebungstherapie* is again recommended for many tuberculous patients.

Attempting to individualize our tuberculous patients as regards their ability to work more or less, we find that they may be classified into the following three groups:

1. *The Acute and Subacute Progressive Cases.*—Those affected with active and progressive diseases, irrespective of the extent of the lesion discovered in the lungs; those who cough, expectorate, have fever, rapid pulse, dyspnea, and lose weight very quickly, cannot and should not work. Their rapidly wasting muscles should not be exercised; their myocardium and nervous systems are profoundly affected by the tuberculous toxin, and only perfect rest may afford them an opportunity to reduce the toxemia and carry them over the acute stage, when the process in the lungs may finally become localized, drainage established, and the disease is arrested in its acute or subacute course.

This class of cases will not be discussed here. They constitute but a small minority of the sanatorium patients, because those showing symptoms of such activity of the disease are either not admitted to institutions or, when admitted, they are soon discharged under the plea that they are not suitable for sanatorium treatment. They cannot work, nor can they perform any exercises without harming the slim chances of an improvement in their condition. Perfect rest is best in their cases, and it is deplorable that they are not admitted to institutions in which this method can be effectively applied; much better than in the average poor or even well-to-do home.

2. *The Conventional Incipient Cases.*—The second class of patients consists of those who show physical signs of tuberculous lesions in the lungs, usually tubercle bacilli in the sputum, but few or none of the constitutional symptoms of phthisis. A very large proportion of the patients in sanatoriums aiming at admitting none but "incipient" cases consists of this class. They are more or less robust looking, their appetite is good, and they have hardly any fever, tachycardia, dyspnea, etc., and they gain in weight and strength soon after admission. As will be shown later on, most of these patients can and should work more or less, and idleness, which is the concomitant of the perfect rest cure, does many of them more harm than good.

3. *Advanced Cases.*—The third class of cases consists of patients showing signs of extensive tuberculous disease of the lungs, mostly bilateral. A large proportion suffer from the constitutional symptoms of phthisis and cannot work, or they may feel quite well while resting but the least exertion results in fever, tachycardia, dyspnea, etc., and they are unable to do anything without harming themselves. Among these are also to be included phthisical patients in the terminal stages of the disease.

But with many patients showing signs of extensive disease the contrary is true. As will be shown later on, the ability of these patients to work does not depend so much on the extent of the pathological process in the lungs, but solely on the constitutional reactions called forth by exercises or work.

Discussing the cases fit for various degrees of work, we leave out of consideration those suffering from acute or subacute febrile tuberculous disease, irrespective of the stage in which they may be classified. They are acutely sick and are no more fit for exertion or even walking than are patients suffering from pneumonia, typhoid, or acute articular rheumatism. At the present state of phthisiotherapy, we have but one weapon to combat the toxemia in these patients—rest, and it should be applied thoroughly.

Deleterious Effects of Prolonged Rest.—But not all the patients in the second and third groups mentioned above are benefited by the rest treatment. They all show physical signs of phthisis, to be sure, but not all suffer from the constitutional symptoms of the disease. An analogy with our present methods of caring for cardiac patients will make our point clear. Is there a rational physician who would enjoin perfect rest for months for all persons in whom he perceives a systolic or presystolic murmur at the apex or base of the heart, and banish them to hospitals or health resorts? When advising a patient with a murmur and cardiac hypertrophy we first make inquiries as to the functional symptoms and the effects of exercise and work on the general condition of the patient. If we find that the field of cardiac response is limited, that work or any kind of exercise results in tachycardia, dyspnea, palpitation, pains in the chest, etc., the patient is put to bed and kept there till complete compensation is established, when we permit more or less activities again. The result is that the vast majority of our cardiac patients pursue their avocations; many with certain restrictions, to be sure, but only those who show signs and symptoms of temporary or permanent cardiac decompensation are urged to keep at more or less perfect rest.

For years it has been a mystery to me why we do not treat our phthisical patients in a similar manner. The only answer I could get was that the suburban sanatorium physicians who have applied the rest cure as a routine measure in all cases can no more conceive work or exercises for tuberculous patients. But we in the cities meet daily with individuals showing symptoms and signs of phthisis who keep at their work and support themselves and those dependent on them for years. And, strange

to say, they apparently last as long as those who have been induced to drop all work and have thus become burdens on their relatives or the community. In fact, in many of these tuberculous patients we observe that perfect rest for months is apt to be productive of considerable harm.

Prolonged rest of an individual or an organ has a deleterious effect on the muscular, and especially the nervous, system. This is drastically seen in limbs which have been kept in splints for some time. Because of disuse, the muscles atrophy, and subsequent attempts to use them meets with inhibition of response and aching or painful sensations. After a long rest in bed or on the reclining chair the patient is weak and unable to use his muscles. This weakness is often attributed to the tuberculous process, while in fact it is due to prolonged disuse of the muscles.

Idleness is also productive of neurasthenic or psychasthenic conditions. The patient becomes excessively introspective and constantly broods over slight symptoms. The advocates of indiscriminate rest for tuberculous patients forget that there is always a psychic aspect to every chronic disease, and they give their patients too much time to brood over the fact that they are invalids. In their intercourse with one another the patients exchange views as to present conditions and the outlook for the future, and their perspective, especially as regards prognosis, is rather limited. Several times a day the thermometrical readings are discussed; trifling gains or losses in weight are taken seriously, and, with the time at their disposal, they decide upon the prognostic significance of these conditions.

These are the main reasons why we find so many hypochondriacs among the sanatorium populations. Many are not at all amenable to reason. Especially is this true of those who have read considerable of the popular literature on tuberculosis which is so assiduously distributed by well meaning but ill advised individuals or societies. They come running to the doctor with the least change in their condition and in many cases are dissatisfied with the answers they receive and write to their favorite journal on tuberculosis for advice. A physician contemplating his patients suffering from nontuberculous diseases repeatedly asking for advice in the "question box" of a supposedly authoritative journal as to the significance of symptoms would be horror stricken. The thousands of patients with cardiac or renal diseases in this country, fortunately for them, have not been pestered with special literature, but many of the tuberculous patients who take the rest cure in and out of institutions are constantly given printed advice as to the significance of trifling or serious symptoms, the reliability of certain methods of treatment, etc.

Idleness is by no means a stimulant to the appetite, and those who, despite the idleness, consume sufficient quantities of food often become obese. The weak and the atrophied muscles are not benefitted by the adipose tissue, but remain flabby and unable to move freely, though the patients are thus often deceived, believing that they are improving because of the gain in weight. Prolonged rest is not at all a stimulant of the natural protective factors, as has been shown by Paterson and Inman. The patients are actually robbed of certain reactions which have been found of great benefit in counteracting the effects of the disease process.

Among well-to-do patients this mode of treatment often results in creating individuals who are living in institutions or in health resorts for life. In all the popular resorts we may meet with patients who have spent there five, ten and even more years, and they have no idea as to when they will be well enough to return home. Among the poor and dependents this method works even more havoc. The public sanatoriums at present retain their patients only for a certain period; some for six, some nine or, at most, twelve months. After this period the patients are discharged irrespective of their condition. If cured, they are told to go home and try some work, but almost invariably the admonition is given that indoor work is likely to produce a relapse, which is not true in most cases. In fact, nearly all are advised to change their occupations. But when the patients come home with the education they have received in the institutions, with their aptitude for introspection and careful analysis of the symptoms they may observe, especially those who are subscribers to one of the popular journals on tuberculosis, where they may ask questions and receive answers, they will never consider themselves fit for work.

Necessity for Individualization in Phthisiotherapy.—On the other hand, city practitioners who meet with many chest cases know of many tuberculous patients who keep more or less busy at their occupations and live as long as the average sanatorium patient. Similarly, the large contingent of tuberculous physicians on the staffs of sanatoriums all over the world do not indulge in the rest cure. While in many cases they demand it of their patients, they are working more or less hard; in fact, some tuberculous physicians have accomplished considerable and lived to the average age of medical men.

To be sure, phthisical individuals who are active in various human pursuits break down now and then. But patients subjected to the perfect rest cure have their ups and downs; acute and subacute exacerbations come at irregular intervals and pass away after proper treatment has been instituted. Any temperature or clinical chart of a sanatorium shows this undulating course of phthisis in a striking manner. Even hemoptysis, which is considered by some to result from exertion, has not been found more frequent nor more severe when it does occur in active and walking patients than in those at perfect rest.

Now, if many tuberculous patients in their homes can work, if nearly all the tuberculous physicians on the staffs of sanatoriums can be active at their avocation, if many of the numerous patients cared for in the tuberculosis clinics in our large cities can work and support themselves more or less, why cannot a large proportion of the sanatorium patients work? The fact that their mode of life is carefully regulated, their diet scientifically arranged, etc., should indeed be in favor of the vast majority of sanatorium patients doing their bit toward the care of the victims of the tubercle bacilli.

We have shown above that not all tuberculous patients are benefited by prolonged rest. But it

must be stated that many would be harmed if all were placed to work as a routine measure. Individualization is here imperative as it is in all therapeutic procedures. To be sure, it will add to the heavy burdens of the house staffs of the institutions, but it will undoubtedly bring heavy returns both to the individual patients and the communities which bear the ultimate burdens imposed by tuberculosis.

Which Tuberculous Patients Should Work?—In attempting to select the proper patients for work we should not be exclusively guided by the conventional "stage" of the disease, nor by the extent of the anatomical changes in the thoracic viscera. Some patients in the so-called "incipient" stage are not fit for any exertion, even though there are hardly any physical signs of a lesion to be discovered by exploration of the chest clinically or radiographically. On the other hand, many patients with extensive changes in the lungs or pleura, and even with excavations in the pulmonary parenchyma, are fit for some activities which may be quite remunerative. In the first class of cases just mentioned the constitutional symptoms are more or less severe. The patients have fever, tachycardia, dyspnea, and they emaciate rapidly. In the second class we meet with many who, though presenting signs of extensive involvement of the lungs, yet have lesions which are torpid, dormant or cicatrized. The cough is mild, though it may be productive; their appetite is good, they have no fever, no tachycardia, no dyspnea, and moderate exertion does not enhance the pulse and temperature. In other words, the instability of the pulse and temperature, characteristic of active phthisis, is lacking under ordinary conditions.

To determine these points we may be guided by the following observations:

The general appearance of the patient gives important hints in many cases. Those strikingly emaciated, with sunken cheek bones and hectic flush, are clearly not fit for any work or exertion; those with blanched mucous membranes of the eyelids and lips, indicating severe anemia, are in the same category, and so are all who show signs of objective dyspnea, or cyanosis of the lips and fingers. But it must always be remembered that slim individuals with tuberculous lesions are very frequently stronger and have a better outlook than those who are fat and puffy. The latter, as a rule, are very short-winded and weak, despite their external appearance of good nutrition.

As was already stated, the findings on physical exploration of the chest are not *per se* conclusive when attempting to solve our problem. I have many patients in this city who have cavities, unilateral or bilateral, who cough and expectorate sputum containing tubercle bacilli and still they keep on working for years. It has appeared to me that those in whom the main lesion is in the left lung are more disabled than those with the main lesions in the right lung. The former are more apt to suffer from severe dyspnea and cyanosis than the latter.

The most reliable criteria as to the ability to work are obtained by a study of the functional response of the body to exertion. This is best ascertained by a study of the effects of exertion on the temperature, pulse and respiration. In fact, all who advocate work for tuberculous patients emphasize that the thermometer is the most reliable guide as to the patient's fitness. But it has been my impression that a fraction of one degree F. is no danger signal in the average case. I know of many tuberculous patients who work despite slight rises of temperature some afternoons and they are not at all harmed by it. They keep on working for years.

It must be borne in mind that in these patients fever is not invariably due to tuberculous toxemia, nor to mixed infection. In many the rise is due to causes with which we are not acquainted, but which some are inclined to attribute to nervous instability. Indeed, any excitement, worry, grief, or anxiety may raise the temperature of a tuberculous patient. In some the temperature rises actually through fear or by autosuggestion. Especially is this true of those who have been in sanatoriums and who believe that they know all about the significance of thermometrical readings. For these hypochondriacs the taking of the temperature is an exciting event not lacking in suspense. The best to be done in these cases is to prohibit them from taking their temperature, or having it taken by somebody else without letting them know of the reading. If we succeed in convincing them that there is no significance in the slight rise in the temperature after exertion, the fever may in fact disappear.

Of even greater significance is the rate of the pulse. All patients with normal pulse rate may work more or less, while tachycardia is a distinct contraindication to activity. This is a fact which has not been appreciated to the extent it deserves. Indeed, it is exceedingly rare to meet with a tuberculous patient in whom the disease is active and progressive with a pulse rate under 75 per minute. Similarly, I have not seen a tuberculous patient with a slow pulse harmed by moderate work. Of course, in evaluating the pulse rate, the nervous element must always be borne in mind.

It should, however, be emphasized that patients in whom the lesion in the lung has cicatrized, but who remained with tachycardia, are permanently disabled, even though their temperature is normal or subnormal, which is not rare. It is well known that the pulse rate is less dependent on the extent of the lesion than on its activity.

Dyspnea is another contraindication to exercise and work. Some patients with healed lesions, with normal temperature, little or no cough and expectoration, remain short-winded for life owing to the interference with the pulmonary circulation, reduction in the extent of the pulmonary parenchyma, visceral displacement, etc. The patients may live long, but they will never be efficient at anything.

The psychic factor is of great importance. Among the city population practitioners frequently meet tuberculous patients who disregard all admonitions and keep at work till an acute exacerbation or complication compels them to take to the bed. At times we meet with some who keep on working for long years despite active disease. They are the paradoxes of practical medicine.

On the other hand, there are many in whom the disease is quiescent, or latent, in whom hardly any of the constitutional symptoms of phthisis can be

discovered, and they do not work. This class is mainly made up of ex-sanatorium patients. They are neurasthenic and psychasthenics; nothing will induce them to become active. They are under the impression that they know "all about TB," and the danger signals which they learned while in the institutions are never forgotten; in fact, they always imagine that they are in extreme danger. They are most difficult to handle. That it is not altogether quiescent or latent tuberculosis which is responsible for the psychasthenia is clear when we mention that even non-tuberculous patients, who have because of erroneous diagnosis spent some months in sanatoriums, are apt to display this fear for exertion.

Of course, complicating extra-pulmonary tuberculous lesions, e.g. of the larynx or intestines, or amyloidosis of the liver, spleen, intestines, etc., are contraindications to work, but patients with these complications are to be grouped with the progressive cases mentioned above. Those having pulmonary complications, such as thick pleura, bronchitis, pulmonary emphysema, cardiac dilatation, etc., are often only able to do light work, but even they are rather to be judged by the effects of exertion on the temperature, pulse and respiration than by the findings on physical exploration of the chest.

At the onset of the active stage of pulmonary tuberculosis work is apt to be harmful. The organism is apparently not yet adapted to the toxemia of phthisis as it becomes in chronic cases later on. These patients have fever, night-sweats, rapid pulse, are easily fatigued and sweat at the least exertion. They do best when put to bed for a few months till the fever abates and the pulse slows down and stays down after attempts at graduated walking exercises have been instituted. If these are well borne, and the temperature and pulse should be our main guides, they may be put to work. On the other hand, patients with old disease, immaterial at what "stage," in whom the lesions are circumscribed, and the pulse and temperature are normal, should work.

We may often be surprised how well they bear work, and in many we will find an improvement in their mental state. They become encouraged by the fact that work does them no harm, and with this encouragement we find also an increase in the natural resistance. The contrast is very striking when we compare them with patients with healed lesions, but who have been told by their medical advisers that they must abstain from work, work only outdoors, or change their occupations, which is often not feasible. The latter are often a discouraged and lazy lot, and take to bed at the least inconvenience. The experiences in most tuberculosis clinics in the large cities bear out these observations, though our suburban phthisiotherapeutists in the sanatoriums have had no opportunities to see such results, as a rule.

What Work Can Tuberculous Patients Do?—After the patients have been carefully selected as fit for work, there remains the problem what work should they be given. The answer to this question is different for patients treated in institutions and those treated at home. In both classes it is important to make the work simple because complicated systems of so-called "graduated labor," and the like, are as difficult of universal application as all other complex methods and are bound to fail, excepting in the hands of some enthusiast. It is also important to keep the patients at the sort of work to which they are used, *i. e.* at their own occupations, excepting when there are special and valid reasons against such a procedure. We are apt to forget that an individual's organism is usually adapted to his occupation by a process of either natural or artificial selection. Sociologists always bear this fact in mind, but physicians hardly ever do. After recovery it is best that the patient, with very few exceptions, should again engage in his occupation for which he is best fitted and at which he can make the best wages.

In institutions the patients who show but few of the constitutional symptoms of phthisis should make themselves useful; all whose pulse, temperature and respiration is around normal should work. The wards and grounds of the hospital should be kept in order by the patients; in fact, very little of outside, paid labor should be employed in public sanatoriums and hospitals for consumptives. With the present shortage of labor and, if the war lasts for some time, the depletion in the contributions to the funds for the maintenance of the institutions, this has become a real necessity. The beds, floors, windows, baths, lavatories, etc., of the sanatoriums should be kept in good order by the patients. A considerable part of the work in the kitchen is also suitable. It is unjust to the patients, as well as to the community, to employ paid labor for this work as is done in most American sanatoriums.

Patients who have been trained in certain specialized work, as well as skilled artisans, can make themselves useful while remaining in the sanatoriums. Thus carpenters, masons, house painters, plumbers, tinsmiths, electricians, etc., can do the repairs the buildings and their equipment may require. Others, who have been in the garment industry, as well as cobblers, can make themselves useful at their lines of work. The clerical work of the institutions can be done by clerks and stenographers who have been admitted as patients.

Patients treated at home should be encouraged to do some work, though it is more difficult to do so. Employers exact regular hours, and do not want workers who frequently miss days from the factory or shop. For this reason alone it is best that early cases of tuberculosis should be sent to sanatoriums where they may be given the rest cure till the active symptoms abate, when they may be tried out at work till found that they can stand it.

In this city we have a factory in which 75 tuberculous patients are employed. Most of them have been for variable periods in sanatoriums, but recently other patients have been admitted, and it has been found that they do well. In fact, some are admitted while they wait for vacant beds in the overcrowded sanatoriums, but finding that they are doing well, and earning money, they refuse to enter when they are called to the institutions. In this factory the simpler varieties of garments are made. Though many of the patients have not been employed at this trade before they got sick, and have to be trained, still their earnings are quite high. Working at piece work, they earn between $5 and $35 per week, the average being about $15 per week. Many of these tuberculous workers were

supported by charity societies before, and a considerable proportion feared work. But the education they have received in the factory—diametrically opposed to the teachings in the average sanatorium—has convinced them that they thrive on work, and this has had an excellent moral effect—they are spiritually encouraged by the fact that they can be self-supporting. It is not very flattering to the profession that this factory was conceived and elaborated by a mere layman who quietly and unostentatiously collects money for its support and spends considerable time in keeping it running. It may be stated that recently there is hardly any loss to the management—the factory is almost self-supporting. I shall, in the near future, publish a detailed report of the accomplishment of this factory.

It must be stated that numerous tuberculous patients are working and doing well, though we have no data as to exact conditions. When we bear in mind that hardly 5 per cent. of the tuberculous patients in this country are in institutions, while 95 per cent. are in their homes, it is clear that of the latter many are at work. The thousands of patients cared for in the tuberculosis clinics of our large cities are not all idle, and it is to be regretted that no detailed study has been made as to the condition of those who work as compared with those who do not.

Experience has, however, taught that the vast majority of carefully selected tuberculous patients will do well though working more or less. A certain proportion will now and then show symptoms of exacerbation of the active tuberculous process and they will have to be placed on the rest treatment for variable periods. But this should not discourage us. We know that patients under the perfect rest treatment have their acute and subacute exacerbations which are part and parcel of the undulating course of phthisis. It is clear that not all exacerbations are due to overactivity.

I have met with many patients with quiescent disease who felt quite well while working in the city, but during a period of rest when unemployed, or when taking a vacation, etc., acute or subacute exacerbations broke out which disabled them for some time. Many patients in sanatoriums who are not doing well under the rest treatment come to the city and promptly begin to improve, though they are quite active. The same is true of certain complications, especially hemoptysis, which is dreaded as much by physicians as by the patients. The idea that pulmonary hemorrhage is frequently due to overexertion has been exploded during recent years. Most cases, especially the copious and fatal forms of pulmonary hemorrhage, occur during the night, waking the patient up from his sleep. In institutions in which the rest cure is vigorously enforced the proportion of patients with hemoptysis is not lower than in others in which exercise and work are done by the patients.

It is important that the working patients should not be overburdened with rules and regulations as to indications and contraindications; it is not advisable to make them excessively introspective, which almost invariably leads to hypochondriasis. The average healthy person, if told that he must take his temperature, pulse, etc., every two hours to find out the effects of his task on his vital functions will surely break down. Indeed, this is the main objection to the so-called "graduated labor" about which so much has been written, but which has failed to gain a foothold in the vast majority of institutions, including its home, England.

With cooperating patients we may trust their subjective sense of fatigue as a reliable danger signal. When a patient reports that his task has engendered a sense of languor, has made him sweat unduly and he feels it difficult to continue, his temperature and pulse should be taken, and if these are found enhanced he should be placed at rest. In all who find work is not productive of a sense of fatigue the pulse and temperature should only be taken as routine measure two or three times a day. If these are found normal for several weeks, this also should be discontinued with a view of preventing the "temperature habit" which is responsible for many of the disabilities of many cured tuberculous patients.

In public institutions this method of placing patients to work can be used as the strongest argument to encourage them. When they realize that they have been selected for work because they have a better outlook for a speedy recovery, hardly any will shirk work, which is not the case now in most sanatoriums.

While this paper was being prepared I noted that an unusual number of patients under my care at the Montefiore Hospital asked for discharge. Inquiry brought out the following fact: Several weeks ago I discharged two patients and told them that they might go to work. After working for a few weeks they came visiting their friends in the hospital and told them that they were earning good wages and felt well. This acted as a stimulus to other patients who asked to be discharged so that they, too, might go out and work for the support of themselves and those dependent on them. In fact, it appears to me that in some institutions it may be advisable to pay the patients who can work and thus encourage them. If sanatoriums are institutions seeking to cure, educate, and rehabilitate tuberculous patients, the money thus spent will prove an excellent investment. Many patients may thus be convinced that they may work without harming themselves and leave the sanatoriums, making place for the numerous patients who suffer from active and progressive disease and are in real need of the kind of treatment available only in institutions, but are kept waiting for lack of vacant beds. It is obvious that the ultimate gainer will be the community charged with caring for its tuberculous patients.

Résumé.—Absolute rest is no more indicated in all cases of pulmonary tuberculosis than it is in all cases of organic heart disease. In both conditions, the effects of physical exertion on the functional capacity, and the constitutional symptoms are the only criteria as to indications for rest and work.

A large proportion of tuberculous patients showing signs of latent, inactive or quiescent disease, but who have nevertheless been admitted to sanatoriums, do not need absolute rest; in fact they may be harmed by it physically and psychically. They can and should work more or less, benefiting themselves as well as those who have to care for them. A considerable number of the sanatorium popula-

tions belong to this category. Work under proper supervision may help them toward a speedy recovery and prevent that form of laziness which is observed in many tuberculous patients after they are discharged from institutions.

In the individual patient the so-called stage of the disease, the extent of the lesion, the presence or absence of râles, etc., are not always safe criteria as to ability or fitness for work. We should be guided in most cases by an evaluation of the activity of the tuberculous process, manifesting itself in abnormal temperature, pulse and respiration. Just as a cardiac patient who does not become short-winded after exertion is permitted to continue at his avocation, so should a tuberculous patient be permitted, or even urged, to work if it is found that exertion does not increase his temperature, pulse and respiration.

That work will not invariably increase the patient's chances of acute exacerbation of the tuberculous process, nor shorten his life, is clear when we contemplate the large number of tuberculous physicians employed in sanatoriums. Although they work, some even quite hard, it has not been shown that they are more apt to be laid up by acute exacerbations, or that their average duration of life is shorter than that of other tuberculous patients.

With the present shortage of labor in this country it has been found difficult to run sanatoriums with hired labor. Institutions are therefore compelled to utilize most of their patients for the routine work, if they are to be managed properly. There is no doubt that it can be done, and now is the time to begin along these lines.

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TREATMENT OF CANCER AT THE ANUS.

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THE treatment of cancer of the rectum may best be considered from three points of observation, each presenting the disease in a different clinical picture: (1) Treatment of the precancerous conditions; (2) radical removal of the tumor (operative measures); (3) palliative or non-operative treatment.

Treatment of Precancerous Conditions.—We have as yet no definite knowledge as to the method of communication of cancer, but we know that in many cases there exists what may be called a precancerous state, when apparently benign growths are found. This condition is found not only in cancers about the rectum but also in malignant growths elsewhere; it may be diagnosed with certainty, and the patient given assurance that radical operation at this stage is effective, easy, and safe, and promises immunity from recurring, as opposed to certain death if the patient reaches us too late. Every patient complaining of local pains, with or without an abnormal discharge, should be carefully examined with the thought of possible cancer. Malignant growths at the anus or within the rectum should be removed at the earliest possible moment, but where the growth has involved surrounding organs radical removal is impossible, and tentative treatment to ameliorate suffering should be considered.

Surgical Treatment.—Extirpation of the rectum for malignant disease was first successfully performed by Lisfranc in 1826, and although his technique has suffered many changes the mortality from the operation is still very high. Tuttle says: "Extirpation is indicated when the growth is movable, and does not involve other organs; when no metastasis or ganglionic extension has occurred, when the patient's physical condition is such that he is able to withstand the shock of operation, and when marked cachexia is not present."

Preparation of the Patient.—In spite of very careful antiseptic preparation of the anal region, so many fatalities occur from infection and giving away of the sutures because of the flowing of the intestinal contents over the wound, that I always make an artificial inguinal anus as the first step. Whether this shall be a temporary or permanent inguinal anus depends upon the findings in the case.

One of the many advantages of colotomy as preliminary to excision of the cancer is the opportunity of examining thoroughly the bladder, urethra, prostate, uterus, and pelvis to determine if the disease has invaded structures other than the rectum. Sometimes adhesive bands from the rectum are only inflammatory, and if found to be so, extirpation of the growth offers hope of succcess. Involvement of the vaginal wall, bladder, or prostate betokens metastasis, and is a serious complication. When operative interference has been decided upon the patient should have a course of preparatory treatment to relieve toxemia and increase his resistance to infection. Such treatment very much increases his chances of recovery from the immediate effects of the operation. The patient's ability to resist infection is a large factor in prolonging his life. If the digestive functions remain good his physical strength is conserved and the constitutional invasion of the disease is retarded. Highly nutritious, absorbable foods, such as eggs, egg albumen, meat extracts, milk, and well-cooked cereals, are indicated, whereas sweets, uncooked starches, fibrous vegetables, and all foods that leave much intestinal refuse, should be avoided. Of course the patient's tastes will vary the diet list. The absolute milk diet is not so satisfactory as when meat, broths, and breads are allowed.

Irrigation.—Twice each day the rectum should be irrigated with one-half strength saturated solution of boric acid or 1 to 5,000 permanganate of potash solution to remove hard, lumpy, putrefying fecal masses, and also to relieve diarrhea or other discharges. The solution should run in slowly so that it will pass up above the disease, and thus wash out mucus, pus, and fecal matter which may have accumulated above or below the tumor. Under this treatment for two weeks sepsis is eliminated and the patient's physical condition much improved, and he is the better prepared to withstand the shock of operation.

The Perineal Operation.—The mortality from extirpation of the rectum by a perineal operation is much lower than that by any other method, but this type of operation is limited to epithelioma near the anus, and is not applicable where the cancer is in or above the rectum proper, leaving a

piece of healthy bowel below it at the anus. The immediate mortality of perineal extirpation of the rectum is due to infection which may occur during the operation from introducing the finger into the rectum and then into the wound, or by accidently cutting or tearing into the rectum, and thus allowing the intestinal contents to flow over the wound. Later infection occurs from the fecal discharges passing over the suture line. This latter danger may be avoided by providing the inguinal anus.

The anesthetized patient is placed in the exaggerated lithotomy position, with the hips well raised on sandbags. The rectum is well washed out with full-strength solution of hydrogen peroxide, followed by full-strength alcohol, and then plugged with gauze. Plugging the rectum protects against leakage, and facilitates its recognition during the later dissection.

A circular incision is made around the anus and deepened about one-half inch, separating the mucous membrane until the external sphincter is exposed thus dissecting off a tubular mass containing the anus, which is now securely closed by a stout silk purse-string ligature. A gauze wipe is tied over the anus with another strong silk ligature, which is left long for use as a tractor later. The external sphincter is next divided anteriorly, and the incision is carried nearly to the base of the scrotum, which is also divided posteriorly, the incision extending back to the tip of the coccyx.

The levator ani muscle is separated by blunt dissection with the scissors. The operator's hand is passed through this hole and the rectum, mesorectum, fatty tissue, and glands are carefully separated from the sacrum. The mesorectum may need to be freed from the rectum by snipping with scissors curved on the flat. The rectum is then freed from the levator ani on either side and the urethra and prostate in front. When the peritoneum is reached it can usually be worked up off the rectum, but if not it will be opened and gauze immediately packed in to prevent the small intestines prolapsing into the wound. The lateral supports of the rectum are fastened by two clamps and cut between, thus preventing bleeding from the middle hemorrhoidal artery. The rectum, being now freed, should come down easily. If it does not do so, the finger should be swept around the rectum and the binding attachments separated. Do not pull the rectum, for fear of tearing the mesentary and causing severe hemorrhage. The rectum is drawn out until healthy bowel is brought outside of the anus. The peritoneum is attached to the anterior intestinal wall by interrupted catgut sutures. The peritoneum must not be tightly drawn around the bowel, nor fastened with continuous sutures, lest subsequent stricture of the bowel result. The levator ani is sutured to the bowel carefully, closing with No. 1 chromic catgut the dead space in front of the bowel. The divided sphincter muscle is approximated to the bowel by sutures dipping down to the muscular wall of the gut, and the anterior and posterior cuts in the muscle are closed. The rectum is nicked across anteriorly to see that the mucosa is healthy and its blood supply sufficient, and if found satisfactory the incision is carried around the bowel. The mucosa must be picked up with snap forceps, and the bleeders sought especially at the mesentery. Gauze drains are placed in the anterior and posterior angles of the wound, the skin wound is closed, the mucous membrane is approximated at the new anus, a rectal tube is inserted, the patient's legs are extended, the buttocks are strapped together with adhesive plaster, and a large diaper of loose, fluffy gauze is held by a T-bandage. The gauze drains are removed at the end of forty-eight hours, and if there is no bleeding they are not replaced.

Complications of Extirpation of the Rectum.—Let us consider first the immediate mishaps, those occurring during the operation or convalescence, and liable to terminate fatally; then those that come on after the patient is about, which, while not directly causing his death, will seriously interfere with his comfort.

Injury to other pelvic organs may usually be avoided by a careful study of the anatomical relations of these organs, particularly the ureters and the bladder. The patient is usually septic, and enfeebled by toxicity from the accumulation of hard fecal matter above the neoplasm. This source of poisoning must be relieved by establishing an artificial anus before any effort is made at resecting the growth. After establishing this inguinal anus as a preliminary step to extirpation of the rectum, the distal segment of the bowel may be irrigated through and through for from a few days to two weeks, and thus rendered less septic. Then when the resection is performed there is no danger of soiling the operative field by escaping intestinal contents, and if stitches give away the wound is not bathed constantly in fecal matter as the bowel empties itself. The chief complication following extirpation of the rectum is sepsis, 75 per cent. of the deaths following this operation being the result of infection.

Hemorrhage is a serious handicap of perineal excision of the rectum, and when the patient is already weakened this considerable loss of blood may be a contraindication to operation. In the combined abdominoperineal method, where the peritoneum is closed at the end of the first stage of the operation, gauze compresses may be used as the perineal dissection progresses, and but a comparatively small amount of blood is lost. No vessels are tied until the rectum is completely dissected free and removed, because in the procedure the same artery will be cut several times, and much valuable time is lost if each "bleeder" is tied as it appears. The middle sacral, the right lateral sacral, and the two middle hemorrhoidal vessels are the ones usually needing attention.

Gangrene of the stump of the bowel which has been brought down and attached to the anus may result from (1) deficient blood supply, (2) too great tension in approximating the amputated bowel to the anus, thus tearing out the stitches, (3) discharge of feces over the wound. In this conjunction it is well to remember that arterioles which pulsate palpably when the bowel is retracted may be stretched too much for patency when the gut is dragged down. Therefore, I always look for a few small spurters in the severed bowel while attaching it to the anus.

Among the later complications following extirpation of the rectum, the most frequent is incontinence of feces, and many ingenious procedures have been devised for this unfortunate condition, but

without satisfactory result. In all of them incontinence returns after a period of time, and when the sphincter muscles have been removed with the neoplasm a permanent inguinal anus should always be established.

Stricture of the rectum of varying severity follows most amputations, and while it cannot be prevented it may be limited by beginning dilatation with bougies ten days after the operation, and later instructing the patient how to use them. Prolapse of the gut quite often follows extirpation, and may require treatment.

Palliative Treatment.—Palliative treatment is limited to inoperable cases, and comprises a number of measures to change distress into comfort and add months or years to the patient's life. Incurable cancer is by no means unrelievable cancer. Tuttle, speaking of his experience of twenty inguinal colotomies done for the relief of symptoms due to inoperable carcinoma, says he believes that in the large majority of inoperable cases just as much comfort and prolongation of life can be obtained by the persistent application of palliative methods of treatment. The essential of all treatment of inoperable cancer is to assist the patient to resist infection, and the maintenance of a good digestion is of prime importance. Predigested foods, milk, eggs, beef, lamb, chicken, meat extracts, and well-cooked cereals, are always indicated; but sweets, raw starches, and vegetables which leave much residue, are to be avoided.

Irrigation is especially indicated where there is much discharge, diarrhea, or constipation. In such cases the terribly repulsive odor of necrotic flesh drives the sufferer from his friends and makes him despondent. The ever-present odor also interferes with his enjoying his own meals. If this ulcerating rectum is irrigated twice daily, or even once only, but persistently, with a saturated solution of boric acid or 1-10,000 permanganate of potassium solution, a wonderful change is wrought. The odor disappears, septic absorption is stopped, and some patients actually put on weight. But the flushings must be continued uninterruptedly.

Drugs.—There are no drugs which in any way may affect the cancer. Digestants, tonics, and intestinal antiseptics all serve a good purpose in selected cases. Opium is contraindicated, as it produces hard, lumpy stools, which may cause obstruction of the bowel, or may tear away the bowel when passing the cancer, and cause severe hemorrhage. Unless opium is given in enormous doses it will not control the diarrhea. For the relief of pain, other sedatives may be given by mouth, or morphine hypodermically.

Curettage and Cauterization.—Sloughing surfaces surrounded by soft, pulpy masses often cause exhausting hemorrhages. If the growth is attached to the posterior wall, these soft bleeding masses may be curetted away with a Paquelin cautery (an ordinary sharp curette may be used, but I prefer the Paquelin). If the growth is situated upon the anterior wall this treatment must be used more advisedly, as there is danger of invading the bladder or peritoneum.

Radium and the *x*-ray are valuable therapeutic agents. By their use the growth may often be checked and the suffering of the patient relieved. In other instances they fail utterly, and their value is to-day quite uncertain. However, they should be considered in every case.

Conclusions.—To estimate the true value of surgery in cancer of the rectum we must know the object of the operation and its results.

The radical operation aims at removal of not only all the diseased tissues, but also those tissues which contain possibilities of future development. It is absurd to attempt extensive surgical procedure where the possibility of radical removal does not exist, and therefore the operation must be planned to suit the objects to be obtained. The age of the patient, his general health, strength, and the condition of his kidneys and cardiovascular system, must be considered.

The vital questions arising in the mind of every practitioner upon finding a cancer of the lower bowel is what course of treatment shall be advised, and why. Certain surgeons will not attempt extirpation unless the neoplasm is confined to the intestinal wall, movable, and not complicated by ganglionic or metastatic extension; others believe that adhesion of the rectum to other pelvic organs, and even the lymphatic enlargement, may sometimes be inflammatory, and a hope of cure may be expected in some of these. If the examining finger fairly passes beyond the growth in an upward direction the case may be considered favorable for operation. In the male, cancer of the rectum, close to the prostate, may not invade the prostate for a long time; in women, on the contrary, cancer on the anterior rectal wall soon implicates the vagina. If the growth is adherent to the upper part of the vagina the peritoneal membrane of Douglas's pouch is pretty sure to be involved, and the growth cannot be removed without opening the peritoneum. In such cases perineal resection should not be attempted, as the lymph glands beyond are doubtless diseased. If the neoplasm is confined to the posterior wall the case is much more favorable. There is no anatomical difficulty to a wide dissection. Glandular infiltration usually comes on later, and those in the hollow of the sacrum can be easily removed. A growth limited to the rectum, however high it may extend along the gut, may be removed by one of the various operations. Extension beyond the rectal wall, fixing it to the sacrum, bladder, prostate, urethra, vagina, or uterus, will usually constitute a contraindication to radical operation. The plan of procedure will vary with the patient. I divide my cases into three classes:

1. At the anus. (a) The sphincter may be preserved. (b) The diseased portion is removed and the proximal portion brought down and sutured to the skin at the anus.

2. Within the rectum or sigmoid. (a) The growth is removed. (b) The growth is short-circuited.

3. Neoplasms high in the sigmoid or in the colon. The growth, if removed, is resected extra abdominally, as advised by Tuttle in his three-step operation.

Perineal extirpation presents the lowest mortality, although it is the bloodiest method, and is often followed by an ulcerated area at the new anus. In doubtful cases the patient may choose the radical operation, with all its high mortality, in the hope of relief of symptoms and of prolongation of life, although the chances of permanent cure may seem slight.

Do not cut across a cancer and leave part behind. The part remaining will grow more rapidly than if you had let it alone altogether. An operation for cancer is an operation to save life. Cosmetic results are to be considered, but they are not to be weighed against recurrence and death a few years later. Never manipulate a cancer roughly, either before or during operation, or more often than is necessary to make a diagnosis. To do so is the easiest way to drive cells into lymph or blood current—hence metastasis. Do not rule out cancer because the patient is not old. About 10 per cent. of cancers occur before thirty-five. To save your patients from cancer, save them from delay. Do not wait for pain and cachexia—the signs of impending death. Be always on the watch for early suspicious symptoms. Be prompt to follow them to a definite diagnosis. Be courageous enough to insist on immediate proper treatment.

30 North Michigan Avenue.

SOME REASONS WHY HOSPITALS FOR THE INSANE ARE OVERCROWDED.*

By W. M. KENNA, M.D.,

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A financial writer, discussing recently the question of money as it relates to human affairs, expresses the view that wars in the future may possibly be prevented by a restriction of the financial credit of any nation which shows a tendency to belligerency. His statement accentuates the perhaps sordid but nevertheless true fact that, getting down to essentials and eliminating romance, the financial side of most questions is the important one. And this element would seem to reach with its tentacular grasp even to the prosaic discharge of a patient from a hospital for the insane.

It has been the writer's observation that many of the laity are frankly of the opinion that in State hospitals for the insane there are patients held who are not deranged and who are thus unjustly retained in a state of incarceration. This impression is not narrowly confined, if one may judge from comments expressed here and there, and the reason for its wide distribution is not only obviously superficial in its causative relation, but is also easily explainable. It comes as the result of loose observation, the absence of critical analysis, the acceptance of hearsay testimony, and from a belief in the declarations of some of the unfortunate patients who, while lacking insight into their own deficient mental condition, yet apparently possess a logical and reasonable trend of mind.

Visitors to institutions for the insane frequently declare that they see nothing abnormal in many of the patients; that the latter seem to talk, act, and feel like normal people, and that it is difficult for them (as, truth to tell, it is sometimes difficult for the hospital attachés themselves) to differentiate in many of the wards between patients and attendants, if the latter are not clothed with distinctive dress or uniform. And so, because of superficial observation and by reason of the standard which is quite commonly held that either profound depression or active excitement specifically typifies the condition of insanity, the above opinion is formed, the necessity for intimate tests in determining an absence of mental abnormality not being appreciated. So far as their observations go, these critics are correct, but they do not delve deeply enough into the question and are not adequately trained to arrive at accurate deductions. And in their inner minds, even if they do not always openly express themselves, the feeling lurks that many of the supposedly insane patients are not in reality alienated. Hence the general suspicion which obtains.

It is strange, however, that people do not reason more intelligently as to the cause for this apparently unjust retention. It is only logical to assume that if these patients, presumably sane, are detained month after month there must be a motive or an ulterior object of some sort which acts as a basis for this detention. But nothing of this kind can possibly be visualized by any normal person if he considers the matter with fairness and without prejudice. The slightest reflection would show on its face that in any public institution of the kind under discussion a superintendent could have no real interest in holding a patient longer than was absolutely necessary. Almost every hospital is overcrowded; there is a crying need for additional buildings, and the trustees and superintendents everywhere are constantly harassed by the lack of sufficient accommodations for the patients already under their care. Surely something of a wholesale discharge would be welcomed with satisfaction by the heads of institutions and by their associated governing bodies. As most of the patients are usually in the pauper class, any insinuation that there is a thought of financial emolument in the minds of the medical officers would be bizarre as well as insulting. These existing conditions only serve to emphasize the ridiculousness as well as the unworthiness of these suspicions and false opinions. And it may be remarked here that this overcrowding which is so prevalent will naturally be increased rather than lessened as a result of the greater interest which is now being taken in the subject of insanity. For, as a logical effect of this greater attention which is being paid to the problem, a more careful scrutiny of deficient individuals is being made. A wave of concern is sweeping over the country in regard to defectives, and soon we may be in the anomalous situation of at once trying to relieve the congestion in our insane hospitals and at the same time of searching the community to uncover those below or different from an established standard.

But while it is true, and only quite natural, that the medical men of the hospitals are anxiously desirous of making as many discharges from them as possible and are constantly aiming at an ideal of 100 per cent. of recoveries among their patients, yet it can be truthfully said that in every hospital for the insane there are many unfortunates who are only slightly abnormal according to accepted standards. These are some of the individuals who seem to the superficial observer to be in normal mental health but who, to one accustomed to the analysis of insane people, present certain definite abnormalities of mental action; who show demonstrable irregularities in their ways of thinking,

*Read at a meeting of the New Haven Medical Society, May 3, 1917.

feeling and doing, and who evince a recognizable lack of capability to adjust themselves to their environment. It is the suitable disposition of this class which would go far to solve the problem of overcrowding as it exists today in every public institution for the insane and which, moreover, would help to disabuse the public generally of the ideas which it now entertains as to the unjust detention of many persons in these hospitals.

However, the difficulty which is confronted is that when the question arises as to the discharge of this type of patients there enters also the problem of responsibility. A superintendent of a hospital for the insane receives his appointment by virtue of his particular skill and knowledge and as a recognition of his ability in this field of medical science. Because of his experience and training he is presumed to know much of his subject and is expected by the exercise of the knowledge he has gleaned and the skill he has acquired to safeguard the interests of the community in which he lives.

Thus, upon the shoulders of a superintendent is placed a great responsibility in the matter of discharging patients committed to his care and supervision. The release of any individual becomes an affair of great potential importance not only to that person himself but to the outside world as well. Will a patient, upon obtaining his freedom, assault or perhaps murder some member of his family as the result of a concealed delusion? Will another, apparently free from his depressive anxieties and from his suicidal tendencies, slash his throat with a razor or throw himself into a neighboring lake at the first opportunity, even before the day is over? Will a third, although seemingly freed from his alcoholic propensities and although bodily fortified against the need for stimulation by his regularity of living and his improved general health, immediately abandon his resolutions and plunge into the depths of a spirituous debauch because he is unable to adapt himself to his new surroundings?

These are some of the questions which puzzle a medical officer whenever the matter of a patient's discharge comes up for decision. If a mentally sick patient does clear up and for a reasonable time presents a sane and normal attitude and can then be discharged with confidence as cured, there is always a feeling of justifiable pride and satisfaction on the part of the superintendent and his medical associates at the outcome. Thereafter, whatever the future may bring forth is purely a fulfillment of destiny. The hospital has done its duty, and its moral and legal responsibility ceases.

However, in the case of the merely improved patients—that is, of those who approach but who are unable to reach the level of the alienistic standard, a different situation presents itself. And just here arises, in a decided way, the question of responsibility, as has been said. The medical staff, in trying to determine the condition of the patient, must cast aside altruistic sentiments and then conscientiously endeavor, with the aid of their experience and teaching, to judge, as well as they are medically and scientifically able, whether or not a recovery has been effected. The patient's relatives or friends sometimes willingly leave the decision to those in charge and accept it as being final and infallible; and, indeed, they are often averse to the dismissal of the patient unless the medical officer will declare positively to them that a definite recovery has been accomplished. If this assurance cannot be given, there then ensues the probability of a hitch in the proceedings; and here is found, perhaps, one basis for the ideas inculcated in the minds of the laity to which allusion has been made.

In these cases an order from the court or the acceptance of responsibility by the selectmen of the town from which the patient is committed occasionally offers a solution of the problem in some communities. But again, such procedure is often held in check by the natural evasion of responsibility. The judge may wish the selectman to bear the burden, or the selectman may desire the backing of the court; they both may prefer to depend upon the superintendent's decision; and he in turn may wait for one of these functionaries to take the initiative. The judges and town officials are pretty generally unwilling to assume the responsibility. They themselves are amenable to the sway of public opinion, and whatever their personal altruistic or sentimental feelings may be, they naturally have a fearsome regard for the possibilities of the future, insofar as the conduct of the patient may involve them.

Habeas corpus proceedings are the bête noir of hospital superintendents; and it has seemed remarkable to the writer that these are so uniformly dreaded by the heads of hospitals. A writ of habeas corpus is the lawful resort of the patient and his friends if they favor a release against the judgment of the superintendent who counsels that the patient is not well enough to be discharged. One reason for this dread may be that such a court proceeding implies or seems to imply a reflection upon the superintendent's medical judgment, but one would think this process of law might more often be welcomed, for here would come a judicial determination of responsibility. If the patient were discharged, and if he caused trouble after his release, the onus would then fall directly upon the judge or jury who gave the decision determining the mental and legal status of the patient.

Paroles help somewhat to relieve the congestion. These are relatively rare, however, and, on the whole, because of their lack of finality, are not especially satisfactory. They do serve to render unnecessary the obtaining of new commitment papers in the event of a patient's not doing well and thus having to be returned to the hospital. It is possible that a lack of future financial provision for such patients may unconsciously act as a crucial deterrent in giving him a chance to be free and to associate with the outside world. That is to say, since most of the patients belong to the so-called pauper class and are pretty uniformly without financial resources, it may be that the fear for their future welfare and the distrust of their ability to adapt themselves to an environment of attrition both combine subconsciously to make for the detention of many of the mildly insane.

It does seem deplorable that most of the patients in hospitals for the insane must perforce upon their discharge take up the struggle for existence without financial backing and without freedom from monetary stress. Just the very ones who have

succumbed to the vicissitudes of life by reason of their instability are sent out again into the world in that condition so positively menacing to mental serenity—that of having a lack of money—and usually with no immediate prospect of employment which shall provide financial returns. The writer believes that many who are clamoring for the weeding out of the insane in these hospitals might quake with fear and apprehension if this same prospect confronted them under similar conditions.

There is a State Board of Charities in many states. This board has carte blanche in the matter of communicating with patients in the hospitals for the insane, and, as a corollary, the patients may appeal to the members of the board orally upon the occasions of the latters' visits to the hospitals, or at any time by writing to the board. Such letters are mailed with scrupulous care by the medical officers of the hospitals and are free from censorship of any kind. So it follows that the Board receives many letters containing pleas for discharge. Upon its tours of inspection the patients are interviewed privately and consideration is given to their requests. At the same time, the Board naturally respects the opinion of the superintendent, and his judgment is usually paramount. He is in a position to demonstrate an abnormality of mind if any exists, and he is properly qualified for such a demonstration. Mention is made of this Board to show that those inmates concerning whom there is a question as to their sanity or insanity have a friend at court, so to speak—a body which conscientiously and religiously acts as a moral check against possible indifference or unwise judgment. Thus the patients are given the opportunity of having their cases taken up for discussion in a proper and humane way by those who, while officially interested, are unprejudiced in every way.

The opportunities associated with the field workers and after-care systems relating to the future welfare of discharged patients are many and varied. These officials serve in a way as middlemen between the hospital authorities and the patients, and from the nature of their duties they are able to maintain with intelligent and personal interest a certain supervision over the patients and to guide with solicitous care the latters' efforts to maintain their mental equilibrium.

It is from these field workers and after-care corps of the state institutions that much is to be expected in time to come as a utilitarian measure of depletion. That is, provided they are clothed with suitable authority and with an elastic means of assisting the discharged patients financially, at least until they demonstrate their own capabilities for self-maintenance. It is not impossible that in future a fund expressly providing for the monetary contingencies of these discharged patients may be appropriated by our legislators as an economic resource aiming to relieve the large expense for building now necessary in caring for the insane under institutional supervision.

It is also possible that a boarding-out system may be a development of the future. If the maximum cost did not exceed the per capita expense of hospital care, there would be in reality a saving, for the elimination of some of the overhead charges and of the administrative outlay incident to hospital care would naturally ensue. Moreover, people might, under this system, take a more genuine interest in these unfortunates and look upon them less as being curiosities and with less of a fixed stare of detachment if remuneration were given for the trouble of caring for them. Such a plan would also help to limit the rapidly increasing and enormous demand for new buildings in which to house our mental defectives.

While it is extremely sad and unfortunate that so many of our population have to suffer incarceration in hospitals for the insane, yet it must be said that there is a lot of foolish and mawkish sentiment oftentimes expressed in regard to their condition of life. Generally speaking, the patients in these hospitals are well looked after, and many of them are serenely happy in their environment. The regularity of life, the opportunities and encouragements which are given to them for engaging in occupational diversion with incidental amusements and relaxations, the freedom from the social friction and irritation of the outside world and the absence of financial harassment all tend to make for mental and emotional poise and enjoyment even if the trend of their brains is appreciably abnormal.

After all, peace, happiness and contentment are coveted prizes in the battle of life, and for these we all strive. And surely even the prospect of a discharge from a hospital for the insane may not bring to a patient joy unalloyed if there is almost certain financial distress to be faced upon his return to his former environment with its attendant emotional, moral and mental strain.

7 Fletcher Avenue.

PELLAGRA:

ITS ETIOLOGY, SYMPTOMATOLOGY, AND TREATMENT.*

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Much confusion abounds in the minds of physicians in regard to pellagra. The same conditions obtain in regard to many other diseases; notably, that of malarial hematuria. Most of this arises from the fact that authors do not make plain the type of the disease about which they write. The physician who treats a few cases of chronic malarial hematuria with quinine and mercury quickly reaches the conclusion that these drugs are harmful if not fatal in the treatment of the disease.

Another treats the acute type in the same manner and is impressed with their great value. This confusion is very noticeable in the treatment of pellagra. He who treats the chronic type affirms that the whole treatment may be summed up in two words, "peas and beans." The physician who treats the acute type is positive that the use of drugs, the transfusion of blood, and physiological salt solution are imperatively demanded.

If the confusion of types was removed I believe a common ground might be found upon which we all could stand. We have three distinct types of pellagra, viz., The acute, subacute, and chronic. In this paper I shall deal strictly with the acute and subacute types, with no reference whatever to the chronic.

*Read by invitation before the Georgia Tri-County Medical Association, at Arlington, March 17, 1917.

In the treament of any disease the physician must have an idea, right or wrong, of its etiology before the treatment can become anything more than an empirical procedure; therefore it is necessary to understand the author's idea of it before one can intelligently comprehend his method of treatment. In 1912 the writer announced to the profession through the Houston County Medical Society that the symptom-complex we call pellagra was an acidosis, the result of a carbohydrate or alcoholic diet in which there was practically no protein; therefore a poison and not a disease. I shall here introduce some facts in support of this etiology.

Sambon has probably done more research work in pellagra than any other man. In *La Presse Médicale*, December 18, 1916, he says: "Pellagra is a universal scourge which attacks all races and has millions of victims; which provokes crime, insanity, and suicide; and fills our prisons and asylums. Thierry claims the original focus to be in Austria in 1753. No one however believes that the disease is so recent in its origin. In fact I am almost certain that it is as old as civilization itself. The elder Pliny describes an affection which suggests pellagra, which prevailed in the localities which are most scourged at the present time." This seems to be strong evidence in support of our theory of its etiology. Note what Sambon says of the effect of pellagra, "It provokes crime, insanity, and suicide, and fills our prisons and asylums." Sociologists, criminologists, and thinkers generally all agree that alcohol is the most fruitful source of crime, insanity, and suicide. A striking similarity. Italy, the country most scourged by the disease, consumes more alcohol per capita than any nation in all the world. A fact pregnant with thought. Again, the universality of the disease strongly supports our contention, because there is no doubt that men everywhere since the days of Adam have transgressed the laws of dietetics.

The appearance of pellagra in the United States contemporaneously with the increased consumption of the carbohydrates, speaks volumes in support of our theory. One frequently hears a physician say: "We ate the same things fifty years ago we eat to-day, why did we not have pellagra then?" This query is based upon a false premise; the census reports show a very radical difference between the diet of fifty years ago and that of to-day. The increase in the consumption of sugar during the past decade has been more than five hundred per cent. In 1916 there was consumed a little less than 100 pounds per capita. The increase in the consumption of syrup has enormously exceeded that of sugar. The consumption of sweet potatoes has increased many hundred fold. Not many years ago they were grown in small patches, "scratched" early in the fall, and the supply was soon exhausted; to-day they are grown in great quantities, properly housed and canned, and are staple articles of diet the year round. There is more rice grown in America than ever before in its history. The cereal foods, practically all carbohydrates, are of recent origin. The increase in the consumption of soft drinks, as noted by the *Journal of the American Medical Association*, Jan. 27, 1917, is simply astounding. The retail value of this material in 1916 was more than $500,000,000. The National Ice Cream Manufacturers estimate their output for 1916 at 200,000,000 gallons. Add to the above that made by private manufacturers and in the home, and you have a bill against the United States well above the billion dollar mark for 1916. This material contains approximately an ounce and a third of sugar to each glass or saucer. You who are older remember when game, fish, squirrels, turkey, and deer, all rich in protein, were staple articles of diet; they are to-day practically unknown.

Many physicians have inquired why the Chinese are so singularly free from pellagra, living as they do almost wholly upon rice, a carbohydrate. These queries are based upon an erroneous premise. The Chinese do not live almost wholly upon rice. Fish enters largely into their diet. China has grown and consumed soy beans for more than 2000 years; to-day soy bean flour almost wholly supplants that of wheat in that country. Soy bean flour occupies this position in no other country in the world. Alcohol as a beverage is almost unknown in China, opium taking its place; another fact pregnant with meaning.

If the Goldberger experiment with the convicts in Mississippi in 1915 proved anything, it substantiated our theory of the etiology. Still stronger evidence is the results we obtain in the sanatorium; patients begin to improve the day the treatment begins; vomiting of weeks' duration subsides in 24 hours; diarrhea is never prolonged over 3 or 4 days; all symptoms begin at once to improve and the patient is dismissed, seemingly well, in 6 to 8 weeks.

I here and now challenge the profession to show such results from any other method of treatment, especially those who follow the teachings of Dr. Goldberger. If I were the only man who had had this experience, and it had been confined to a small number of patients, there would be room for doubt; but when we consider the fact that Dr. Decks had a similar experience, and that my patients now number more than 300, the results can be nothing less than the logical sequence of a rational treatment.

Symptoms.—The symptoms of pellagra are so familiar that a description of them is unnecessary; however, one feature of it demands our attention, because of its paramount importance. A large percentage of the cases show no dermatitis, and they may be easily overlooked, and disastrous consequences follow. Physicians generally are not recognizing this type of the disease; about one-third of our cases are of this character; in every one of them a negative diagnosis of pellagra had been made; their prompt recovery proved the error. No type of the disease is more difficult to treat; therefore, an early diagnosis is of the utmost importance.

Joe Wing, the greatest farm lecturer America ever produced, was a notable example of this character. This man suffered from "indigestion" for years; his real condition was overlooked, and a diagnosis of pellagra was not made until a short while before his death. A life sacrificed upon the altar of ignorance at the zenith of its usefulness. A red, sleek, or fissured tongue, indigestion, constipation or diarrhea, irritability or melancholia, with insomnia and persistent dreaming, are sufficient

symptoms to warrant a diagnosis of pellagra. The admirable paper read by Dr. M. L. Graves, read at the Atlanta meeting of the Southern Medical Association, very graphically described this anomalous condition.

Treatment.—If our acidosis theory is correct, we obviously have a perverted metabolism. Our duty would be: 1. To restore this function as quickly as possible by cutting off all material shown to be productive of the acid. The history of Deeks' patients as well as of mine proves conclusively that the carbohydrates are the offending material; therefore, all sweets and starches should be at once eliminated from the diet.

2. By increasing the alkalinity of the blood, rendering the acid already formed more easy of elimination. I have found no drug more dependable for this purpose than dilute nitric acid. (*a*) It renders the contents of the canal alkaline, affording quick relief to the crippled metabolism. (*b*) It renders the blood alkaline or neutral, quickly restoring its oxygen-carrying functions; the value of which is obvious to all thinking minds.

3. By aiding in every way in our power the eliminating processes of the body. If constipation is present, the bowels should be kept open with sulphate of magnesia. The eliminating function of the kidneys should receive careful attention, and be kept up to the maximum of efficiency. Usually the acid is sufficient for this purpose, however, at times the infusion of digitalis is of great value. The skin must receive attention, because it plays a very important rôle. Pellagrins rarely perspire: therefore the skin may be likened to a blanket of tar, completely cutting off one of Nature's most important avenues of elimination. Tub baths daily with gentle massage of the entire surface afford much relief. The transfusion of physiological salt solution is of great value here; it dilutes the poison, relaxes the tension, and in this way opens wide the emunctories.

4. By conserving and increasing the vitality of the patient by every known means at our command. If the intoxication is alarming, an immediate transfusion of blood should be given. If the symptoms are not so urgent, the transfusion of saline solution will be sufficient. These agents may be employed from time to time as required. The food should be daintily prepared and given in such quantities and at such intervals as not to overtax the digestive functions. The patient should be placed in a dark room thoroughly protected from the rays of the sun and all noise and excitement. The mental phenomena present a rich field for investigation. I said in my paper of 1912 that I believed this condition was the result of an alcoholic neurosis; I am now thoroughly convinced of the correctness of that diagnosis. This being true, the immediate elimination of all sweets and starches from the diet is imperative; the drugs best suited to the control of this condition are trional, veronal, and hyoscine. Mental therapeutics properly administered is one of our most potent weapons. The dermatitis requires no treatment other than cooling lotions and cleanliness.

At the suggestion of Dr. John Aulde, I have conducted a series of experiments with the chloride of calcium. In those cases of acute diarrhea with vomiting and abundant dermatitis this drug seems to be of no value; but in cases of severe constipation, with scanty secretions and but little or no dermatitis, the results are brilliant. The administration of the arsenical preparations, salvarsan and cacodylate of soda, so strongly advocated by Dr. Martin, and almost universally prescribed by physicians, is I believe worse than useless.

Many patients admitted to the Sanatorium in the last stage of the disease have taken large quantities of both drugs; like opium they mask the real condition, producing a sense of security from which the victim awakes in a more serious condition than before.

You will note that the treatment here advised is in conflict with the teachings of our government expert. Dr. Goldberger contends that the whole treatment may be summed up in one word "peas." I cannot believe, however, the doctor meant for us to take that statement seriously, merely a "confession of faith."

We have not dealt fairly by our patients unless day by day we impress upon them the fact that after recovery if they return to the carbohydrate diet, just so surely will they be poisoned again. Many physicians contend that this is proof positive that the patient had not recovered. This position is not tenable. If one is poisoned by mercury and recovers, and is later poisoned again, is it reasonable to contend that he had not recovered from the first poison? It is true that once having been poisoned by mercury the system is ever after more susceptible to the drug, but that is no proof that the person had not recovered. The same is true of pellagra; when once poisoned by the carbohydrates, the system becomes so sensitized to this material as to render it forever intolerable, no matter how thorough the recovery may have been.

To prove this theory, many experiments have been conducted upon former patients. The fact that I was once a pellagrin myself has afforded me ample opportunity to carry out these experiments on my own person, and to make an exhaustive study of this condition from a personal point of view; although I recovered years ago and am now in good health, the consumption of an ounce of sugar or syrup daily for a week will produce indigestion, a red tongue, and a sore mouth; all the other carbohydrates produce similar results at varying intervals of time.

The above theory of the etiology may be erroneous. I am open to conviction when sufficient proof is offered. However, there can be no error as to the value of this method of treatment, because our patients recover promptly, positively, and permanently.

Filiform Drainage in Puerperal Mastitis.—Dr. Di Sant' Agnese Valerio cured a severe case of this complication by the use of Chaput's filiform drainage.—*Il Policlinico.*

Dermographism and Syphilis.—According to Perntz 24 hours after an injection of succinimiotate of mercury positive dermographism can be obtained on subjects having primary and secondary syphilis as well as latent cases. It occurs with far more constancy than the Jarisch-Herxheimer reaction. — *Dermitologische Zeitschrift.*

HYPERTHYROIDISM.

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SOME of the symptoms resulting from hypersecretion of the thyroid gland were first noticed in 1786 by Caleb Hillier Parry, a physician of Bath, England. Among the posthumous writings of Parry was found a description of eight cases of "Enlargement of the Thyroid Gland in Connection with Enlargement or Palpitation of the Heart." In the first one of these cases exophthalmos was also present. By Graves in 1830, and by Basedow in 1835, more detailed descriptions of the disease were given. At that time it was not known that excessive secretion of the thyroid gland was the cause of this malady. But since 1835 our knowledge of the symptoms, cause, and treatment of the condition often called either Parry's or Graves' or Basedow's disease has increased considerably.

Occurrence.—Hyperthroidism is a disease which affects women usually, Sattler's compilation showing that of the 3,800 cases 3,120 were females. Although a case in a suckling has been reported, this disease is uncommon in childhood. It is also interesting to note that familial occurrence is not at all infrequent, Frey having reported four cases in a family of five persons, and Ostereich having reported a family in which ten members were affected. Although the information is of no particular value clinically, this disease also occurs rarely in horses, dogs and cows.

Etiology.—Most of the symptoms have been produced experimentally by feeding large doses of thyroid gland substance. The symptoms thus produced were quite mild in comparison to those of a fully developed case of Grave's disease. Crile[1] believes that a hyperactivity of the suprarenal glands coexists with that of the thyroid, and states that "the symptoms of exophthalmic goiter are identical with those produced by the combined administration of epinephrin and of thyroid extract, plus the deterioration produced by the disease in certain organs." In summing up his discussion on etiology, Falta[2] draws the following conclusions: "Most of the symptoms can be referred to the hyperthryoidism; the cause of the hyperthyroidism is possibly conditioned centrally, and thus perhaps a series of symptoms and alterations in the function of other ductless glands are coordinate with the hyperthyroidism."

This disease frequently follows various infectious diseases, such as scarlet fever, acute articular rheumatism, etc. It frequently makes its appearance at the time of one of the sexual epochs—at puberty, during pregnancy, and at the menopause. Hyperthyroidism has a great reputation of beginning after mental shocks, such as fright, sorrow, and extreme disappointment. It also seems to affect more frequently persons in whom there is a neuropathic tendency or an instability of the nervous system.

This hypersecretion may occur in a gland previously normal, or one in an adenomatous condition. Obtaining similar results after feeding some tadpoles with normal thyroid tissue and others with adenomatous thyroid tissue, Graham[3] concluded that adenomatous thyroid tissue has the ability to functionate as does normal thyroid tissue. Important also is the fact that the symptoms of hyperthyroidism sometimes occur after the administration of iodine and medication with thyroid extract.

Morbid Anatomy and Pathology.—The two most characteristic postmortem findings are an enlargement of the thyroid gland and the *persistence* of the thymus gland. There is usually a uniform increase in the size of the thyroid. Early in the course of the disease the gland is soft and vascular, but in long-standing cases the thyroid loses much of its vascularity and becomes more firm. The iodine content is directly proportional to the amount of colloid present in the follicles, as much as 40 or 50 mg. having been found in one lobe. The iodine exists in the form of either iodothyrin or iodothyroglobulin. Microscopically there is an increase in the secreting tissues, which become branched or stellate instead of round or square, as normally they are, and the lining epithelium becomes cuboidal instead of cubical. Greenfield has called attention to the fact that the hypersecretory thyroid resembles the normal thyroid, as does the lactating mammary gland resemble the resting mammary. There is usually an abnormal amount of retrobulbar fat. There is often a hyperplasia of lymph structures around the thyroid gland.

Among the 36 autopsies done at St. Thomas' Hospital in London during the last 36 years, on patients who died of exophthalmic goiter, MacKenzie[4] reports the finding of a persistent thymus in 26 cases. According to Capelle's statistics, 44 per cent. of cases of hyperthroidism that died of intercurrent diseases had an enlarged thymus; 82 per cent. of cases that died of the thyrotoxicosis had an enlarged thymus; and almost 100 per cent. of cases of hyperthroidism that died at operation had an enlarged thymus.

Symptoms.—The number and severity of the symptoms are more or less dependent upon (1) the amount of hypersecretion, (2) the amount of this hypersecretion which is absorbed, (3) the ability of the organism to neutralize or detoxicate the excessive secretion, and (4) upon the stability or instability of the nervous system.

Cardiovascular Symptoms.—Probably the first, and one of the most distressing, symptoms is the tachycardia. The pulse rate varies between 90 and 200 per minute. The slightest exertion or the mildest mental shock will serve as a clutch to throw the cardiac mechanism into highest speed. Palpitation is often most distressing. There is an increase in the strength of the heart action; often also the area of cardiac dullness is increased, which increase is due more to dilatation than to hypertrophy.

The heart sounds are quite loud. Graves reported a case in which the heart sounds could be heard at a distance of three feet away from the anterior chest wall. At times, in the case of the writer's mother, these cardiac sounds were distinctly audible at a distance of two or three feet. Rather frequently there are systolic murmurs. In well-developed cases there is marked pulsation of the arteries in the thyroid gland and of the carotids; sometimes, in very severe cases, there is a pulsatory shaking of the head. Marked pulsation in the abdominal aorta, and in the liver and spleen has been observed.

It is, therefore, surprising to find a radial pulse

of poor tension and a normal or slightly subnormal blood pressure; but such is usually the case. This abnormal fall of pressure from center to periphery is explainable by the relaxation or dilatation of the peripheral vessels.

Falta attributes the tachycardia to irritation of the accelerator, and the peripheral relaxation to irritation of the vasodilator. Also he states that irritation of the root of the depressor nerve causes an increase in the blood pressure of thyroid gland vessels. Asher and Flack found that the excitability of the depressor nerve was increased by the internal secretion of the thyroid. The preceding statements help to explain the cause of the cardiovascular symptoms.

Glandular Symptoms.—More or less enlargement of the thyroid gland is demonstrable in practically all cases. The enlargement is bilateral in the great majority of cases. Rarely it is unilateral. The severity of the symptoms is by no means always directly proportional to the amount of enlargement, for slightly enlarged glands are often very toxic. On palpation a distinct thrill is felt; and on auscultation, vascular murmurs, synchronous with the heart's action, are audible.

Ocular Symptoms.—Bilateral exophthalmos is not uncommon; rarely it is unilateral, in which case the pupil of the protruding eye is dilated. This protrusion of the eyeballs is probably due to engorgement of the orbital blood vessels and to an abnormal relaxation of the musculus palpebralis. In long-standing cases the protrusion becomes permanent, due to the deposition of retrobulbar fat. A destructive keratitis sometimes follows the exophthalmos.

Retraction of the upper lid is frequent. The upper lid quite often fails to follow when the vision is turned slowly downward, allowing the white sclera to become visible at the upper border of the cornea (v. Gräfe's sign). Tremor of upper lid sometimes occurs. Involuntary winking is infrequent and incomplete. Möbius' symptom consists in a weakness of convergence. Suker has recently described another symptom under the term "deficient complementary fixation in lateral eye rotation." Kocher has observed that the rapid up-and-down movement of an object fixed by the eye causes a momentary convulsive contraction of upper lid. Joffroy's sign consists in the failure of the skin of the forehead to wrinkle when patient looks up.

Zentmayer[6] mentions the occurrence also of increased (rarely decreased) lacrimation, tremor of the eyeball, weak convergence, and paresis of the ocular muscles in the form of bilateral ophthalmoplegia externa, of the associated and of the individual muscles.

Nervous Symptoms.—One of the most common of all symptoms is a fine tremor of the separated fingers, which is usually not increased by voluntary motion, but which may disturb delicate coordinated movements. The tremor may affect the upper eyelids, lips, tongue, the arms, the legs, the diaphragm, and respiratory muscles, and even may seem to affect more or less the entire body, which last condition the French have termed "état de vibration perpetuelle." The tremor occurs eight to nine and one-half times per second. Cramps in the hands and feet occasionally occur during the night. "Drawing" pains in arms or legs or shoulders, and sometimes in entire body, beset the patients not infrequently. Muscular weakness, especially of the legs, is quite evident.

Mental Symptoms.—Abnormal irritability, great excitability, and strong emotion characterize this disease. There are often great changes in the moral nature. Insomnia is fairly common. The sleep may be unrefreshing, and productive of most unpleasant dreams. Somnambulism occasionally occurs. Infrequently, hallucinations or delusions of persecution beset the patient. Rarely insanity of the melancholic or the maniacal type supervenes.

Metabolic Symptoms.—An increased appetite and emaciation are a most frequent combination. Means and Aub[6] found that the general metabolism shows a characteristic rise in hyperthyroidism, which rise may be used as a functional test of thyroid activity or as an index of the intensity of thyroid intoxication. Dubois[7] found that the heat production in very severe cases was increased 75 per cent. or more above the normal average; in severe cases, 50 per cent. or more; in moderately severe cases, less than 50 per cent. "The fundamental exchange (or carbon dioxide production and the oxygen consumption in a fasting, quiet state) is increased. The protein exchange is increased also."[2]

Sattler has collected 40 cases in which hyperthyroidism and true diabetes occurred simultaneously. In these cases, however, it is very probable that an independent lesion of the insular apparatus of the pancreas was the cause of the diabetes. Nevertheless, in some cases, the hypersecretion of the thyroid serves to determine a glycosuric tendency, in which case the thyrogenic glycosuria improves with the amelioration of the symptoms of excessive thyroid secretion, and disappears with the cure of the hyperthyroidism. The elimination of phosphate may increase as much as 25 per cent.

Respiratory Symptoms.—Trousseau called attention to the soundlessness of the voice. Most observers have noted the dyspnea, which frequently amounts to 30 or 40 respirations per minute, and which is due to the increased need for oxygen. These patients often experience a sensation of scratching in the throat, as well as an irritating, persistent cough, accompanied at times by little expectoration and at other times by abundant sputum.

It is interesting to note that flushing and excessive sweating so often are present. The sweating explains the decreased electrical resistance of the body. In some cases the hairs of the head, the eyebrows, the eyelashes, as well as of the axillary and public regions, fall out. The appetite is capricious, both as to amount and kind of food. Excessive thirst is common. Vomiting and painless diarrhea sometimes occur, neither of which symptoms responds to treatment.

The blood often at first shows a slight leucopenia, and quite regularly a mononucleosis. In about 75 per cent. of cases the coagulation time is delayed. The urine is usually normal.

Hyperthyroidism does not seem to hinder or prevent conception, such patients often improving during pregnancy and usually going to full time. Irregularity of menstruation, amenorrhea, or menorrhagia, and leucorrhea are common.

Prognosis.—MacKenzie[8] summarizes the outcome of these patients in the following words: "The duration, the course, and the end of the disease in any individual case are uncertain. In about 25 per cent. of cases death results from the hyperthyroidism. In about 50 per cent. of cases more or less recovery will eventually take place. In the other 25 per cent. the disease continues in a chronic form during life." Following recovery from this disease, patients are rarely as strong and healthy as before. The outlook in children's cases is more favorable than in adult cases. Recurrences are not rare. Within the last few years the prognosis has become considerably better.

Treatment.—Absolute mental and physical rest is essential in all fully developed cases. A nurse who has had considerable experience in handling such cases is preferable. Encouragement has a good effect. Plenty of fresh air is beneficial. Alcohol and tobacco are harmful. Two tepid sponge baths or one warm tub bath, daily, are helpful. Tea and coffee are harmful.

It has been taught that a diet rich in protein should be given to offset the increased protein exchange which occurs in hyperthyroidism. Lately, however, the experiments of Falta go to show that administration of protein causes an increased thyroid secretion; and the experiments of Rudinger show that this increased protein exchange may be depressed to normal by the administration of an almost protein-free diet, but rich in carbohydrates.

Extracts of all the endocrine glands, alone or in combination, have been tried without benefit. It is almost unnecessary to state that the administration of thyroid extract or of iodine only aggravates the condition.

Various sera have been tried, without especial benefit. Beebe's serum, obtained from thyroidectomized animals, seems to be the best of that class of preparations.

Digitalis and strophanthus seem to have little or no effect upon the heart rate. The tincture of convallaria sometimes has a very beneficial effect on the tachycardia. Belladonna, in the form of the tincture or the extract, does good by decreasing excitability and restlessness. A capsule containing atropine sulphate, gr. 1/150, Squibb's extract of ergot gr. 5, and quinine hydrobromate gr. 5, given three times daily, produces good results.

Injections into the gland of boiling water have been tried without much improvement. But Watson[9] has reported securing very beneficial results in the relief of symptoms by injecting small amounts of a weak solution of quinine and urea deeply into the thyroid gland. Watson recommends this form of treatment for those cases not severe enough to justify surgical removal.

Aikens[10] reports his use of radium in the treatment of thyroid hypersecretion, and adds the histories of seven patients improved by the radiotherapy. This writer says that the effect of the radium is decreased vascularity and a reduced secretion.

X-ray treatment has given exceptionally good results. By using the Coolidge tube, the burning rays are screened and the penetrating rays are allowed to pass in. The strength of the ray is measured by a colorimeter. The dose should be just a little less than the erythema dose. The first effect of Röntgenotherapy is a slowing of the pulse rate, which is followed by a diminution of the nervousness and the disappearance of the tremor. Later, a gain in weight and a slight decrease in the size of the tumor occur. The exophthalmos is not much reduced. It is MacKenzie's opinion that a good way to handle these cases is to cause myxedema by means of the *x*-ray, and then relieve the myxedema by the administration of thyroid extract. Also irradiation of the suprarenals causes a marked improvement in hyperthyroidism.

The time required for a complete course of *x*-ray treatment varies from six to eighteen months.

The surgical treatment is also very important. In applying any surgical measures to these patients, the operator must remember the possibility of the patient's dying of fright, and should, therefore, use the greatest caution. In very severe cases the surgical work has to be done with the patient in bed, in which case the operating room is carried to the patient's room instead of the patient being carried to the operating room.

Some surgeons prefer local anesthesia, some choose ether by intratracheal insufflation, and others prefer a combination of the two methods.

At present, the removal of one lobe, the isthmus, and part of the other lobe of the thyroid, is the chief surgical procedure. The mortality in such operation, when done by skilled men, is less than 5 per cent.

The preferable treatment is to use first the medical and *x*-ray opportunities and to resort to surgery when those methods have failed.

REFERENCES.

1. Crile, G. W.: *J. A. M. A.*, Aug. 25, 1917.
2. Falta, W.: The Ductless Glandular Diseases. 2nd. edition, p. 92. Blakiston's Son & Co.
3. Graham, A.: *Jour. Exper. Med.*, Oct., 1916.
4. MacKenzie, H.: *Lancet*, Nov. 11, 1916.
5. Zentmayer, W.: *J. A. M. A.*, July 7, 1917.
6. Means and Aub: *J. A. M. A.*, July 7, 1917.
7. Dubois, E. F.: *Arch. Int. Med.*, June, 1916.
8. MacKenzie, H.: In Allbutt & Rolleston's System, of Medicine, 2nd edition, Vol. IV., part I, p. 377.
9. Watson, L. F.: *Southern Med. Jour.*, May 1, 1916.
10. Aikens, W. H. B.: *N. Y. Med. Jour.*, July 8, 1916.

VOMITING OF PREGNANCY.

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THE treatment of hyperemesis gravidarum must necessarily be based on the etiological factor involved. Reflex irritation and neurotic factors, however, should receive due consideration. The writer is not unmindful of the fact that vomiting of pregnancy as a neurosis is amenable to suggestive methods such as apply in the treatment of hysteria. Despite the recognition of the latter and the employment of a multitude of drugs, the induction of abortion or of premature labor not infrequently becomes mandatory.

The purpose of this contribution is to direct attention to one of the numerous reflexes discovered by Dr. Albert Abrams, of San Francisco, viz., the pylorus reflex, which is an insuperable aid in the treatment of the vomiting of pregnancy.

Relative to this reflex, the following is excerpted from the last edition, Vol. VII, of the "Reference

Handbook of the Medical Sciences": "Concussion of the fifth dorsal spine will dilate the pylorus. This fact has been utilized for the following purposes: 1. To relieve pylorospasm. 2. To facilitate rapid absorption and hasten the elimination of nauseous drugs from the stomach. 3. To eliminate the action of the gastric juice on drugs destined for action on the intestinal tract. 4. In the treatment of gastric affections. 5. To aid duodenal intubation—the ordinary stomach tube will pass directly into the duodenum during the time pressure is made at the fifth dorsal spine. After ingestion of the conventional bismuth meal, it takes approximately one hour and fifteen minutes for the stomach to void its contents, whereas, after stimulation of the fifth dorsal spine, the stomach voids the bismuth in one and one-half minutes."

Harley E. MacDonald, M. D. (Los Angeles) comments as follows: "Just as preventive medicine is abolishing the roller towel, broom and public drinking cup, so medicine is about to say farewell to the stomach tube. I believe that Abrams' pylorus reflex will revolutionize the practice of gastroenterology. I have already cured stomach troubles of many years' duration by instructing the patient to drink two glasses of water three or four hours after eating. Then to lie on the right side while a member of the family percusses the fifth dorsal spine. I recall a patient practically moribund from inanition superinduced by incontrollable vomiting and in whom ingestion of peptonized milk followed immediately by concussion of the fifth dorsal spine resulted in cure. It appears to me that we should worry no longer about the vomiting of pregnancy. —(*Physico-Clinical Medicine*, June, 1917.)

My experience with this simple maneuver embraces many cases which have proved refractory to the conventional methods of treatment. The method of execution is as follows: In the morning, before the pregnant woman rises, she ingests a glass of water containing sodium bicarbonate. Then she sits up in bed, and any member of the family is taught to strike a series of moderate blows (not in excess of one-half minute, to avoid exhaustion of the reflex) on the fifth dorsal spine, which has been located and marked by the physician. Any ordinary plexor and plexímeter suffice to execute these blows.

This preliminary maneuver is equivalent to stomach lavage. After resting several minutes until nausea, if present, is abated, nourishment is given and the fifth dorsal spine is again percussed. If, during the day, nausea or vomiting reappears and nourishment is rejected, the reflex may be elicited immediately after the ingestion of food.

It was indeed surprising for me to have achieved results by aid of this simple method which I first approached with so much doubt and uncertainty

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Low Mortality Rate of Eclampsia in Scandinavian Countries.—According to Gammelhoft recent figures in Copenhagen give a mortality of less than 8 per cent. in 89 cases and in exactly 8 per cent. in 109 cases (rapid early delivery for severe cases, Stroganoff treatment for mild ones). A score of years ago the figures were much higher. A third obstetrician curettes the uterus after delivery and lost but three of his last thirty-four cases.—*Correspondenz-Blatt für Schweizer Aerzte.*

Medicolegal Notes.

Examination of Medical Experts and Defendants in Malpractice Case.—In an action for malpractice it appeared that the plaintiff had sustained a fracture of his left arm, the humerus being broken at the junction of the upper and middle thirds, the broken end of the bone being so separated and not in apposition that the musculospiral nerve was drawn in between said pieces of bone. It was alleged that he was treated by the defendants for nearly 8 weeks, when they abandoned the case; that his arm hung useless at his side and he was permanently crippled. Negligence was alleged (1) in failing to find out that the nerve was caught between the broken ends of the bone before bandaging the fracture on the first visit; (2) in leaving the nerve so caught; (3) in failing to bring the ends of bone into direct apposition with each other; (4) in applying a permanent dressing before they knew whether or not the nerve was caught. At the trial a medical expert had testified at great length and had been asked a lengthy hypothetical question, setting forth the facts claimed to have been shown. A question was then asked him as to how long it would take lymph to harden into bone in the case of a man such as the plaintiff, 61 years old and of previous good health, "as shown by the evidence in this case." It was held that this question was not improper as asking the witness to base his answer on all the evidence in the case, as the quoted phrase might fairly be interpreted as referring to the plaintiff's age and previous good health as shown by the evidence. The witness answered that it would take 4½ or 5 weeks, everything being equal. It was held that this answer was not prejudicial, as he had already testified without objection that the lymph would harden to the consistency of gristle in about 3 weeks in a young person or 5 weeks in an old person; this being substantially the same as his answer to the question objected to.

Questions asked the defendants as to whether they brought their best professional ability to bear upon the case and exercised their best skill, knowledge, and ability, and whether they exercised the utmost good faith, were held not leading or suggestive. Such questions did not call for the conclusion of the witnesses or invade the province of the jury, and should not have been excluded, as the witnesses were not asked whether they were negligent or exercised the care required of a physician. Judgment for the plaintiff was reversed and a new trial ordered.—Ingwersen vs. Carr & Brannon, Iowa Supreme Court, 164 N. W. 217.

Failure to Remove Sponge from Incision.—In an action for injury caused by the failure to remove a sponge from an incision after an operation for enlarged uterus, it was admitted by the defendant physician that the failure to remove any foreign substance from an incision is negligence *per se*, but it was urged that there is an exception to that rule in this: That it is not negligence for a surgeon to leave a foreign substance in a wound when in his professional judgment further exploration for such foreign substance would endanger the safety of the patient. It was therefore claimed that, the evidence showing that the patient was failing fast on the operating table, and that in the defendant's judgment it was necessary to sew up the wound at once in order to save her life, this case was brought within the exception. In Davis vs. Kerr, 239 Pa. 351, 86 Atl. 1007, and an Skike vs. Potter, 53 Neb. 28, 73 N. W. 295, the exception is recognized; but the court said that in both these cases it was based on the ground that either the surgeon relied on the count of the sponges kept by the nurses, or that he knew the foreign substance still remained in the patient's body, and in his judgment the patient's safety would be greatly endangered by any further exploration to discover and remove it. As there was no evidence in the present case that the sponges were counted by the attending nurses, or that the surgeon knew there was another sponge in the incision (he, in fact, testified that had he so known, he might have removed it), the facts in this case did not, it was held, bring it within the exception, conceding and approving for the sake of argument that such an exception exists.—Wynne vs. Harvey, Washington Supreme Court, 165 Pac. 67.

Military Medicine.

War Edema.—Under the name *das Kriegsödem* (war edema) great attention is being paid at present in the German medical journals to a peculiar disease which seems to have become widespread throughout Germany during the present year. The disease has broken out not only in numbers of the camps occupied by prisoners of war, but also in the large towns. Maase and Zondek (*Berl. klin. Woch.*, No. 36, September 3, 1917) give an account of the disease as they have seen it in Berlin. The first cases occurred in January, 1917; males above the age of 40 years have been almost exclusively the sufferers. No noteworthy premonitory symptoms were observed, but suddenly great edema developed, especially of the lower limbs. The face and scrotum were often affected also, and in a small number of instances ascites and hemothorax occurred. There were no cardiac symptoms, and the urine never contained any albumin. As soon as the patient was put to bed a very marked diuresis at once began, and the edema quickly disappeared. Remissions and recurrences were fairly common. The composition of the edema fluid in these cases had been compared chemically with the fluid effusions in renal disease and obstructive conditions such as hepatic cirrhosis. The chief difference found was the high ammonia figures in the Kriegsödem, as contrasted with the two other conditions. The pulse rate was markedly slowed during the disease, and examination of the blood gave, as a rule, a red count of three to four millions. This condition of anemia it was thought might probably be ascribed to hydremia. The occurrence of diarrhea was fairly common. The authors, in agreement with others, consider the cause of the disease to be underfeeding, especially the diminished quantity of fat. They suggest that toxic products of albuminoid metabolism may cause damage of the endothelial lining of the blood vessels, and so lead to edema. The high residual nitrogen and ammonia values found in the blood, urine, and edema fluids were considered to be evidence in favor of this hypothesis. By giving three patients 100 grams of fat daily for a week the authors were able to cure the disease completely without rest in bed or any other remedial measure. Another factor suggested as of etiological influence is the amount of fluid ingested. Owing to the changed food conditions most of the sufferers had been taking a more watery diet than normally in the shape of soups, turnips, and so on. The regulation treatment of the condition consists of rest in bed until all swelling has disappeared, diminution of the daily fluid intake, and bettering as far as possible of the diet. Schiff (*Muench. med. Woch.*, No. 22) states that the disease appeared in Vienna with great suddenness. He gives the usual pulse rate as from 42 to 56, and states that the amount of urine passed daily during the stage of recovery was commonly 3 to 4 litres. He suggests that this purely war disease has obvious similarities with beriberi and other diseases depending on failure of vitamines. Numerous authors have described the same disease as it occurs in the camps of prisoners of war, pointing out clearly its cause and the means that may be taken to remedy it when there is the will to do so.—*British Medical Journal*, October 27, 1917.

Value of Antitetanic Serum.—In an unsigned article in the *Archives Medicales Belges* for September, 1917, is an attempted revision of our knowledge of this subject. It has been possible to show by curves that the prophylactic value of the serum is beyond all doubt. Bruce's curve demonstrates that after November, 1914, when plenty of serum became available the morbidity dropped to almost zero and has remained at a very low average level. During September-October, 1914, before serum became available, the incidence of tetanus in the wounded was enormous. Attempts have been made, however, to show that a sudden large incidence or reduction in incidence could be due to other factors than absence or abundance of serum. Thus poor handling of the wounded soon after injury could be a factor, as could also a tetanigenic soil, and the presence of a large number of horses in the neighborhood. Against this kind of teaching is cited the experience with the disease at Kut-el-Amara. None of these collateral factors were in evidence when serum stamped it out. An equally suggestive experience was that of French and German wounded brought in side by side after a certain engagement. The German surgeon captured with his men declined the proffer of serum on the pretext that he did not regard it as efficacious. A number of German soldiers developed tetanus, while not a single French case developed. An entire series of such parallels is on record. Notwithstanding this kind of evidence there are skeptics. Thiéry divides the history of serotherapy into five periods, each of which appears to represent some modification of preceding opinions, or as Thiéry calls them, successive surrenders. The most recent of these takes account of the development of late tetanus and involves injections throughout the entire healing period of the wound. He anticipates further surrenders. This skeptical attitude appears to be attributable largely to frequent reports of "postseric" tetanus. These are due to certain foci of elaboration of tetanus toxin which are not reached by serotherapy any more than is the toxin which has become fixed to the nerve centers. From these foci of elaboration waves of toxin pass into the circulation. The majority of surgeons believe that these toxin waves can be reached by a barrage of repeated serum injections, but Thiéry seems skeptical. It is, of course, essential to make every attempt while dressing wounds to render closed foci of tetanus germs impossible and it is hardly fair to expect serum to neutralize incomplete disinfection of wounds. No doubt, serum or no serum, there would be a great difference in tetanus incidence in the wounded if one-half had their wounds scientifically treated, while in the other half haphazard methods were pursued. A subject of great importance in this connection is seroprophylaxis in second interventions. Here there is interjected the element of anaphylaxis. The more or less illusory danger from the latter is not to be contrasted with the danger of tetanus. The problem of anaphylaxis does not appear in connection with

frequently repeated injections but with the considerable interval which may exist between first and second operations it has to be borne in mind. In second interventions moderate doses of prophylactic serum are believed to be best. Of late, several injections have been condemned on the ground that the immunity which accrues is very short and shorter as injections are more frequently repeated.

The Professional Visual Acuity of the Soldier.—Ginestous writes at length in *Le Caducée* for September 15 of certain changes in the requirements for visual acuteness in the different kinds of army service. From 1894 to 1902 the superior limit of myopia was fixed at seven diopters. In 1905 it went up to 7, and in 1916 to 8 diopters. Up to 1902 there had been no provision made for the correction of astigmatism. Then correction with spherical convex lenses was recommended, while in 1905 correction with simple cylinders was introduced, and in 1916 spherocylindrical correction was employed. These reforms have made good in the services, but unfortunately they do not touch on the subject of acuteness of vision *per se*. In 1902 the requirements were that the good eye should have at least one-half and the poor eye one-tenth for the fighting man; while for the auxiliary the corresponding figures were one-quarter and one-tenth. In 1905 the vision for the poor eye need not exceed one-twentieth for the fighting soldier, while no fixed limits were established for the auxiliary. These figures have a purely physiological significance, or, in other words, a professional significance is ignored. Yet visual acuteness should stand in definite relationship to special needs. To become a soldier, certain general requirements must, of course, be satisfied, but aside from this those with superior vision should be utilized for certain activities in which such vision can be utilized. Thus far it is only the aviators who are required to have perfect vision. Binocular vision should be at least 1/5, 1/5, for ½ plus 1/20 is insufficient, in that a 1/20 eye is practically a blind eye, and binocular vision does not exist. Under such a condition 1/6 binocular vision rejects from the army, although ¼ monocular vision can be utilized in auxiliary work. In civil life three grades of visual acuteness are recognized: 1, ordinary vision; 2, superior vision; and 3, excellent vision. That is to say, there are three grades of occupation as based on the need of one or another degree of visual acuteness.

Hence the author would recommend the following scale for the army, so that every man's coefficient of vision could be properly utilized:

I. Excellent Vision. Under this head would be grouped aviators and gunners.

II. Superior Vision. Under this head would come men in all the services—infantry, cavalry and artillery, as well as policemen and firemen.

III. Ordinary Vision. Engineers, transportation men, munition men, artisans, laborers, hospital orderlies, etc.

IV. Inferior Vision. These men should have a definite relationship between their employment and eyesight.

War and Bacteriology.—Bacteriology is bound up in war, and therefore it may be concluded that the study of bacteriology will be given a great impetus by war. All phases of bacteriology have a more or less intimate relationship with war, but as that phase which concerns the prevention and cure of human infection is the one with which bacteriology and war come most closely into contact it will be briefly considered.

In the *Scientific Monthly* for November, 1917, Dr. David John Davis deals with this subject and points out that the ravages of disease germs in the army may not be the most serious part of the problem. The return of the troops to their homes must lead to a more general infection of the civil population with the various diseases that generally follow and are to a very large extent peculiar to military camps. Of these infections may be mentioned trench fever, infectious jaundice, trench nephritis, cerebrospinal fever, typhoid and para typhoid fevers, Asiatic cholera, and the dysenteries.

Typhoid and paratyphoid fevers need little comment, for vaccination and improved sanitary measures, have robbed them of their terrors and they seem to be no longer the scourge of armies in the field. Trench fever, which by the way, frequently attacks those who have never been in the trenches, first made its appearance on the Western Front and has occurred in Great Britain, Mesopotamia, the Balkans, Salonica and among the Austrian and German troops on the Eastern Front and in the Tyrol. The disease appears to differ from any hitherto known, it is a definite clinical entity and is doubtless of an infectious nature. While it is in itself not deadly, it causes a good deal of suffering and distress and interferes seriously with the efficiency of troops.

Trench nephritis has been a very frequent disease on all fronts, but the cause of the malady remains obscure. The specific microbe has not been isolated nor have attempts to transmit it been successful.

Cerebrospinal fever has been common during the war, in fact, it is essentially an army disease, affecting the men in barracks and camps, rather than those on active service. It seems to prevail especially in camps containing troops drawn from various parts of the country.

Infectious jaundice has been fairly frequent and is caused by a spirochete. The most interesting point with regard to this infection is that it has been shown that the germ commonly infects rats and consequently that trenches would furnish excellent facilities for the dissemination of the disease.

The dysenteries have been exceedingly prevalent in the armies engaged in the eastern and Mediterrancan campaigns and especially at Gallipoli. Emetine bismuth iodide, recommended by Dale and others and administered by the mouth has been found to destroy in the most satisfactory manner the pathogenic amebas.

Typhus fever transmitted by the body louse has been controlled by the extermination of this parasite.

Davis calls attention to the very important rôle that American bacteriology and hygiene have played in this war, which augurs well for the care of the American troops from the preventive and curative standpoints. Bacteriology has already effected much in controlling and stamping out disease, and undoubtedly the lessons learned from the war will advance the good work in this direction.

Red Cross Needs Dogs for War Work.—The Red Cross makes a plea for dogs to be sent to France with the Army Medical Corps. As was pointed out in a recent issue the dogs are used to scent out wounded men in places where Red Cross men cannot go, to carry medicine, food, and water to the wounded. They will also carry messages and dispatches when other means of communication fail. Thus far no legislation has been passed providing funds for the army to train dogs and the Red Cross has to train the dogs, maintain them, transport them to France, and maintain them in that country. It is estimated that there are now about 10,000 dogs serving with the armies. Dogs to be desirable should be between eight and ten months old, intelligent, loyal, and fearless. If dogs are found on trial to be unfit for service they are returned to their donors.

Laboratory Course for War Service.—Through the cooperation of the War Service Committee of the Medical Women's National Association, New York University, and the Bureau of Laboratories of the Department of Health, a course in medical laboratory work is offered to applicants who have a preliminary training in science obtained in a four-year college course or its equivalent. The object is to fit workers for war service in medical laboratories in this country and in Europe. The course will be extended over a period of three months and will require six hours' work each day. Applications may be made to Dr. Anna W. Williams, Research Laboratory, foot of East Sixteenth Street, New York.

Measles in the Army.—Reports of health conditions in the National Guard and National Army camps for the week ended November 9 show that measles and pneumonia predominate among the diseases which send men to the hospitals. The sick and injured rate in the National Guard camps was 33.9 per 1,000 and in the National Army camps 25.2. In the National Guard camps the Northern troops showed much more sickness of a communicable nature than the Southern troops. The same comparison prevailed in the National Army camps except at Fort Riley, which had nine cases of meningitis during the week. Camp Wheeler reported 34 new cases of pneumonia, and Camp Bowie 39. Camp Pike had 683 cases of measles and 76 of pneumonia. Camp Jackson reported 370 cases of measles. The measles cases are reported to be mild and the mortality from pneumonia low. The weekly health report of Camp Wadsworth contradicts the report of an epidemic which was in all probability the work of German propagandists, who are trying to cause alarm among people at home. Camp Wadsworth is said to be the healthiest camp in the history of the United States Army.

Medical Women in France.—The report that the American Women's Hospitals have sent a unit of women physicians to France is incorrect. These hospitals have sent through the Red Cross some twelve practitioners to France, who will work independently in various localities, but not as a unit. The organization of the American Women's Hospitals was inspired by the fact that the war service of the women of Great Britain is being made known to the world under the name of the "Scottish Women's Hospitals," and was established after consultation with the authorities in Washington. The work to be done by this organization differs somewhat from that of the Scottish Women's Hospitals in that the American women physicians will give civilian as well as military relief both in this country and abroad. The hope is that the American Women's Hospitals will be able to establish in the devastated portions of the Allies' countries a series of dispensaries to be tributary to central general hospitals. Those not needing hospital care may thus be looked after in the dispensaries, while the serious cases will be taken by ambulance to the nearest general hospital for treatment. The American Fund for French Wounded has officially suggested cooperation with the American Women's Hospitals, the latter to look after the diet and other factors relating to the rebuilding of health, and there are plans for cooperation with other relief organizations in other countries.

The Medical Officers' Training Comp at Fort Benjamin Harrison has been closed, and the medical officers who were still in training there have been transferred to Camp Greenleaf, at Fort Oglethorpe.

Surgical Dressings Needed.—Representatives of the Red Cross chapters of Southern New York State recently held a meeting in New York City for the purpose of stimulating war work. Dr. Allan McRossie, a member of a commission that spent some time in France, urged upon the delegates the necessity of keeping up the making of surgical dressings.

Major Grayson M. P. Murphy, head of the American Red Cross Commission to Europe, has gone to Rome to take charge of the administration of the relief funds sent to Italy until the arrival of the Permanent Italian Commission. Medicines, hospital supplies, food stuffs, and clothing have been shipped from various European warehouses to different points in Italy and in order to facilitate the movement of refugees free canteens and soup kitchens have been arranged for.

Hospital Interne Service.—The following resolution was adopted by the Public Health Committee of the New York Academy of Medicine on November 5:

Resolved, That the Public Health Committee of the New York Academy of Medicine suggest to the Surgeon General of the United States Army the desirability of a change in the wording of the "Circular of Information on the Completion of Interneships of Commissioned Officers (Form I—I)," permitting the period of interneship to terminate in December of the year following graduation instead of in July of that year. Permission to remain on the inactive list for the period named should, of course, be granted only "if the exigencies of the service permit."

Another Ambulance Fund for the American Army.—It seems to be the laudable ambition of every group of people, no matter for what purpose they have organized, to assist in supplying ambulances. A campaign has now been started among the billiard players of the United States to raise a $300,000 fund for the purchase of ambulances. One ambulance has already been purchased and will be on exhibit in New York City.

MEDICAL RECORD.

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THE WAR AND HOSPITAL INTERNES.

THE war has called for many readjustments in the economic and social, as well as in other branches of the life of the country. It has deeply affected the medical profession and created a number of problems requiring solution consonant with the best interests of the country as a whole. One of the vital problems in this group is how best to serve the paramount needs of the military establishment of the nation without at the same time disintegrating the civil hospital service. When the first call for physicians was issued the profession responded loyally and patriotically. Many of the hospitals lost a large proportion of their attending staffs and internes. In the rush no consideration was given to any but military needs, and this was only natural and proper. As a result of the splendid response we now have a corps of medical officers sufficient for an army of almost two million men.

Before long we shall in all probability have a second call for physicians. Therefore, is not this the most opportune time to appraise the existing situation with a view of meeting the needs in a most efficient manner? Including homes for invalids and sanatoria of all kinds, we have in this country over three-quarters of a million hospital beds. A conservative estimate places the number of beds in general hospitals at 300,000. The total number of medical students graduating from our colleges is not much over 3,000 yearly. If all of them entered the general hospitals only, this would mean a ratio of one interne to 100 hospital beds. Until recently it was the general practice to require two years' service of the internes. This requirement doubled, as it were, the supply of internes and made for greater hospital efficiency as the interne's chief usefulness was in the second year of his service. The graded service, moreover, insured to the interne an amount of scientific grounding and experience indispensable to a competent medical practitioner.

When conscription into the army went into effect many of the internes and medical students were drafted. It took a great deal of protest and persuasion before the desired exemption was obtained. The army regulation as it stands at present exempts the forthcoming medical graduates from immediate service for one year following graduation in order that they may acquire hospital training as internes. The order reads that the exemption year shall end in July of the year following graduation, which usually takes place in June, although recently several medical schools, by utilizing the summer vacation period and by crowding the curriculum, will be able to graduate students at the end of the winter semester, in February. In view of this order granting but one year for hospital interneship, several hospitals have already abandoned, to the detriment of the institutions and their patients, the two-year graded service and introduced a one-year service. They did this reluctantly, simply to meet a war contingency. Others have procrastinated in changing the rule, particularly in view of the already serious depletion of the staffs of attending physicians and internes. They will, however, be compelled to do it if a change in the present ruling of the Surgeon General of the army is not effected. There should be no ineluctable difficulty in securing the highly desirable change in the present ruling in view of the fact that it can be rescinded at any time if the war requirement should demand it and in view of the further fact that, as has been suggested by the Public Health Committee of the New York Academy of Medicine (see page 901), it can be accomplished in a very simple way by changing the interpretation of the ruling fixing the exemption year. The Public Health Committee suggested in a recent resolution that the interne exemption year shall be interpreted as ending on December 31 of the year following graduation from a medical school instead of on July 31 of that year. By this change alone six months of additional service can be secured by the hospitals and if the students should be graduated in January or February instead of in June, an additional four or five months can be released.

It seems imperative that a change in the War Department ruling should be adopted, for it will not only benefit the hospitals of the country and end the existing chaos and shortage of help, but it will lead to a higher efficiency of the medical branch of the war service.

ANESTHESIA IN OBSTETRICS.

ONE of the many empiricisms in medicine which are rapidly melting away as a result of careful experimentation and thoughtful clinical observation is the long-held notion that in spite of the inherent danger of chloroform, it is nevertheless the best and safest anesthetic in obstetrical work. It was universally believed that for some unknown reason there was an especial tolerance to chloroform by the gravid woman, and a particular tolerance to it during labor pains. Those who feared chloroform ordinarily were quite reassured as to its safety in obstetrics. It is true that until such of the newer anesthetics came into general use as nitrous oxide, ethyl chloride, etc., chloroform was the most convenient anesthetic to use in the

short obstetrical manipulations and operations that arose during labor because of the simplicity of administration, small quantity of the anesthetic required, rapidity of full anesthesia, and rapidity of recovery therefrom without the discomfort and annoyances usually following on ether anesthesia. Fatality statistics were not collected and the real mortality from chloroform poisoning was not adequately brought to the attention of the practitioner.

Recent experimental work, described by Davis and Ferguson in a paper presented at the fifth annual meeting of the American Association of Anesthetists, shows that there are certain well-defined tissue changes which can in a measure account for sudden chloroform fatalities and the untoward effects of the other anesthetics. In animals narcosis with chloroform produced swelling of the cells, fat infiltration, necrosis, and hemorrhage. Ether did not produce necrosis, but there ensued a parenchymatous degeneration of a milder degree and some tissue swelling. On the other hand nitrous oxide had little tendency to cause tissue changes. In the profound tissue changes may be found a plausible explanation for the delayed fatalities from chloroform. But, of course, death from chloroform administration may occur at any stage and without premonitions of any kind as a result of ventricular fibrillation, which quite justifies the terror that this anesthetic usually has in general anesthesia. Indeed, statistics now at hand, even in obstetrical work, point to the fact that chloroform is the most dangerous of anesthetics. However, almost any anesthetic if administered over a long period will produce hemolysis, retention of metabolic products, and acidosis, especially in the fetus. And unfortunately in every consideration of the choice of an anesthetic or the effect of anesthesia too little, if any, attention has been paid to the effect upon the fetus. Yet in every case of untoward action the effect is more marked and more dangerous to the fetus than to the mother. This is especially the case with chloroform. In the case of nitrous oxide, considered the safest anesthestic, the long continued administration is very prone to produce asphyxiation in the fetus *in utero* even without visible effect on the mother. Of course, when there is cynanosis of the mother the danger to the child is very great, and while the administration of oxygen with the gas reduces this danger it does not wholly eliminate it in prolonged anesthesia, and rebreathing is so dangerous to the infant that it ought to have no place in obstetrical anesthesia. Aside from these contraindications in the use of nitrous oxide and its combinations, high blood pressure, especially that encountered in the preeclamptic stage, and hyperthyroidism are absolute contraindications to its use.

It seems then that ether is still the safest anesthetic to use in obstetrics if there do not exist any contraindications such as would bar it in general surgery, as long preanesthesia period—that is, the long first stage—after-effects, complications, etc. Ether is borne better by both fetus and mother. Of course, both ether and chloroform tend to lessen contractions of the uterus, are cumulative in their action, and are not so quickly eliminated. To a much greater degree than with chloroform babies born after ether anesthesia may show the effects of the drug for many hours. Except for the marked tendency to asphyxiation nitrous oxide does not have any after-effects on the infant because of its rapid elimination.

THE FOOD QUESTION.

THE problem of conserving the nation's food supply is one of the most vital importance in the prosecution of the great struggle in which this country is now engaged. Not only do we have to feed our own people at home and our armies abroad, but also do we have to export tremendous quantities of foodstuffs to our allies in order that their civil as well as military population may be adequately nourished. This is a gigantic task which cannot be accomplished unless our food administrators have the entire cooperation of all members of the community. Aside from the immediate need of minimizing the great wastage of food that is without doubt one of our besetting national sins, it is imperative to increase production and reduce our consumption of certain foods, especially meat, wheat products, and sugar. This calls for the exercise of the utmost care in selecting dietaries. It is beyond dispute that many people eat more food than is actually required for their proper maintenance in good health and strength. This can be attributed chiefly to the habit of self-indulgence and the desire to "tickle the palate" with some delectable dish. The Epicurean tastes developed by a not inconsiderable part of our population, *pari passu* with the phenomenal prosperity that this country has enjoyed during the last two years, probably accounts for some of the evils from which we are now suffering.

The excessive ingestion of food leads to an overtaxing of the organs of elimination with resultant injury to the system as a whole from the accumulation of deleterious waste products. It is a well known fact that a continued high protein intake is a prolific source of arterial degeneration and that bugbear of modern American life—high blood pressure. From the standpoint of individual and collective health, therefore, a restriction in the amount of protein consumed would not only make for greater efficiency, but would also lessen the tendency to many of the ills which can now be ascribed to overeating.

The experiments of physiological chemists have shown that an averaged-sized adult can get along comfortably on 118 grams of protein, 500 grams of carbohydrate, and 50 grams of fat a day, which dietary yields approximately 3,000 calories. This is considered a "standard" diet and can of course be modified to suit the climate, the amount and

character of manual work, as well as the individual's appetite and purse. In order to conserve the meat and wheat supply as much as possible, substitutes have been suggested, such as fish, vegetable and nut proteins, milk, eggs, corn products, etc. It is not a difficult task to arrange a palatable and nutritious menu with the aid of scientific data in regard to such matters so readily accessible. Lusk in his book on *The Science of Nutrition* puts the problem very succinctly when he says that impending food shortage can be remedied by increasing the number of milch cows and by reducing the live stock raised for meat. The latter would free arable land for the production of grain and potatoes and save for human consumption grain fed to steers. It is quite certain that meat in the quantity it is consumed to-day is entirely unnecessary, and it is susceptible of scientific proof that mechanical work is more efficiently and economically derived from carbohydrate food than from meat.

VITAMINES IN THE SOLDIERS' RATIONS.

Dieticians are rather conservative in taking up the subject of vitamines, just as they were formerly in the adoption of calories. This means, of course, that they are slow in explaining certain effects by the presence or absence of vitamines, although they fully recognize, and indeed are the first to insist upon the necessity of certain food articles for the prevention and cure of deficiency diseases. The old theory that certain mineral ingredients and vegetable acids prevent deficiency diseases will probably die hard and, as a matter of fact, in the installation of vitamines as dietetic necessities we may go to the extreme of overlooking the role of the substances above mentioned on nutrition. It is highly important that the two factors—inorganic matter and vitamines—be kept quite distinct in connection with dietetics. In the classic experiments in mineral starvation were vitaminiferous substances also absent from the diet?

The subject of vitamine defect in soldiers' rations has come to light in Italy, in which country it was announced last May by Ramoino (abstract in *El Siglo Medico* for September 1) that the soldiers on the fighting line and in the trenches were suffering for lack of certain elements of nutrition. The symptoms which presented themselves were gastroenteric disorders, nocturnal diarrhea followed by constipation, various eruptions, epistaxis, cyanotic gums, and oral fetor. There were also headache and pains in the muscles and joints and some subjects showed edema. Loss of weight, sluggishness, and melancholia were present to some extent. The ration contained sufficient calories for hard work and sufficient protein, but the above mentioned complex of symptoms did not begin to disappear until vegetables and fruits had been introduced into the dietary. It was evident that antiscorbutic vitamines had not been represented in the ration. Pains had been taken to prevent beriberi by leaving certain vitamines in the diet and nothing resembling this affection developed. It is well to remember that scurvy largely disappeared from Europe when the potato cultivation was introduced from America. Lemons should be readily available for Italian troops.

Uniting Wounds Without Suture.

More than one hundred years ago the expediency of bringing all wounds together by stitching was questioned. As Dr. Douglas H. Stewart has pointed out in the *Western Medical Times* for August, 1917, Samuel Cooper, a well known British army surgeon, in the year 1807 recommended the conjoined operation of position, of adhesive plaster, and of a bandage for the uniting of certain wounds, in place of sutures. This old writer described the type of wounds suitable for this kind of treatment and the manner of bandage to be employed. It is interesting to note that a nurse who does a good deal of bandaging for Dr. Stewart is an enthusiast for Cooper's bandage as a substitute for the usual strapping of varicose veins and ulcers. Stewart himself has applied such bandages not only to the kind of wounds described by the original exponent of the method, that is to longitudinal wounds, but to transverse ones as well, and is very favorably impressed with this principle of wound treatment. It certainly seems reasonable to believe that suturing of wounds should not be practised when these can be united as quickly and as well by bandaging or strapping.

News of the Week.

Relief for Italy.—The American Red Cross has doubled its contribution for the relief of Italian refugees. Ambassador Page had already been instructed to draw on the Red Cross for any amount up to $250,000 for relief work in Italy. On November 11 another $250,000 was appropriated to meet emergencies arising in consequence of the recent reverses of the Italian army.

Plan Relief for Jewish War Sufferers.—Plans have been laid by the Jewish Board for Welfare Work in the United States for conducting a campaign to raise $5,000,000 for the relief of Jewish war sufferers. The campaign is to be carried on during the two weeks beginning December 3. The Jewish War Relief Fund for 1917, when the New York campaign is finished, will amount to $10,000,000.

The Adirondack Cottage Sanitarium is to receive one-half of the residuary estate of Robert W. Patterson, amounting to upward of $1,000,000.

Cooperative Plan to Further Clinical Study.—Officials and instructors of medical schools and colleges and representatives of the staffs of the various city hospitals met at the invitation of Deputy Commissioner H. C. Wright of the Department of Public Charities with the Society of Medical Jurisprudence, at the New York Academy of Medicine, on November 12, to listen to a discussion of "The Municipality's Relation to Medical Education." It was brought out that the hospitals operated by the

city have more than 16,000 free beds, and that not more than one-fifth of the cases treated were considered for clinical or other educational purposes by post-graduate students. The suggestion was made that there be some unity of plan between the medical schools and the city hospitals whereby this immense amount of clinical material may be made available for study. The announcement was made that plans had been approved by Commissioner Kingsbury for systematic courses of medical college instruction in the City Hospital and the Institution for Feeble-Minded on Randall's Island which will be opened the first of the year.

Venereal Diseases to be Reported in Philadelphia.—Representatives of the Departments of Health and Charities of the city of Philadelphia met on November 12 to discuss the advisability of making the so-called social diseases reportable. It was the consensus of opinion of those present that the proposed plan should be put into effect. The Health Department will take steps to make these diseases reportable in the near future.

Regulations Affecting Sale of Medicinal Alcohol.—The office of the Commissioner of Internal Revenue has announced a decision which permits pharmacists to sell small quantities of non-beverage alcohol without a physician's prescription to persons who do not hold a permit. The quantity must not exceed a pint and it must first be medicated in accordance with one of the following formulæ: 1. Carbolic acid 1 part, alcohol 99 parts. 2. Formaldehyde 1 part, alcohol 250 parts. 3. Bichloride of mercury, 1 part, alcohol 2,000 parts. 4. Bichloride of mercury 0.8 gram, hydrochloric acid 60 c.c., alcohol 640 s. c. c., water 300 c.c. 5. Bichloride of mercury 1½ grains, hydrochloric acid 2 drams, alcohol 4 ounces. 6. Formaldehyde 2 parts, glycerine 2 parts, alcohol 96 parts. 7. Carbolic acid 1 dram, tannic acid 1 dram, alcohol 1 pint, water 1 pint. 8. Alum ½ ounce, formaldehyde 2 drams, camphor 1 ounce, alcohol and water, each 1 pint. 9. Lysol 1 part, alcohol 99 parts. 10. Liquor cresolis, comp. 10 c.c., alcohol 1,000 c.c.. The container of such alcohol will bear a "poison" label. Any abuse of these privileges will result in recall of the pharmacist's permit and its cancellation.

Memorial Services for Dr. Lewis A. Stimson.—On the afternoon of November 16 exercises in memory of Dr. Lewis Atterbury Stimson, formerly professor of surgery of the Cornell University Medical College, were held in the college auditorium. Addresses were made by Dr. Jacob Gould Shurman, Elihu Root, Dr. W. Gilman Thompson, Dr. Edward L. Keyes, and Howard Townsend of the Board of Governors of New York Hospital.

Dr. Thomas F. Reilly has been appointed to the Chair of Medicine in Fordham University School of Medicine.

Dr. Evander M. Sanders of Nashville has been appointed president of the State Board of Health of Tennessee to succeed Dr. R. E. Fort. Dr. W. J. Miller of Johnson City has been elevced vice-president.

The Southern Illinois Medical Society, at its forty-third annual meeting, held at Duquoin, Ill., elected the following officers: *President,* Dr. E. C. Alvis of Benton; *First Vice-President,* Dr. H. H. Roth of Murphysboro; *Second Vice-President,* Dr. Max Adles of Duquoin; *Secretary-Treasurer,* Dr. A. B. Capell of Shawneetown; *Assistant Secretary,* Dr. C. W. Lillie of East St. Louis.

The Kentucky State Medical Association, at its annual meeting, held in Louisville, on November 8 and 9, elected the following officers: *President,* Dr. J. S. Lock of Barbourville; *First Vice-President,* Dr. J. L. Barker of Pembroke; *Second Vice-President,* Dr. H. H. Stallard of Pikeville; *Third Vice-President,* Dr. J. C. Douglas of Franklin; *Delegates to the American Medical Association,* Dr. W. W. Richmond of Clinton and Dr. C. L. Wheeler of Lexington.

Harvey Society Lecture.—The third lecture of the present course will be delivered at the New York Academy of Medicine on November 24, 1917, when Dr. Linsly R. Williams will speak on "The Medical Problems of the War."

United States Civil Service announces an examination for the position of pathologist, for men only, on December 5, 1917, to fill a vacancy in Freedman's Hospital, Washington, D. C., at $2,000 a year. Future vacancies requiring similar qualifications will be filled from this list. Applicants should apply for Form 1312 and for further information to the Civil Service Commission, Washington, D. C.

The Commission also announces an open competitive examination for medical interne, on December 5, 1917, to fill a vacancy in St. Elizabeth's Hospital, Washington, D. C., at $900 a year. Future vacancies requiring similar qualifications will be filled from this list. Applicants desiring to take this examination should apply at once for Form 1312, stating the title of the examination desired to the Civil Service Commission, Washington, D. C.

Examination for Medical Inspector.—The Municipal Civil Service Commission of New York announces an examination for Medical Inspector, Grade 1, male and female, for which applications will be received at Room 1400, Municipal Building, until November 20, at 4 P. M. The incumbents of these positions in the Department of Health may be called to the examination of infants, or school children, to make the diagnosis of communicable disease, to engage in the diagnosis of tuberculosis, syphilis, and the various occupational diseases, and to investigate, report, or correct, conditions unfavorable to the health of individuals or communities. The salary range of Grade 1 is to, but not including, $1200 per annum for part time service, not less than 18 hours weekly.

Tuberculosis and the War.—Kerr, in a memorandum entitled, "The Influence of War Conditions Upon the Death Rate from Consumption," states that his own city, Newcastle-upon-Tyne, shows an increase in the number of deaths from tuberculosis since the outbreak of the war. He finds a similar increase in other parts of Great Britain, but a much greater increase in those countries whose territory has suffered most. Among the conditions which are specially liable to render people susceptible to tuberculosis he gives poverty the first place, either actual or relative to the rising cost of food; next he places insufficient housing and overstrain, either physical or mental. He says that practically the whole civil population is suffering from overwork

or anxiety of mind. He finds a considerable increase in the number of deaths from tuberculosis among that section of the population which has been especially affected by the new conditions of life brought about by the war, namely girls between the ages of fifteen and twenty years who have filled the gaps in factory, shop, and office, and even in the heavier outdoor employments. It is in this group of young women that the great rise in the death rate from consumption occurs.

A New Antisyphilitic.—At a meeting of the National Academy of Science in Philadelphia on November 20, Dr. Simon Flexner announced the discovery of a new arsenical preparation for the treatment of syphilis. The new drug, called A-189, is said to be superior to salvarsan, being parasitotropic to a much higher degree.

The Nevada State Medical Association, which met in Reno, Nev., on October 22, elected the following officers: *President,* Dr. H. A. Brown of Reno; *Secretary-Treasurer,* Dr. J. L. Robinson; *Delegate to the House of Delegates of the American Medical Association,* Dr. William Z. Dahl of Reno.

Obituary Notes.—Dr. Margaret Abigail Cleaves of New York died in Mobile, Ala., on November 13. She was a graduate of the University of Iowa Medical Department, in 1873, and a member of the American Electro-Therapeutic Association. She was formerly superintendent of the State Insane Asylum at Mount Pleasant, Iowa, and later superintendent of the State Insane Asylum at Harrisburg, Pa. Dr. Cleaves was the author of a work on electrotherapeutics and of numerous contributions to the literature on this subject.

Dr. Simeon Cole Bradley, a graduate of the College of Physicians and Surgeons, New York, in 1880, died suddenly of heart disease at his home in Nyack, N. Y., on November 13, aged 63 years.

Dr. Arthur Martin Clapp of Springfield, Mass., was electrocuted by a high power electrical machine with which he was experimenting in his office, on October 31. He was a graduate of Harvard Medical School, in 1902, and was 41 years of age.

Dr. Edward Johnson, a retired physician, formerly of Fullerton, Neb., died in an Omaha hospital, on October 26. He was a graduate of the Medical College of Maine, in 1887.

Dr. James M. Ferguson, a retired physician of New Orleans, died October 24, aged 77 years. He was a graduate of the New Orleans College of Medicine and was a surgeon in the Confederate Army during the Civil War.

Dr. William Gibson Craig of Springfield, Mass., a graduate of Jefferson Medical College, in 1868, died on November 15, aged 50 years. He was a member of the American College of Surgeons.

Dr. James Henry Honan died at Augusta, Ga., on November 14. He was a graduate of Rush Medical College in 1895, and later studied in Germany under Professor His. He practised medicine for a number of years in Berlin and later in Bad Nauheim. At the time of his death he was professor of diseases of the heart and circulatory system in the University of Georgia.

Dr. James Ward Vance, a graduate of Pulte Medical College, Cincinnati, in 1881, died at his home in Madison, Wis., on October 31, aged 85 years.

Obituary.

FRANCIS LE ROY SATTERLEE, M.D.

NEW YORK.

Dr. Francis LeRoy Satterlee died after a lingering illness at his home in New York City, on November 12, at the age of 71 years. He was born in this city and was a graduate of New York University Medical School in 1868, a member of the New York Academy of Medicine, the New York Pathological Society, the Medical Societies of the County and State of New York, and the American Medical Association. Dr. Satterlee was surgeon to the Police Department for nearly eighteen years, retiring some twenty years ago. He was attending physician at St. Elizabeth's Hospital and consulting physician of the Midnight Mission, and formerly was the attending physician at the Northwestern Dispensary, in the department of skin diseases and rheumatism. For fifty years he held the chair of physics, chemistry, and metallurgy at the New York College of Dentistry. He was the author of a treatise on rheumatism and had written much on gout and allied conditions. A son, Major Henry S. Satterlee, M.R.C., U.S.A., is now stationed at Camp Sherman, Ohio.

RICHARD WEIL, M.D.

NEW YORK.

Dr. Richard Weil of this city, a major in the Medical Reserve Corps and chief of the medical staff of the Base Hospital at Camp Wheeler, Macon, Ga., died of pneumonia on Monday of this week. He was born in this city in 1876 and was graduated from the College of Physicians and Surgeons in 1900. After a post-graduate course in Vienna and Leipsic he returned to New York and was appointed instructor in experimental medicine at the Cornell Medical School, being made full professor a few years later. He was pathologist at the German Hospital, associate visiting physician at the Mt. Sinai Hospital, and assistant director of cancer research at the General Memorial Hospital. He was a member of the Medical Societies of the County and State of New York, of the American Medical Association, the New York Pathological Society, the New York Academy of Medicine, the Association of American Physicians, the American Association of Pathologists and Bacteriologists, and of the American Association for Cancer Research. At the outbreak of the war he was commissioned captain in the Reserve Corps and was sent to the training camp at Fort Benjamin Harrison. From there he was transferred to Camp Wheeler and was appointed chief of the medical service with the rank of major.

FRANKLIN PAINE MALL, M.D., LL.D.

BALTIMORE, MD.

Dr. Franklin P. Mall, professor of anatomy at Johns Hopkins University, died November 17. He was born in Iowa in 1862 and was graduated in medicine from the University of Michigan in 1883. He studied later in Leipsic, Heidelberg, and the Johns Hopkins University, where he was appointed an instructor in pathology in 1888. In 1889 he

went to Clark University, at Worcester, Mass., as professor of vertebrate anatomy, remaining until 1892, when he went to the University of Chicago as professor of anatomy, but returned to Baltimore to take the chair of anatomy in Johns Hopkins in 1893. In 1915 he was appointed director of the department of embryology in the Carnegie Institution at Washington. He was a fellow of the College of Physicians of Philadelphia, member of the National Academy of Sciences, associate fellow of the American Academy of Arts and Sciences, and the Society of Experimental Biology and Medicine, and a member of the Commission for Neurological Research of the International Association of Academies, the Wistar Institute of Anatomy, the American Philosophical Society, the American Society of Physiologists, the American Society of Zoologists, and the Society of American Naturalists. He was a trustee of the Marine Biological Laboratory at Woods Hole, Mass., and was president of the Association of American Anatomists from 1905 to 1907. Dr. Mall was the author of "Causes Underlying the Origin of Human Monsters" and "The Fate of the Human Ovum in Tubal Pregnancy"; and was joint editor of the Handbuch der Entwicklungsgeschichte des Menschen, co-editor and one of the founders of the *American Journal of Anatomy* and of the *Anatomical Record*, and was associate editor of the *Journal of Morphology*.

Correspondence.

PROPOSED REGISTRATION OF ALL PATIENTS TAKING OPIUM.

To the Editor of the Medical Record:

Sir:—Your attention and that of your readers is directed to the blanks just issued by the State Department of Health to physicians who have registered with this department in compliance with the requirements of the last narcotic law of this State. This registration is necessary for the privilege of dispensing what are called "habit forming drugs." In this blank will be found a formal demand for the registration of patients by physicians which is not only not called for under the law as passed, but which was actually rejected by the law makers when offered by its proponents, the Department of Health of this city and the so-called Judges' Committee on Narcotic Addiction.

This demand related to information asked by the State Department of Health under the column headed for "disease or habit," together with the explanatory footnote "distinguish between a prescription of a drug given to alleviate pain due to an incurable disease, or one given because of habit." Whether this extra legal procedure on the part of this administrative body is due to ignorance, oversight, or any other cause, it is equally reprehensible, and should be resisted.

The registration with the local health authorities of all persons using opium in the course of an acute illness while under the care of a physician for a period of three weeks, though demanded by the Department of Health, was properly defeated. This was a breach of professional privilege to be resisted at all hazards. The registration of addicts with the State Board of Health was a compromise. It was agreed to by the representatives of all the medical bodies except one. This one I had the honor to represent. We were against every form of registration, which violated professional secrecy, a stand that is now justified by this attempt to exceed the legal requirements of the present law, to what end remains to be discovered.

John P. Davin, M.D.

New York.

IN RE OSTEOPATHY.

To the Editor of The Medical Record:

Sir:—Dr. Douglas Graham's assumption that I am not familiar with what pertains to massage treatment in hospitals is wholly unwarranted. I have great regard for the value of massage in the management of many patients and have utilized it advantageously in a large number of cases.

But there are instances in which massage has not proved curative and where osteopathy has. No one is, or can be, more opposed than I am to all narrowness and exclusiveness in medicine. On the other hand, I wish a fair show to be accorded to all comers who desire it. Now then, I know of more than one osteopath who has benefited those whom neither drugs nor massage have relieved.

Beverley Robinson, M.D.

New York.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

WAR BREAD AND ITS EFFECT ON HEALTH—ADMIXTURE OF VARIOUS CEREALS—PALATABILITY AND USEFULNESS OF MAIZE.

London, October 23, 1917.

At a meeting of the Medical Society of London, Sir St. Clair Thomson, president, gave an address on the founder and the foundation of the society. Following this was a discussion over war bread and its effects on health, introduced by Drs. R. Hutchison and E. I. Spriggs. The former considered, first of all, the necessity of knowing something of its composition, and so mentioned that the wheat berry consists of three parts—the pericarp, germ, and endosperm. Only about 70 per cent. of the berry is utilized in ordinary white flour, the germ and pericarp being rejected as mere fodder. To economize our wheat it is now compulsory for millers to extract 80 per cent. of the berry as flour, and some of the pericarp and germ is included, making thus the government regulation (G. R.) flour, which is the basis of war bread. Chemically, this is richer than wheat flour in every constituent except starch; particularly is it richer in vitamines and phosphorus. Its absorbability, as compared with white flour, is not settled, but it is not likely to be inferior if the white flour be finely ground. But war bread is not generally made from G. R. flour alone. Other cereals—maize, barley, rice, oats—are allowed. The proportion of these varies, and at present it is found impossible to standardize the flour of the whole country. The cereals added cannot be called injurious, for they are all good foods. Maize has been much criticised, but if properly ground there is no harm in it, and the hostility displayed to it is only due to prejudice. It certainly is eaten with relish in America.

It is not possible to make bread from the present flour, which has the same esthetic qualities as pre-war bread. The darker color is of no consequence, but the lower proportion of gluten, especially when other cereals are added, make the bread less porous. This drawback may be expected to become less when bakers get more experience with the flour. There is nothing chemically injurious in war bread; in fact, it is superior, from a chemical point of view, to white bread. No doubt the quality produced by different bakers and in different localities varies a good deal, but there is no evidence of any serious disturbance of digestion on this account. Patients are apt to blame the war bread for any disturbance of their digestion. When it seems to disagree, the effect of toasting and more thorough chewing should be tried. Dr. Hutchison had not himself seen a patient in whose case it was possible to persuade himself that the bread had affected the digestion injuriously.

Dr. Spriggs said complaints of the use of other cereals than wheat were due to various reasons, such as lack of skill in making it with the new flour. Then few people realized before the war that cereals given to animals were good human foods, and did not know that from oats, barley, or maize we could get many times the food value that was got by turning them first into animal food. Professor T. B. Wood calculated that out of nearly 17 million tons of various kinds of grain used before the war, only 5 millions became human food. This was less than the average production of home-grown corn, which amounted to 6½ million tons. Dr. Spriggs said he had advocated the use in home-made bread of a mixture of barley meal, oatmeal, rice, or maize; one part of meal to two of wheat or war flour. This is a higher proportion than usually employed. Samples of bread made with different proportions and with other cereals were shown; so were breads made with a cereal which had been boiled before mixing with the flour; by this means it was possible to make a spongier loaf.

Professor W. H. Thompson, adviser to the Ministry of Food, noted the importance of getting our protein food from a number of sources, as all proteins are not "adequate" for both growth and maintenance. Even maize had but one-third of its protein of the "adequate" type. He thought much of the trouble was due to ignorance in milling and baking. In early days, millers were not able to grind their maize to a sufficient degree of fineness. Observations are now being carried out which will most likely overcome all difficulties. Dr. E. Kingscote said that in north Italy, before the war, many who lived on maize, having no other food, were healthy and well nourished. The mixture of flours he thought might cause some difficulty; the grinding of the maize was not equal to that of the wheat, and in baking they took different times. Sir St. Clair Thomson remarked that Lettsom mentioned the subject in one of his essays, and gave hints for a substitute for white bread, viz., "Fine flour of Indian corn to be mixed with that of wheat in equal proportions." He also suggested the use of potatoes as a partial substitute for bread, recommending one-fourth of potatoes; and further, he pointed out that the addition of a little ground rice prevented the bread from crumbling.

OUR LETTER FROM PARIS.

(From Our Regular Correspondent.)

RELIEF WORK FOR THE FRENCH WOUNDED—INSPECTION DAY AT AMERICAN ARMY HOSPITAL NO. 1—THE ARMY DENTAL CONTROVERSY.

PARIS, October 23, 1917.

THE cooperation of the American Fund for French Wounded with the American Red Cross is one of the most important steps that has been made in the work of relief for France. The A. F. F. W. is an organization which represents women's work in America. It was established in the early days of the war for the relief of the wounded in France, and during its existence has aided more than 4,000 hospitals. Between 50,000 and 100,000 American women are working continually toward its support. The society is made up of committees all over the United States, there being more than 400. Many of the members who have built up this society felt a keen disappointment in thinking that their work might lose its independence through the coming of the Red Cross in France; but, on the contrary, the American Red Cross Commission in France has filled the workers on this side with enthusiasm, and the results will be a far greater achievement than could have been expected from any individual society alone. There are between fifty and a hundred voluntary workers in France, who are working in the various departments: hospital department, civil, visiting, clerical, etc., and one of the unique features of this organization of women is an automobile service, which is now well known in France, the vehicles of which are operated by women and are a familiar sight throughout the many cities in which they work.

Yesterday was inspection day at the American Red Cross Military Hospital in Neuilly, and it brought to light a number of improvements that are being made almost daily in the organization under military control. Inspection days have only recently been introduced as a part of the weekly routine of the hospital, and they have proved a wonderful inspiration to all the workers, from the scrub-women to the highest in authority. Every Saturday morning the military administrator, Colonel George Peed, accompanied by the surgeon-in-chief, Major James Hutchinson, and others of the medical corps and Mrs. W. K. Vanderbilt, inspect the hospital from cellar to garret. No corner is overlooked. Every room is closely examined, every curtain raised, every drawer opened and the contents inspected down to a pin, and if a particle of dust is to be found or a garment misplaced the head of the department remembers that her goal must be reached before another inspection day, and that goal must be perfection. The military appearance of the hospital has been greatly added to by the fact that the civilian orderlies who are leaving to enlist in other branches of the army, or are being called to other duties, are being replaced by American soldiers. About fifty soldiers are now engaged in ward duty or any kind of work that is necessary. Four American cooks have been put in the kitchen and are rapidly learning the French way of cooking and the dishes that the French "poilus" like best.

The Paris automobile ambulance service, which is an important part of the hospital, has been reorgan-

ized, and is now composed of two sections of forty-five men each, who have recently arrived from Allentown, Pa., where they have been in training with the other sections which are to compose a part of the "United States Army Ambulance Service" for France, and which have arrived in Paris within the last month. The dental part of the hospital, which is said to be the best and most perfectly equipped in the world, has just received a gift of new chairs of the most modern type and an entire set of new dental cabinets with all sorts of new contrivances from the S. S. White Dental Manufacturing Company of America.

And that brings to mind a state of affairs which is the cause of some controversy and deep dissatisfaction. Drs. Hayes and Davenport have been in charge of the dental department of this hospital from the beginning, treating a class of injuries of the maxillaries and mouth, with a success that has elicited the admiration of all who have become acquainted with their work; and these gentlemen are not alone in remarkable accomplishment along these lines. For the first time in history dentistry has become a fixed adjunct to the care and treatment of the army in time of war and the inventive genius of the army operators has created wonders in the treatment of gunshot injuries of this particular class, and dental science has made unprecedented advances in consequence. When the army took over this hospital the men at the head of this department were requested to accept commissions as lieutenants and continue their work under the orders and direction of a medical major in charge of the hospital. This they declined to do and therein lies the germ of a controversy. These dentists, two of the most celebrated in Europe, with private practices comprising royalty and nobility, and aggregating a hundred thousand dollars per year, both well past middle life, naturally consider themselves fully as important and valuable to the service as some of the doctors not yet thirty years of age who have been taken into the medical service of the army with rank of major. Moreover, as their work is of a highly specialized nature and in many respects outside the ordinary treatment by surgeons, they claim to know more about it than a physician, no matter what his rank, and they are unwilling to place themselves under the supervision and orders of a medical man. In sum, they demand that dentistry shall be made an independent department of the army and be under the control of the recognized leaders in their profession of equal rank with their medical brethren, and it is evident that this thought is giving rise to an agitation that will not rest short of congressional or departmental action.

146 Avenue des Champs-Elysées.

Progress of Medical Science.

Boston Medical and Surgical Journal.

November 8, 1917.

1. A Physician's Impressions of Florida. W. L. Johnson.
2. Massachusetts Anti-Tuberculosis League. Third Annual Meeting, April 10, 1917.
3. Introductory Remarks by the President. Vincent Y. Bowditch.
4. Tuberculosis in Cattle. Curtis M. Hilliard.
5. The Danger to Children from Tuberculosis in Cattle. Richard M. Smith.
6. Starting Health Habits in Childhood, as Illustrated by a Recent Experiment. Louisa P. Loring.
7. Community Health and Tuberculosis Demonstration at Framingham. Donald B. Armstrong.
8. County Tuberculosis Hospitals: Report of Progress. Eugene R. Kelley.
9. What Becomes of the Discharged Consumptives? Bernice M. Billings.
10. Annual Report of the Massachusetts Anti-Tuberculosis Leagues—1917. Seymour H. Stone.

4. Tuberculosis in Cattle.—Curtis M. Hilliard states that tuberculosis in cattle has been more or less neglected by anti-tuberculosis societies because of its relatively low incidence in humans compared with the human type of infection. On the other hand, the fact that the occurrence of bovine tuberculosis in man is absolutely preventable, while the human variety is, at best, reducible only, would seem to make it imperative that the cattle disease should receive prompt and vigorous attention by all agencies and societies that aim at this scourge. The bacillus is found to occur chiefly in the bodies of dairy cattle, but may also infect beef cattle, hogs raised in dairy districts, and rarely other animals, and finally is found in man. Less than 1 per cent. of beef cattle are tuberculous. In dairy herds the disease seems to ravage the Eastern states more than the Western in this country. In New York, from 1910-1912, of 39,330 cattle examined by the tuberculin test, 7171, or 19 per cent. reacted. The Massachusetts commissioner on domestic animals in Connecticut states in the 1916 report "that 30 per cent. of our cattle are infected with this dreaded disease seems probable from those found in the herds, the owners of which have taken advantage of the tuberculin test." The Massachusetts commissioner gives 12 per cent. as an approximate figure for this state. To be extremely conservative, Hilliard states that 10 per cent. of all dairy cattle furnishing milk in our large cities for infants, children, and adults alike, are infected with a disease which is transmissible to man. Milk and milk products are the chief means by which the bacillus is passed from cows to man. The germ rarely infects the milk glands, but when it does a grave menace exists, for there are almost as many tubercle bacilli in the milk as there are in sputum in active human cases, and it will dangerously infect the milk of a large number of cows, when mixed. The disease usually exists as a lung infection in cattle. The nose and throat discharges are infectious and serve as a fruitful source of infection amongst cattle themselves, but special opportunity is afforded for the infection of milk directly from this source. Indirectly, however, the germs from this origin find their way into milk. They are "raised" by coughing, swallowed, and pass through the whole length of the alimentary tract in a virulent condition. In manure they will survive for some time, probably for weeks. Almost all milk contains some cow manure and so it might be anticipated that bovine tubercle bacilli will sometimes be found in milk. Probably between 7 and 8 per cent. of milk in our large cities contains tubercle bacilli. Ice cream, butter, and cheese may also contain tubercle of animal origin. Cream contains several times as many organisms as does the skimmed milk. Examination of these products, especially butter, reveal the presence of the tubercle bacilli far too often for comfort. It might be thought that the salt in butter and its storage in the cold would render the microbes harmless in a short time; while the cold has a tendency to eliminate pathogenic bacteria, Mohler of the United States Bureau of Animal Industry has demonstrated the tubercle bacilli to remain virulent for 160 days in salted butter and for 261 days in cheese. Most investigators will agree that the bacillus will survive for many weeks—time ample for transmission to man. Furthermore the bacillus enters through the mucosa of the intestine most conveniently with a fatty diet, so that these products are of great importance in relation to the problem. Hilliard considers this problem from two standpoints: (1) The elimination of tuberculous cattle. (2) The pasteurization of milk. A careful routine physical examination by the competent veterinary will go a long way to keep a herd free from this disease, of course, employing the tuberculin test. Then in order to procure clean milk, pasteurization must be employed. Hilliard says that we have wrangled for years over the pros and cons of pasteurization, but scientific laboratory investigations and practical results have overthrown these objections. He thoroughly believes in the compulsory pasteurization of all milk, except certified (and the day will come when most of that will be heated also), which comes to our cities.

5. The Danger to Children from Tuberculosis in Cattle.—Richard M. Smith brings out the fact that tuberculosis in children is usually a disease of the bones and glands, and that it enters the body in the vast majority of cases by the digestive tract. He refers particularly to tuberculosis of bovine origin. Tuberculosis from this source represents in general about 25 per cent. of all cases of this disease in children under five years of age. It is estimated that in New York City between 6 and 10 per cent. of the children that die in the hospitals each year of tuberculosis, die of the bovine infection, representing about 300 children a year. Smith considers that there has been but a slow appreciation of the importance of bovine tuberculosis in children, and that we have been very slow to apply the remedy. He states that there are only two ways in which the disease can be eliminated: one is to have milk as it is produced free from tubercle bacilli, and the other to destroy the tubercle bacilli which are present in the milk. Since the process for procuring the first condition is very expensive and will take an immense amount of time, the second method must be applied. This can be done through pasteurization of milk, but it must be properly done else a false standard of security will be established. Strong influence should be exerted to have some sort of inspection or careful and intelligent supervision of pasteurizing plants employed if the method of pasteurization is to be adopted generally.

New York Medical Journal.

November 10, 1917.

1. Some Aspects of Military Surgery. H. G. Barling.
2. Repair of "Flat Foot," "Broken Arch," or "Rheumatism of the Feet," Especially in Recruits. J. Madison Taylor.
3. Traumatic Hysteria. C. P. Oberndorf.
4. Clinical Observations from the Study of 371 Cases Presenting Symptoms of Nephrolithiasis. R. F. O'Neil.
5. Factors of Race Improvement. Casper L. Redfield.
6. Ventilation and Cubic Space for Infants in Institutions. A Report. By the Public Health Committee of the New York Academy of Medicine.
7. Amaurotic Family Idiocy. J. Epstein.
8. A Study of Some Functional Inefficiencies of the Teeth Associated with Occlusal Anomalies. Milo Hellman.

6. Ventilation and Cubic Space for Infants in Institutions. A Report.—The Public Health Committee of the New York Academy of Medicine has published a report with reference to ventilation in connection with infants in institutions, the same having been prepared by Thomas S. Southworth, William L. Stowell, and Philip Van Ingen, as a joint subcommittee of the Public Health Committee and the Pedicatric Section of the New York Academy of Medicine. The committee recommends that: (1) The present law relating to ventilation in institutions for children, which is utterly inadequate, should be abrogated and superseded by legislation which would be based on definite and scientifically grounded standards. (2) The air space allowed should be from 1000 to 1500 cubic feet for a child, especially for sick babies. Artificially fed babies, owing to the frequency of digestive disturbances, their susceptibility to illness, and their high mortality, should be rated as sick babies. There is no essential difference between institution wards and hospital wards when the infants are artificially fed. The longer stay in the institution than in the hospital increases the susceptibility to illness and malnutrition, and at least equalizes the requirements for space. New-born infants might be allowed less space for the first two weeks of life, if nursed at the breast. (3) When the rooms are very high the cubic space for a child should be made liberal to prevent proximity of beds. Each bed should have 100 square feet of floor space. (4) In order to minimize the danger from cross infection, beds and cribs should be separated from each other by a distance considerably greater than the two feet required by the present law. Six feet would make a desirable distance between beds. (5) All rooms, and particularly those in which artificially fed infants are kept, should be provided with devices for proper window ventilation at all seasons. (6) The State Department of Health should possess the exclusive power of control and regulation, and no local board or department of health should have the power to alter the standards specified in the law. Exceptional permits to deviate from the normal standards may only be granted by the State commissioner of health upon the recommendation of an accredited inspector, accompanied by a written report showing adequate grounds for such recommendation. (7) Frequent inspection should be required, at irregular intervals.

Journal of the American Medical Association.

November 10, 1917.

1. The Diet of Prisoners of War in Germany. Alonzo Englebert Taylor.
2. Prophylactic Therapy for Rickets in a Negro Community. Alfred F. Hess and Lester J. Unger.
3. Carbon Monoxide Poisoning. William D. McNally.
4. Carcinoma of Prostate: An Improved Technique for Radical Excision with Preservation of Urinary Control. Hugh Hampton Young.
5. The Etiology of Perthes' Disease. Percy Willard Roberts.
6. Systematization of a Surgical Service. Eugene H. Pool and Frederick W. Bancroft.
7. Surgical Treatment of Chronic Enterocolonic Diarrhea. Samuel C. Gant.

2. Prophylactic Therapy for Rickets in a Negro Community.—Alfred F. Hess and Lester J. Unger, realizing that for many years cod liver oil has been regarded as the sovereign remedy for rickets, decided to investigate whether its usefulness could not be extended to the prophylactic treatment of this disease. Since about 90 per cent. of the colored babies are subject to rickets, these men chose a negro community in New York, known as Columbus Hill, in which to carry out their investigations. This district, having a population of about 9,000, bears the unenviable distinction of having the highest mortality of any neighborhood in the city, being New York's "black spot." They began their work on about eighty infants between the ages of 4 months and a year, belonging to families in which the other children showed evidences of the same disease. Physical examinations were made and records kept with an examination at the end of two, four, and six months. Of course many mothers did not keep up the therapy, so at the end of the six months only forty-nine babies had been given the full treatment. Results showed that the development of rickets was prevented in more than four-fifths of the infants who received the oil for six months, and in more than one-half of those who were given it for four months. Of the sixteen infants who did not receive the oil, fifteen showed signs of rickets, though all of them lived under the same conditions and many in the same families. No other treatment was given, nor was a change of diet or mode of life attempted which could account for the difference in the results in the two groups of cases. The oil proved to be a more potent factor than breast feeding in warding off rickets, as almost all the colored babies developed rickets even when breast fed. They further state that it is difficult to tell either the minimum length of time that the oil must be given to accomplish prophylaxis or the minimum dosage necessary. Results showed, however, that a four months' course of treatment, averaging a total of from 16 to 20 ounces of oil, is insufficient to afford protection. It would seem that a six months' course of treatment should be considered the minimum duration for beneficial results. Their plan was to give infants under 6 months one-half teaspoonful of oil three times a day, and older infants twice this amount. It was found that almost all babies can take cod liver oil, although it may disagree temporarily and may have to be discontinued for short intervals when there is digestive disturbance. Infants of from 2 to 3 months tolerate the oil in half-teaspoonful doses, and younger ones may be given still smaller amounts. This study was not carried out during the summer months, so that it does not provide a criterion of the practicability of oil therapy in the warm weather. As the result of personal experience gathered at other times, these men believe that with slight modification it can be pursued throughout the year. In summer, moreover, rickets seems to pass through a quiescent period; therefore treatment is not so necessary as in the colder season. The results of this investigation by Hess and Unger have been so satisfactory that they have led to the establishment of a rickets clinic in Columbus Hill by the Department of Health, in connection with its baby welfare station, where cod liver oil will be dispensed at cost.

The Lancet.

October 13, 1917

1. Report upon an Investigation into the Effects of Cold upon the Body. Norman C. Lake.
2. The Chemical Affinities of *Vibrio Choleræ*. Lucius Nicholls
3. Normal Gun-Deafness. T. B. Jobson.
4. A Case of Traumatic Rupture of the Heart. G. R. Turner and Leslie Pearce Gould.
5. Gastric Digestion of Various Foodstuffs after Gastro-enterostomy. A. A. Wolkoff and E. E. Klopfer.
6. A Case of Compound Fracture of the Patella Treated by Wiring; Complete Functional Recovery. J. B. Hance.
7. The Surgical Galvanic Current in the Treatment of Paralysis. A Simple Method of Localizing Contraction to Paralyzed Muscles. E. P. Cumberbatch.

1. Report upon an Investigation into the Effects of Cold upon the Body.—Norman C. Lake conducted these investigations and found that a reinvestigation of "frost bite" was also necessary, for if the effect of "chilling" of the tissues is to produce a state of suspended animation, then it would be illogical to accept theories which assumed a direct effect of a degenerative and destructive nature. The term "frost bite" is here used in its widest sense, and includes such conditions as "trench foot." He offers the results of his investigations as follows: (1) The temperature—60 C. must be considered critical in relationship to the effects of cold upon the tissues. (2) Degrees of cold below this temperature produce true frost bite and actual damage to tissues. (3) Degrees of cold above this temperature only produce effects secondarily by causing vasomotor paralysis. (4) Nerve blocking does not prevent either the effects of frost bite or chilling. (5) The use of vasoconstrictors delays the swelling in cases of true frost bite, while in cases of chilling the exudation may be entirely prevented. (6) Satisfactory treatment of trench foot must be directed towards preventing any appreciable rise in capillary pressure. (7) In the production of trench foot cold must be considered the essential factor, other factors being either secondary or subsidiary. (8) Treatment by the use of vasoconstrictors, either intravenously or otherwise, would appear logical and worthy of trial. (9) Treatment by nerve-blocking, either regional or central, is also suggested, although, in all probability, it cannot be expected to give good results unless used in conjunction with vasoconstrictors. (10) Prophylaxis consists in using any and every means of preventing congestion of the legs, and in avoiding, as far as possible, variations in the temperature. (11) The question as to whether any surgical procedure, such as temporary occlusion of the arteries, would bring about the desired reduction in capillary pressure is being investigated.

British Medical Journal.

October 20, 1917.

1. Remarks on the Treatment of Infected, especially War Wounds. Rutherford Morison.
2. Report on Wound Treatment by Brilliant Green Paste. A. Rendle Short, J. S. Arkle, and C. King.
3. The Use of Liquid Paraffin in the Treatment of War Wounds. H. M. W. Gray.
4. Reinfection in Syphilis; with Observations on 28 Cases. Charles F. White.
5. The Medical Treatment of Gonorrhœa. H. C. Donald and A. M. Davidson.
6. Operations on the Nasal Sinuses Carried Out Through a Temporary Opening in the Septum. (Transeptal.) Norman Patterson.
7. Dosage in the Therapeutic Administration of Thyroid Gland Substance. A. E. Carver.
8. A Case of Contracted Pelvis: Cesarean Section Thrice. Arthur Crook.

4. Reinfection in Syphilis; with Observations on 28 Cases.—Charles F. White states that probably there is no such thing as a natural immunity from syphilis. However this may be, it was held until recently that immunity from syphilis might be acquired. The older theory, now abandoned, was that one infection of syphilis produced immunity from further infection; in other words that syphilis could be acquired but once in a lifetime. Careful investigation appears to have established (1) that reinfection can take place, and (2) that such reinfection cannot take place until the original infection has been completely cured. Since the introduction of the combined salvarsan and mercury treatment for syphilis the number of cases of genuine reinfections reported has increased—a sure sign of the curative efficacy of this treatment and a proof that one attack of syphilis does not produce immunity. Perhaps we should not be far wrong in saying that the only persons immune from syphilis are the syphilitics. Formerly proof of reinfection was based on clinical evidence alone and was open to certain fallacies, namely: (*a*) *In the Case of the First Attack.*—Absence of positive proof of syphilis in those cases in which treatment was started in the primary stage and in which secondary symptoms did not develop. As no microscopic examination was made, or in the failure to find spirochetes in serum from the sore, it was always possible that the diagnosis was mistaken. In other words, there was no positive proof that the chancre was syphilitic and not a soft sore. (*b*) *In the Case of the Second Attack.*—(1) A soft chancre, (2) a recurrent chancre, (3) a chancriform gumma, or (4) a pseudochancre (that is, a mucous genital syphilide which may have undergone induration), being mistaken for primary syphilitic chancres, or (5) the recurrent rashes being perhaps put down as fresh secondary syphilides and regarded as proof of a second attack. Since the discovery by Schaudinn and Hoffmann of the *Spirochæta pallida* as the cause of syphilis and the introduction of the Wassermann serum test as an aid to its diagnosis and cure, positive proof of reinfection can in certain cases be given apart from the clinical evidence. The following conditions may be offered: (1) In the first attack, *Spirochæta pallida* being found from the chancre or syphilitic lesions (condyloma, mucous patch, or rash) or the blood giving a positive Wassermann reaction (here we must exclude the positive Wassermann of cases of hereditary syphilis); and (2) in the second attack, *Spirochæta pallida* being found from the new chancre which appeared at a different site from the first chancre, and the blood at the same time giving a negative Wassermann reaction, which of course implies that the patient must have been seen shortly after the appearance of the second chancre, or at least before the blood had had time to become positive. Twenty-eight cases divided into two series are reported showing reinfection, treatment, and, with disappearance of all signs and negative Wassermanns, considered cured. These twenty-eight cases of reinfection occurred in a series of 10,500 cases of syphilis treated in No. ——— General Hospital during the past two years. One example of these cases is here given. CASE VI. *First Admission* (Sept. 6, 1915).—Signs of infection: (1) Sloughing primary papular syphilitic sore on end of prepuce; (2) glands in both groins hard and enlarged. No other visible sign. Incubation period, five weeks; noticed sore seventeen days after exposure. *S. pallida* present on dark-ground examination. Treatment: Eight injections of 0.3 gram salvarsan and five weekly injections of 1 grain mercury cream. Treatment completed Oct. 12, 1915. *Second Admission* (Mar. 24, 1916).—Signs of infection: (1) Hard sore beneath prepuce—unable to completely retract foreskin; (2) glands in groin slightly enlarged. No other visible sign. Last exposure to infection two months before; noticed sore two weeks before admission. *S. pallida* present on dark-ground examination. Wassermann reaction negative. Treatment same as on first admission; completed May 9, 1916.

Correspondenz-Blatt für Schweizer Aerzte.

September, 1917.

Anatomical Investigations into the Frequency of Tuberculosis.—Reinhart has made autopsies for about 30 months in the Berne University pathological department with especial reference to the frequency of tuberculosis. During this interval he made 460 autopsies. The twenty-eight newly born infants were free from all suspicion of the disease. Of 72 other children (under 16) 21 showed evidences, but of this number only 12 died of tuberculosis. In the other 9 cases, however, the disease was active and progressive, and no child presented any evidence of latent or healed foci. Judging from these figures nearly 30 per cent. of all children are tuberculous. In other clinics the percentage varies from 10 to 42, average of 11 clinics about 27. The author's and other figures show that from 18 to 20 represents the fatal age for tuberculous incidence, for at that period the ratio suddenly doubles. Of 360 sections in adults (from 16 years upward) no less than

347 showed some evidence pointing to tuberculosis (over 96 per cent.). This is more than treble the ratio in childhood. The 13 negative cases occurred in the younger adults by preference. The author's figures are notably higher than those of other clinics with the exception of Zürich (97-98 per cent.). Dresden gives 91 per cent. but other German cities are very much lower or, roughly speaking, a third less. But of these 347 patients only 80 actually died of tubercle, equal to 22.2 per cent. The author includes the smaller calcified lesions under tuberculosis, but even if these are not reckoned the percentage is 87.5. Of 247 cases of tuberculosis in which the disease was not responsible for death only 37 were of the active progressive type, all others showing cicatrization or calcification with a majority of foci in the lungs and bronchial glands. The enormous percentage of autopsy tuberculosis at Zürich and Berne should not beget pessimism but optimism. It teaches that while practically every one is tuberculous the disease takes a relatively small toll of life.

Emetine and Psoriasis.—Jadassohn refers to several favorable reports concerning the action upon psoriasis of emetine. The author's colleagues having called upon him to test this remedy he secured some ampoules of the hydrochloride and began to treat them with certain psoriasis cases of moderate severity. He began with 0.01 and increased very gradually to 0.03, one injection daily, without the development of a toxic reaction. The largest total quantity injected was 0.68. Locally, indifferent ointments were applied. Of 4 cases thus treated not one showed any response; while the deep injections into the buttocks were decidedly painful. It is possible that larger doses over longer intervals would have secured a favorable response, but the author will leave that for others to test.

Correspondenz-Blatt für Schweizer Aerzte.

September 15, 1917.

Dangers of Intrauterine Pessaries.—Guggisberg states that extrauterine pessaries properly adjusted are universally recognized as a gynecological resource. As to the intrauterine varieties the profession are divided in opinion. When used for therapeutic purposes it is rather by the family practitioner than by the specialists; for the latter do not sanction it either in textbooks or in the clinic. But the author is moved to write chiefly against the great danger of using the intrauterine apparatus to prevent conception. Historically considered the therapeutic pessary was freely used by some of the founders of gynecology but not for long as the dangers soon asserted themselves. The ordinary vaginal pessary then came to replace them. The author is considering now the purely supporting pessary. The use of tents and bougies is, of course, another thing, and even gynecologists sometimes make use of them. This is the case especially in infantile uterus with amenorrhea and in mechanical dysmenorrhea. But even this use is risky and repudiated by many specialists. At present Fehling's glass tubes with lateral windows seem the least objectionable, but the requirements for avoiding danger should be very strict. Patients must keep their bed and the duration of treatment should not exceed three weeks, naturally between menstruations. While such tubes permit menstruation to take place no chance of this kind should be taken. In regard to so-called "sterilettes" or obturators to prevent conception, these must be clubbed at the upper extremity to prevent their slipping out; while the lower extremity is provided with an occlusive concave disk which is intended to prevent all entrance of spermatozoids in the uterus. While physicians, unfortunately, sometimes introduce these instruments, it is the charlatan, the masseuse, and midwife who are especially active in this direction. Many women learn the art of introducing them on their own persons. The dangers from their use are manifold. Occasionally a portion of the pessary is left behind as a foreign body, while faulty introduction has caused numerous accidents of perforation of the uterus into the adjacent cavities. But the widest danger is from allowing these instruments to remain *in situ* for further copulation. If used at all, the least thing to do should be withdrawal after coitus. When allowed to remain in, infection of some kind is almost certain to result. Abundant statistical material is available on this score. Thus Gummert collected the following series of accidents following the anti-conceptional use of obturators: deaths, 13; womb colic, 29; irregular intrauterine hemorrhages, 29; purulent endometritis, 57; exudates, 61; pressure ulcers, 5; perforation into anterior fornix, 4; into bladder, 1; into rectum, 2; peritonitis, 37. The slightest injury has led to fatal sepsis. But this is not all. These eminently occlusive structures do not always prevent conception. Gummert found 92 cases in which conception took place despite the use of the sterilette. Further, no less than 78 of these pregnancies ended in abortion, chiefly septic in character. The author gives notes of two cases of extrauterine pregnancy which followed the use of the apparatus and cites another from the practice of Jung. It is, therefore, abundantly evident that this custom is both highly dangerous and uncertain. The condition is serious enough to require legal intervention but difficulties are at once obvious. It has already been stated that there is a limited legitimate use for intrauterine pessaries and a law against manufacture or import would work hardships. Not a few sterile women have been made to conceive through the use of Fehling's tubes. A law making a physician's prescription mandatory for the sale of these instruments would not solve the problem. One point has not been touched on, a very important one, viz., the danger of abortion to a pregnant woman who leaves a sterilette *in situ*. But this, of course, is entering into quite another subject, for there is no limit to methods for accomplishing this end. The only question of interest here is the possibility of regarding the sterilette as under the head of abortifacient material. It is probably used deliberately for such a purpose to a vanishingly small extent because other measures are superior.

Journal de Médecine de Bordeaux.

September, 1917.

Improved Technique in the Research in Stools for Parasitic Ova.—Carles and Barthélemy discuss methods of intensive research, such as are pursued in sputum diagnosis for the discovery of parasitic cysts and ova—especially for the entameba of dysentery—in the stools. One method recently advocated is the following. After having thoroughly homogenized the stool, place about 20 c.c. of it in a 125 c.c. graduate and add formolized saline solution 10 per cent. to make a homogeneous emulsion, which must be strained through a wire or cloth strainer. The fineness of the latter must stand in direct relation to the size of the ova sought. A number 32 will give passage to the ova of worms, as the spaces measure 225 micromillimeters. For the entameba, No. 90 will give it passage, the interstices measuring 60 microns. The filtrate thus obtained is now centrifuged for 1 minute at 1800 revolutions. The supernatant fluid is now suddenly decanted off and the sediment diluted with a solution of citric acid in water containing formol (acid 12, water 86, 40 per cent. formol 2, density 1047). To this mixture 1 or 2 c.c. of ether are added and the whole shaken strongly. The whole is now centrifuged for 30 seconds, 1800 revolutions. Since cysts, etc., may be caught at the zone of separation between the ether and heavier fluid this should be disturbed with a pipette and centrifuged a second time. The ether and supernatant fluid are quickly decanted off and the sediment should now be free of all food residues, large formed elements and much bacterial life, and if any ova or minute cysts are present they should be readily found in smears stained with lugol. The word enrichment as applied to this kind of method means simply concentration with elimination; and since the culture countries have made an intensive study of tropical disease in their colonies the helminthologists have developed numerous technical resources in the research for parasitic ova in the feces. The author, however, criticizes some of the procedures in use; while at the same time speed of procedure is not necessarily a factor with the pure naturalist. The clinician must have a rapid and infallible method which agrees in all respects with rapid tests for Koch's bacillus in the sputum. In the author's procedure the density of the

acid solution used is not a mere detail but represents an optimum for the discovery of protozoan cysts. Citric acid is moreover a great improvement over the chlorhydric acid used by helminthologists; while sulphuric ether is by far the best solvent for all the fatty matters. This acid is too strong to spare delicate tissues and its density (1171) is too high. The selection of straining apparatus is also vital for complete success as is also the speed of the centrifuge. In both these requirements the author has been compelled to discard the technique of helminthologists as unsuited to clinical demands. Naturally the criterion for superiority of method is the character of the field obtained—the relative number of objects per field at low powers.

La Presse Médicale.

September 20, 1917.

Chronic Enteric Syndromes and Military Service.—Lauboy and Marre speak of the increasing frequency of chronic bowel troubles among the formations at the front. Some soldiers were predisposed to these affections at the start while others have developed them solely as a result of army life. These troubles are obscure in nature and apparently devoid of causes. One of the more striking forms is a colitis attended with constipation. The patients complain of a good deal of pain and pass formed mucus. It would appear that in these cases constipation is the basic trouble. After a period of obstinate constipation a reaction of diarrhea sets in which may be brief or prolonged. In some patients constipation and diarrhea alternate and the diarrheic periods may last the longest. The stools show that the diarrhea is not a true one but only a false, reactionary one. Mucus may be loose, or ribbon like or may be a complete cast of the bowel. Pain may be continuous or critical and always precedes the reactionary diarrhea. The condition should yield after a course of treatment. In a second type of colitis diarrhea is present throughout. This is more common than the preceding. Although the bowels are loose the number of movements need not be large—in fact there may be only a single daily evacuation early in the morning. Other subjects have, in addition to this stool, one or two others during the day. In the worst cases there may be a number of evacuations. Aside from the difference in the number of stools the condition is always the same as shown by the character of the stools. Other types are a pseudo-dysentery which may be associated with ulcerative and hemorrhagic colitis. Sharply distinguished from the colonic types given above is true chronic diarrhea, which is simply precipitate evacuation of the contents of the small intestine. This affection represents true diarrhea and may be nemogenic or due to local irritation, especially seen in infectious enteritis. In regard to prognosis colitis from constipation and ulcerative colitis are the most obstinate while putrid discharges are also an unfavorable element. With either putrefactive or fermentative diarrhea, there must be inferior utilization of foods as well as constant loss of albumin. The weight and temperature are important in prognosis. There should be a routine use of the symoidoscope and bacterial control of the stools in all rebellious cases. Test meals may be of value.

Reflexes from Percussion of the Sole in Diagnosis.—Rimbaud compares this resource with percussion of the tendo Achilles. There is a difference of opinion among authorities in this regard for while some claim that the two resources give the same result others flatly contradict this statement. The author finds that as a rule one act simply corroborates the finds of the other but also claims that percussion of the sole of the foot may at times give specific reflexes. In the normal subject the foot *per se* is flexed and the toes are separately flexed. But while flexion of the foot is the same for percussion anywhere of the sole, flexion of the toes varies with the area percussed. Flexion of the foot is of precisely the same character as that induced by percussion of the tendo Achillis, i.e., is tendinous in nature. Flexion of the toes, on the contrary, is a muscle reflex which varies with the muscle percussed. Flexion of the foot as a whole is absent in sciatic lesions just as it is in percussion of the tendon, but flexion of the toes is abolished only when there is a complete interruption of innervation in the sciatic or internal popliteal.

Journal de Médecine de Paris.

September, 1917.

What Is Arthritism?—Fernet states that we may regard good health as a diathesis—a "eutrophic diathesis"—which is relatively rare. Starting with this idea we may imagine the existence of any number of dystrophic diatheses, some of which represent slight, others profound departures from good health. In the past we have had arthritic, rheumatismal, herpetic, scrofulous, syphilitic, tuberculous, and other so called diatheses which are only too often confounded with infectious diseases—tuberculosis, syphilis, etc. At the other extreme diathesis has been confounded with temperament—sanguine, bilious, nervous, lymphatic. The author can see only three real diatheses, viz., scrofulous, arthritic, and herpetic. The tuberculous and syphilitic diatheses, so called, are conditions which result from the diseases or infections themselves and which differ throughout from actual diatheses, which are inborn, not acquired conditions. Upon a diathetic foundation diseases develop, some because of the diathesis, others in despite of it; but even the last named are sensibly modified by the constitutional state. We no longer believe in the existence of a rheumatic diathesis, for rheumatism we now know to be due to Achalme's bacillus which causes a general infection. As far as chronic rheumatism is concerned, it is far from being an entity, but certain types doubtless occur in subjects with the arthritic diathesis and at times represent pure gout. Scrofula, so called, is a diathetic entity, which may readily be studied in the child, occurring as it does by preference in the offspring of very poor, often alcoholic parents. These victims are undernourished and deprived of air and light and the condition is manifested as an insufficiency of the lymphatic system which invites or modifies the infections of childhood, of which the chief is tuberculosis. So called herpetism or the herpetic diathesis has been freely discussed but its nature seems quite unknown so that the author does not recognize its independent existence; for him it should be a sort of subdiathesis of arthritism. This narrows the field to two basic conditions which should be antagonistic. Just as scrofula is due to undernourishment so arthritism should depend in some way on overnourishment. Just as one is preeminently a disease of the poor the other affects only the well to do. However, idleness is a factor no less important than dietetic excesses. The other view is that arthritism is not a plus but a minus condition, characterized by slow metabolism. This view the author rejects because an arthritic subject does not exhibit anything sluggish or indolent in his diseases which are the very reverse—hyperacute, painful, suggestive of irritation. Like scrofula, arthritism can be inherited from the wrong kind of parents. Aside from true gout, chiefly a disease of advanced life, we see arthritic manifestations in adolescence and early maturity—skin diseases, asthma, congestions and hemorrhages, headaches, and migraine, hemorrhoids, neuralgias, calculus diseases, etc., etc. The arthritic takes cold very easily and another quite constant early manifestation is dyspepsia. In late life an entire series of the diseases of this period may be brought into relationship with arthritism which, moreover, may apparently be a factor in cancer. The rôle it plays in cardiorenal disease and arteriosclerosis is, of course, notorious. The arthritic complicates his condition with abuse of alcohol, etc., and thus sets up vicious circles. Arthritism is most readily recognized through the polymorbidity of the subject and the apparent migration of disease from one locality to another. No one plan of drugs, or diet, etc., can cure arthritism, but there must be a complete inversion of all the methods of living which have fostered its development.

Formaldehyde in the Treatment of Pyodermatoses.—Aschner has treated with great success cases of various suppurative affections of the skin, including boils, with 4 per cent. formaldehyde solution applied with a brush. —*Correspondenz-Blatt für Schweizer Aerzte.*

Book Reviews.

FRACTURES OF THE LOWER EXTREMITY OR BASE OF THE RADIUS. By LEWIS STEPHEN PILCHER, A.M., M.D., LL.D., of Brooklyn, N. Y., Consulting Surgeon, Bushwick, German, Jewish, St. John's and Bethany Deaconess Hospitals, Norwegian Deaconess Home and Hospital, New York Skin and Cancer Hospital; Editor of the Annals of Surgery. Pages 116, with 132 illustrations. Price, $2. Philadelphia and London: J. B. Lippincott Company, 1917.

VERY early in his professional career Pilcher became especially interested in fractures of the lower end of the radius, and this interest has persisted to the present time. In this book the author first goes carefully into the anatomy of the bony and ligamentous structures involved and shows the mechanism of fractures of the lower extremity of the radius. He does not employ the term "Colles's fracture" because he feels that "names descriptive in anatomical or pathological terms of a surgical condition are much to be preferred when it is possible to phrase them" and also that "the use of the name in question has been so associated through all these years with erroneous views of the nature and cause of the injury that its continued use tends to hinder the general acceptance now of more accurate knowledge."

The different varieties of displacement of the lower fragment or fragments, the not infrequent splitting of the lower end of the radius, and the reasons for these conditions are discussed *in extenso* and all these conditions are profusely illustrated by drawings and radiographs. Epiphysial separations, arrest of growth of the radius, the permanent alterations in the contour of the base of the radius that often take place after fractures, the deformities following unreduced or partially reduced fractures—all these subjects are exhaustively considered. The author's method of treatment is then described and fully illustrated.

The author has made many contributions to the literature of fractures, and this book is written as his final word on the subject. The diction is pleasing, the subject matter well presented, the illustrations are almost uniformly excellent, and the book forms a truly valuable addition to the literature of fractures of the lower end of the radius.

SURGICAL THERAPEUTICS AND OPERATIVE TECHNIQUE. In Three Volumes. By E. DOYEN. English Edition Prepared by the Author in Collaboration with H. Spencer-Browne, M.B. Cantab., etc. Elève de l'Institut Pasteur; Physician et Chef de Clinique de l'Institut Doyen. Vol. I. Pp. 746, with 1034 illustrations. Price per set of three volumes $25.00. New York: William Wood and Company, 1917.

WE have here the first volume of a work written by a master in the diagnosis and treatment of surgical conditions. One naturally expects much under such circumstances, and the reader soon finds that his expectations are to be more than realized. American surgeons are especially fortunate, for this is not a translation of the French edition which appeared some years ago but is taken from the material for the second French edition, which has not yet appeared in the original language; hence is thoroughly up-to-date, and this and the succeeding volumes will contain the latest developments in war surgery and surgical treatment in general. The French edition will consist of five volumes, but the three-volume English edition will contain the complete French text.

In a short introductory chapter Doyen gives a brief historical review of the evolution of surgical practice, then proceeds with the discussion of methods of operating and calls attention to the value of rapid and at the same time careful work. Besides being an unusually keen diagnostician and remarkable operator, Doyen was a mechanical genius, devised many instruments, and otherwise contributed greatly to the advancement of operative technique. The reviewer was aware of these facts, yet was amazed upon reading this book to learn the extent to which the surgeon of today is indebted to Doyen for the comparative perfection of portions of his armamentarium, for at least forty pages are required for the description and illustration of instruments and other apparatus devised or radically modified by him. Doyen's story of his early preparation to enter the surgical field, including the protracted study of special subjects under the best masters in the various branches of medicine, surgery, pathology, and bacteriology, his long training in operative surgery on the cadaver and the practice of exercises designed to increase his manual dexterity, is extremely interesting and will long serve as a model for one ambitious to become a really expert diagnostician and operator. Following the introductory chapter, the book is divided into two parts, the first, of about 475 pages, being devoted to the consideration of matters pertaining to general surgical technique; the second, of about 250 pages, to operations on the head.

Part I contains descriptions of the instruments and various mechanical appliances required in private and hospital work, sections on care of the patient before, during, and after operation, general surgical technique, surgery of the blood-vessels and nerves, autoplastic surgery, destruction of pathological tissues by heat, electro-coagulation treatment of malignant growths, and many other subjects. All through this section we find case reports, personal reminiscences, and various other digressions when lend a personal touch to the text and add materially to its value. In some fields (that of blood transfusion, for example) we find Doyen's methods somewhat antiquated as compared with current American practice, but such cases are exceptional. Doyen gave much time to the study of cancer and to methods for the eradication of malignant growths, and his descriptions of his method of electro-coagulation is of great interest.

In Part II the usual operations on the head, including certain special operations on the eye and ear, are described and illustrated. Certain portions of this section are somewhat disappointing. This applies especially to the text relating to intracranial surgery, where the indications for operations requiring opening of the cranial cavity have received but brief consideration. This seems a pity, since suggestions based upon the wealth of Doyen's experience would have been of the greatest value. Despite these criticisms, it is safe to say that this book will be found interesting and instructive by all American surgeons; and if the same standard is maintained in the two forthcoming volumes, Doyen's work will form one of the most valuable treatises on surgical therapeusis and operative technique that has ever appeared.

GOOD HEALTH, HOW TO GET IT, AND HOW TO KEEP IT. By ALVAH H. DOTY, M.D., Author of "The Prevention of Infectious Diseases," "The Mosquito," "A Manual of Instruction in the Principles of Prompt Aid to the Injured," etc. Illustrated. Price, $1.50 net. New York and London: D. Appleton and Company, 1917.

QUOTING from the preface of this book as follows: "It has been the aim of the author to include in this book the essential and salient points in the construction of the body and function of its various parts; also to discuss public health problems, the maintenance of individual physical well-being, the means by which infectious diseases are transmitted and how they may be prevented, the importance of pure air, good water, and nourishing food, as well as other matters connected with the subject of hygiene. The author has endeavored to present these in a clear and simple manner, and in a way that will make the application of the information practicable in everyday life and conduct." That Dr. Doty has accomplished all he endeavored to do will be apparent to the fortunate readers of this latest work from his pen. A sane, well and attractively written book, which puts forth all the best in practical knowledge of the topics presented in so simple a style that it can be used and understood by any reader of normal intelligence, and at the same time it will prove a delight to those teaching hygiene, first aid, and kindred branches, because it has condensed so much vital material in so small a space. The reviewer has been keenly delighted with the ideas of the author in regard to distribution of meals as expressed on pages 116 and 117. In italics has he placed this sentence, "*breakfast should be the best meal of the day.*" Then he gives the reasons for his statement, which, as many of his readers will know, is in direct opposition to the teaching of the past fifteen years where this meal is concerned.

Society Reports.

SEVENTH CLINICAL CONGRESS OF SURGEONS OF NORTH AMERICA.

(Special Report to the MEDICAL RECORD.)

(*Concluded from page* 831.)

Wednesday, October 24—Third Evening Session.

Symposium on Military Surgery and the Specialties: General Surgery.—Major CHARLES H. MAYO, M.R.C., of Rochester, Minn., stated that it was only through medicine that it had been possible to carry on the war for three years. Without thorough medical efficiency the war would have been terminated through disease and infection and we probably should have had brought upon us a very unsatisfactory peace, which would have been far worse than no peace at all. Through medical efficiency this war would be carried on to a final termination which would end the wars of the present age and democracy would be safe in the world. When war was first declared the medical men of our country responded to the call for the aid of humanity. Probably two thousand of them had been helping in England, hundreds had helped in France, in Serbia, in Russia, and in Italy, and some few hundred in Germany, and we had their experience to aid us. We were proud, from a medical standpoint, that Germany recognized us by dropping bombs on the hospitals, because we were returning 80 per cent. of the injured back to the front. It was unfortunate that the medical profession had not quite the rank to accomplish the things they might be able to accomplish, so that they could go from the country, either as medical men or men in the army with a rank which befitted them, so that they could properly associate with the representatives of France, England, and Italy who were doing the same work. The navy had been recognized and now had just as good rank as that of any country in the world, and all the men of the army should have it. Congress had honored our Surgeon General with the highest honor it was possible to give, by bestowing on him the rank of Major General. They had developed through his sanction and help the greatest post-graduate school in medicine in the world, and there were thousands of our medical men in training. Many of the best medical men objected to taking the training because they didn't understand that without it they would not be able to do any of the work. The training of doctors along military lines was essential and every camp represented a better lot of men. The specialists were doing great work in the Surgeon General's office and nothing was coming out of the office of the Surgeon General with his sanction except things that would stand the test of common sense. This was too serious a time to make any change in the specialties or general surgery or anything else. Robert Jones had 5,000 beds, where he had done most wonderful work in orthopedic surgery, and we were going to have a little better work in that line. The records which had come back showed that on over the top fighting about 10 per cent. received head injuries of some sort; in trench warfare possibly 20 per cent. received injuries about the head of all varieties. We had about 10 per cent. of chest injuries, 6 per cent. of abdominal injuries, and 25 per cent. of the total on the average were fractures to be taken care of. There would be plenty of work for every man and the various specialties were grouped under three headings: General surgery, general medicine, and the laboratory. Under them came all sorts of work of reconstruction, which would mean so much. We were building mobile operating pavilions and connected with them were a few large vans that could be moved about rapidly. They were all standardized and well equipped with everything that had been chosen for the army work in the medical line. As to Carrel's work along antiseptic lines, he had developed the principle of some chemical agent that would not injure the tissues and Dakin as the chemist had carried out his ideas. Dakin took the old Labarraque's solution of lime chloride and by removing the free alkali made it safe for use. But that did not mean that this antiseptic or any other was going to work indiscriminately without common sense and without the judgment of the surgeon. There was no great innovation about the care of injured people; there was the modern application of the principles, but they were not so new. They wanted men of mature age and judgment to put at the head of the hospitals to do the work that was being done now in the base hospitals.

Head Surgery.—Major WALTER R. PARKER, M.R.C., U.S.A., Detroit, said that he had been asked to speak in place of Colonel Lyster because the latter had been detained in Washington on duties incident to the war. One of the first problems to be considered after the sudden expansion of the Medical Corps ot the Army was to determine how to give the army the benefit of the services of those trained in a special branch of surgery, and at the same time construct the necessary organization to make them effective from a military standpoint. One of the steps in carrying out this policy was the grouping of those specially qualified into a unit to be known as Division of Surgery of the Head, the specialties forming the group being ophthalmology, otolaryngology, brain surgery, and oral plastic surgery of the face. In the office of the Surgeon General this division was under the direction of Lieut. Colonel Lyster of the Regular corps, and to each subsection was assigned a member of the Medical Reserve Corps. The first duty of the division had been to secure for the Surgeon General the names of a sufficient number of physicians qualified to do the work, who were willing to serve. In some instances, particularly in brain surgery and oral plastic surgery, there were not enough trained men available to meet the demand, so schools had been established where preliminary training was given. Through the activity of this division 589 officers of the M. R. C. were now on duty or ready to serve, and more than twice that number had signified their willingness to serve. Should the war necessitate the training of three millions of men it was estimated that the number of surgeons required by that section would be over three thousand. Another special duty of the division had been to suggest plans and equipment, and to advise on the personnel of a special head hospital with a capacity of 1,000 beds, authorized by the surgeon general to be erected and operated somewhere in France at the proper time. In that hospital would begin the first work of reconstruction. It was the purpose of the Surgeon General to establish schools of instruction for all the surgeons in the cantonment hospitals. To assist in this work teachers of known reputation had been assigned to take charge of the various divisions and textbooks dealing with the military aspect of each department were being prepared. The spirit shown by the men assigned to duty in the national army and national guard cantonment hospitals had been all that could be desired. In a few instances requests for a higher rank had come to the heads of the various divisions, but only in rare instances had service been refused because of the commission offered. The Surgeon General had authorized him to say that it was the policy of his office to give the higher rank to those of large experience who, on entering the service, were qualified to assume full control of the special service to which they had been assigned. To those in the lower grades it could be assured that merit would be recognized and promotion given whenever it was fitting to do so.

Brain Surgery.—Captain CHARLES BAGLEY, JR., M.R.C., Baltimore, thought the physicians, in common with others, had failed to appreciate the full force of duty until their great work was divided into small parts. He classified the wounds of war surgery of the nervous system as follows:

"1. Tangential wounds, in which the missile, usually a rifle bullet, has passed superficially to the bone, leaving its mark externally in the form of a gutter, with or without fracture or intracranial complication.

"2. Penetrating wounds, in which the missile has passed immediately beneath the bone. In these cases the laceration of the dura and brain is, naturally, inevitable. Bone fragments may penetrate more or less deeply.

"3. Direct localized blows by fragments of shell or shrapnel bullets, which have themselves failed to penetrate the skull, but nevertheless have driven fragments of bone deep into the brain.

"4. Penetrating wounds in which a missile has entered and remained lodged with the brain substances.

"5. Cases in which a rifle bullet has passed across the cranial cavity, the wounds of entry and exit being on opposite sides of the head.

"6. Concussion of the spinal cord, in many instances not associated with external signs of injuries.

"7. Compression of the spinal cord when a detached spicule of bone is driven into the spinal cord, these injuries frequently differing only in degree from those produced directly from a projectile.

"8. Direct localized injuries resulting from fragments of shell or shrapnel in which there may be extensive local destruction and often a considerable amount of blood clot.

"9. Wounds or injuries of the peripheral nerves, of varying degrees, again divided into a small group in which the nerve injury is of primary importance, and much larger group in which the injury of neighborhood structure is of far greater significance."

The problems in the care of this varied group were to combat shock and use promptly whatever revisional operative work might be indicated, to combat infection, and to remove foreign bodies as intelligently as possible. The *x*-ray had been of tremendous assistance in localization and also in directing the removal of fragments. The giant magnet had a limited value and was capable of great harm. Hernia cerebri had proved particularly difficult to treat successfully. Bony defects of the skull and "crippled brains" were not of immediate importance, but indicated to a small degree the tremendous problem of reconstruction which would fall to the division of brain surgery after the war. He made an earnest plea that every possible means be used to reduce the occurrence of epilepsy. The present very small corps of neurological surgeons would have to undergo the expansion now so conspicuous in all branches of the service. A plan had been formulated for training the men who were capable and willing to undertake this special work and schools had been established at various places under the direction of skilled neurological surgeons. After receiving intensive fundamental training, they would be capable of special clinical training in Europe. A book on "War Surgery of the Nervous System" had been compiled by Major M. G. Seelig, in which the complex subject-matter had been condensed. For over three months they had been steadily compiling a list of candidates for this special branch, but were still seriously in need of surgeons. The work must be undertaken in an unselfish and self-sacrificing manner, but if properly done the compensation upon completing might be summed up as follows:

"(1) To the individual soldier, the best service. (2) To the medical department of the army, a small part of the great task, well done. (3) To scientific research the advance that will necessarily come if all specimens are carefully preserved and correlated for post-bellum study. (4) To the civilian population all the advantages incident to the wider dissemination of a broader surgical knowledge. (5) To the individual surgeon, active in the work, the satisfaction of having done his part."

Ophthalmic Surgery.—Major JAMES BORDLEY, JR., of Baltimore said that his committee had been authorized on April 26, and since that time, without an intermission of a single day, it had been working in Washington in an advisory capacity on the many ophthalmological problems of the army. A complete catalogue of nearly 9,000 ophthalmologists in the country had been prepared and they had been able to hand to the Surgeon General the names of over 1,400 men who had signified their willingness and were qualified to serve. More than 300 had been commissioned and more than 200 ordered into active duty. They felt convinced that when the American army was in the field the surgeon general's plans for ophthalmic service would be found adequate. They had caused to be made for the first time in the United States the soda glass necessary in the manufacture of glass eyes which heretofore had been manufactured exclusively in Germany, and a member of the committee acting independently had devised a plan for protecting eyes against injury, which they believed would be of far-reaching value. One member of the committee had been called into active service and assigned to the division of physical reconstruction and reeducation to assist Major King, the chief of the division, in preparing plans for the reeducation of the blind and deaf soldiers. A group of twelve of the leading educators of the blind in this country had been asked to study this complex question with him and on their suggestions Major King had arranged for the field service in France and for the establishment of a teaching institution in this country. Everyone who had given thought to the subject of reeducation of the injured soldier knew that it was essential for the army to hold him in the military service until his reeducation was completed. In order to do that the Surgeon General must have supervision over every stage of the process, and the organization that would have the responsibility of the placing of an injured soldier in a trade or profession should likewise be directly under the surgeon general who was charged with the duty of preparing that man physically for the battle of life. The blind soldier must first, if possible, be reconstructed ocularly and if not, then reeducated and placed in such a position that his future happiness would, as far as possible, be assured.

Surgery of the Ear, Nose, and Throat.—Dr. C. W. RICHARDSON of Washington reviewed the appointment of the various committees and stated that the first activity engaged in by the subcommittee on otolaryngology was the listing of all the known specialists in that branch of medicine throughout the United States and the preparing of an index catalogue. They had discovered that 852 men were available for service; of this number 43 had been assigned to national army cantonments, 34 to national guard cantonments, and 149 others had accepted their commissions and were awaiting assignment to duty. The number that had been assigned to go abroad was 32, and there were 852 others who had signified their willingness to accept service, but had not yet taken out their application papers. Other activities of this committee had been the standardization of otolaryngological instruments; aiding the Surgeon General to assign the proper personnel to cantonments and base hospitals; the revision of hearing requirements for entrance to the army; the assembling of tests for malingerers, and the near perfection of an ear protector. A special hospital and dispensary building for the section of surgery of the head had been planned for the national army cantonment and for the base hospitals abroad. All of these activities had received the approval of the surgeon general. A manual of war surgery of otolaryngology was being prepared by Major H. W. Loeb of St. Louis, and several trips had been made by members of the committee to various cities to explain to otolaryngologists the activities of the committee, and awaken interest in the members of this branch of medicine to their opportunities for service. The names of candidates for commissions unknown to the committee as to their professional qualifications were referred to the advisor in the State from which the candidate came and an accurate account of his qualifications was thus obtained. The committee had also been enabled to suggest the names of the men to be assigned to each of the cantonment special hospitals and they were now preparing a roster of the men to be placed in the base hospitals abroad. The reconstruction, reeducation, and rehabilitation of the defective in hearing and speech among the soldiers was receiving due consideration by this committee.

The Aims of the Subsection of Plastic and Oral Surgery.—Major VILRAY P. BLAIR, M.R.C., U.S.A., of St. Louis, said that the distressing wounds of the face and jawbones had attracted particular attention, not only on account of the disfigurement which they caused, but because of the difficulty which was first encountered in dealing with them. That difficulty was the logical outcome of an attitude that regarded dentistry and surgery as two distinct and separate professions. As long as this theory was allowed to dominate practice, a man who had an extensive injury of the face and jawbone had about as much chance for an ideal result as had the man with an open fracture of the limb in the days when the physician and the bonesetter could find no common ground upon which to meet. The surgeon had expended much study upon making himself master of the various means of splinting an injured limb, but proper fixation of a fractured jaw could only be accomplished by the use of dental splints. These he could not always apply himself and he had not always sought the help that the dentist

could so easily lend. Proper fixation in the early stage was one of the most important points in the treatment. The dentist was not trained to care for the wounded tissues beyond fixation of the bones, yet repair of the soft tissues and proper drainage might be equally important. A few had bridged this no man's land between surgery and dentistry, but he believed that the majority were pursuing their separate ways and that a patient with a jaw injury would be treated either by a surgeon or a dentist, neither of whom was master of all the problems, and that either the fixation or the care of the tissues would suffer accordingly. It had been the custom to transport these men back to special centers, where qualified men were stationed, and in the meantime the patients received what might be called general treatment. We had recently been told that the most important step in the preparation for the care of our wounded was to plan to give them the proper operative treatment within the first twelve hours, and that if this was done the primary union might be obtained in 90 per cent., and that gas gangrene, etc., might by this means be eliminated. He felt convinced that this earlier treatment would accomplish even better results than late treatment where reconstruction must overshadow conservation, and that if the plan of treatment could be started in the earlier hours after the injury it would occasion much less distress to the patient and much less effort on the part of the operator. It was the hope to place in every evacuation, base, and recovery hospital men who were familiar with the problems and technique of dealing with these face and jaw injuries, so that from the very first these patients would receive the very best that surgery had to offer. There were many men in this country who had specialized in oral surgery, many of them with medical degrees, who had gone beyond the treatment of the teeth to devote their attention to the peridental structures. These men understood most of the oral problems, but as a rule were not accustomed to doing the major surgery that was required for many war injuries. It was by associating the capable general surgeon with the dental oral surgeon and sending them out as units that the skill could be furnished in multiple. In orders to correlate the work and to present the special war problems short course schools had been established by the surgeon general in several cities where those surgeons and the dental oral surgeons working together would be molded into working units. Until their services were needed abroad those units were cooperating with the dental surgeons at the cantonments in an attempt to eradicate peridental infections from the mouths of our soldiers. It was hoped by this means to lessen materially the medical casualties on the other side.

Orthopedic Surgery.—Major E. G. Brackett, M.R.C., U.S.A., of Boston thought the problems of the orthopedic surgeon did not differ materially from those of the other departments of medicine except in extent. There were two principal considerations involved in the plan to bring the men who had been disabled back into normal civil life:

I. *The Surgical.*—The quick restoration was the essential element. To avoid the many disabilities which might occur by delayed treatment preparations were made in order that the special care might begin as far back in the line as possible, with the shortest line of communications and with the fewest changes before arriving at that base where the permanent part of the treatment would be given. To insure the early and continuous cooperative care of the men who were to be given special treatment the medical forces, working both in France and the United States were to be guided by the same general plan. For the care of men overseas a number of beds sufficient to meet the demand had been planned and were under way. The hospitals would be built to contain 250 beds each and fitted with the curative workshops. About 70 surgeons were working in the orthopedic hospitals in England under Col. Sir Robert Jones, and many of them would be detailed to take up the work among American soldiers in France when the need arose. Special provision to supply artificial limbs in sufficient numbers was necessary. In order to supply a sufficiently large number of men who would be capable of responding to this work, special training was being given to those members of the M.R.C. who had applied for work in this division.

II. *The establishing of industrial occupational facilities in intimate relation,* both administratively and geographically with the hospital. Thus the curative workshops would be built as part of the hospital equipment so that the men, while still confined to the hospitals might, at the same time, be carrying on their vocational and curative work, and no time would be lost. The work of the orthopedic rehabilitation must be looked upon as having three distinct phases, yet so closely allied and interwoven that they made one problem: (1) The physical restoration. (2) The industrial reeducation to fit the new physical conditions into the existing social relations, which must be resumed. (3) The reinstallation in normal employment. This work of rehabilitation in its three phases was an activity which was most stimulating, for it was not directed alone toward the provision of a temporary emergency, which would end with this military crisis. The need of this same rehabilitative work as a factor in solving our civil and industrial problem had been evident for some time, and already attempts had been made to meet the need through the establishment of such work. Thus the military problem would merge directly into the permanent civil one, and could then be turned over to meet the municipal demands. It would make it one of the lasting contributions which could come out of the disasters of this war.

Thursday, October 25—Fourth Evening Session.

Presidential Address.—Dr. John G. Clark of Philadelphia delivered this address, the text of which was "The Use of Radium in Gynecology." He reported the results in the use of radium in one hundred cases of small myoma uteri and in cases of so-called myopathic hemorrhage, which were usually resistant to curettage and consequently required a hysterectomy to relieve the menorrhagia. In concluding his clinical review of this series of cases, which had been followed up very carefully, Dr. Clark spoke as follows "Radium is the treatment of choice in all cases of small, uncomplicated myomata, whose only symptom is hemorrhage. In these, as well as in cases of myopathic hemorrhage, almost 100 per cent. cure may be expected. Sufficient dosage will produce complete and permanent amenorrhea. In young women, radium should be used with the greatest caution, since its application may be followed by a premature menopause. If other measures have failed, radium may be employed, but in small dosage. Irregular bleeding due to pelvic inflammatory disease, tumors of large size or tumors of any size complicated by diseases of the adnexa or surrounding structures, as well as single myomata in young women, are to be treated by appropriate operation and not by the application of radium. In no case of uterine bleeding should radium be used without a preliminary curettage and microscopic examination of the curettings by a competent pathologist. In properly selected cases the immediate convalescence is smooth and restoration to health is complete. Pelvic pain rarely occurs and as a rule is of but a few days' duration. In the exceptional case leucorrhea follows the application of radium, but this is not permanent. Not infrequently radium has cured or diminished discharge which was present before its application."

As a preliminary statement in his discussion on cancer of the uterus, Dr. Clark stated that they had discovered that the disproportion between operable and inoperable cancer of the cervix was about 1 to 5 in that during ten years 60 cases were found within the operative limits of a radical hysterectomy, whereas approximately 300 were turned away from the hospital as hopeless. The use of radium was confined strictly to the latter class, 100 cases having been subjected to this treatment. Dr. Clark adhered to the principle that operation was the method of choice in the operable cases, for notwithstanding there was a minimum salvage in even a well-selected series of cases this treatment was the best that had been obtained. He therefore adhered to the dictum that when a case was within surgical bounds it should be treated by radical surgical measures. Relative to the inoperable cases, he said: "The remarkable palliative results in cases of inoperable cancer of the cervix have modified our viewpoint as to the cases which fall within the elective surgical class, for our former rule was when in doubt as to the extent

of the growth, operate, but now we reverse the policy, and in doubtful cases we employ radium. Under this restrictive policy, our percentage of operative cases has shrunken, but we trust that the results from a radical hysterectomy will yield better curative results. We justify this conservative attitude by the assertion that in 100 inoperable cases treated by radium local healing has occurred in 52 per cent. This does not mean, however, that all of these 52 patients are alive, for several are dead of metastasis but without return of the local cervical process primarily destroyed by the radium. Even though the patient died from the secondary invasion, this is a remarkable showing as to palliative results, exceeding in our experience all other remedies, and we trust that several will survive the five-year test. One of the terrifying symptoms for the patient and her family is hemorrhages. Of our 100 cases 60 were completely relieved of this symptom. There was a recurrence of hemorrhage in 10 cases and in only 14 it was uninfluenced. Vaginal discharge, other than hemorrhage, was checked in 51; uninfluenced in 15. Of those suffering pain 23 were relieved, and 14 were not relieved. In some cases, the relief of pain was only temporary, varying from a few days to a month or more."

A few surgeons have advocated the use of radium preliminary to a hysterectomy. From this view Dr. Clark was a radical dissenter, for it hardly appeared conceivable that a remedy which worked effectively for at least 2 cm. from its point of application could be improved upon by a surgeon's knife, limited by such insuperable anatomical barriers as the bladder in front, the rectum posteriorly, and the ureters and pelvic vessels laterally. He therefore adhered strictly to one rule, namely, never to attempt an operation on any case that had been healed locally by radium. It appeared to him a most unwise surgical policy to subject a patient to the hazards of a radical operation, rendered more dangerous by the dense cicatricial tissue which formed in the wake of a successful radium application, in what he believed to be a fatuous attempt to secure still more effective results. Indeed, he was inclined to the view that cancerous nests of degenerating cancer cells might actually be liberated and thus render abortive an otherwise good palliative result.

Radium, as was shown in Dr. Clark's series of cases, was by no means an infallible panacea for cancer. There was no way of determining which cases would be benefited by its use. There was beyond doubt a certain percentage, as estimated by his observation, in which cancerous growths were not retarded by radiotherapy; indeed, in an occasional case it would appear that there was a positive acceleration of the growth. That many cases showed an astounding improvement with local disappearance of the ulceration could not be gainsaid. In his series, several instances occurred in which the results achieved were so remarkable as to be almost incredible. In some of these cases the fire was but smouldering and would break out sooner or later with renewed violence, as several of his cases had proved, but upon the whole this treatment yielded, to say the least, highly encouraging palliative results, and he trusted that permanent results would follow in a definite percentage of otherwise hopeless cases.

In the discussion of cancer cases the question of hospital economics must not be lost sight of. The length of stay in the hospital following a radical operation averaged at least three weeks; whereas after the application of radium not more than three days would be required. When complications arose after radical operations they were usually serious, entailing much suffering. Such patients, on returning home, were likely to remain semi-invalids for several weeks or months, and when, as was frequently the case, there was a rapid continuation of the disease, they became a heavy burden to a poor family. In the comparison of statistics, this difference between the two classes of patients was greatly in favor of those treated by radium, a fact that tended to incline Dr. Clark strongly to the use of radium in borderline cases, which formerly he subjected to a radical operation.

Removal of the uterus in cases of cancer of the fundus had yielded such good results that the speaker did not feel justified in taking any chances with radium, even in the borderline cases, except in cases where there was a serious surgical contraindication. In his series of 100 cases, only four were thus treated. He said: "*Our surgical attitude toward the cervical and fundal growths is diametrically opposite. In borderline cases of cancer of the cervix we invariably employ radium. In advanced cases of cancer of the fundus we invariably perform a hysterectomy.*" A pessimistic view dominated the outlook in the surgical treatment of the cervical growths if the pathological process was at all advanced, whereas fundal growths might be viewed with a cheerful optimism even when the cancerous process was extensive. As a palliative agent, Dr. Clark asserted with full assurance that he had never obtained results with any other method that had even approached in beneficence those secured by radium. The treatment was simple and entailed no distress to the patient, and the results in checking hemorrhage were immediate and in a very large number of cases the hemorrhage never returned, even in the fatal cases. Because of the wellnigh miraculous action of radium in the occasional case, there was danger of unbridled optimism and no one should let the occasional astounding result cloud his vision when it came to a judicious consideration of a large series of cases.

In this brief summary Dr. Clark said he had attempted to give a fair and unbiased statement of the benefits, limitations, and dangers of radiotherapy in gynecology. He stated, however, that "our conclusion of today may be completely changed by our experience of tomorrow for the entire field of work is still in the period of probation, but we are certain that the benefits of this remedy are so great that no well ordered clinic can do the best work without it. In our experience, 100 milligrams have been sufficient to serve a most satisfactory purpose in gynecological practice."

War Surgery of the Spinal Cord.—Dr. CHARLES H. FRAZIER stated that under the enlightened scientific administration of the Surgeon-General's office neurological surgery was recognized as needing special training and special facilities, that to that end courses were being established to train surgeons for this work, and special hospitals were planned in the war zone where such cases could be cared for by neurologist and surgeon in cooperation. The spinal cord might suffer in a variety of ways, both directly and indirectly. It might be severely lacerated or even completely severed by direct contact with the bullet or indriven piece of bone, by the bullet protruding into the canal, by a subdural hemorrhage, by adhesions, or serous exudates; it might be contused by the bullet and accompanying splinters of bone, and finally the cord might undergo grave structural changes from the effects of concussion or commotion caused by a bullet striking some portion of the vertebral column and bounding back to become lodged in the soft parts, or the sudden atmospheric changes produced by the explosion of shells in the neighborhood might result in changes in the spinal cord. Considerable interest had been aroused as to spinal concussion. Unlike concussion of brain, structural changes, even to complete disintegration, were a not inconstant feature. In most cases of spinal concussion the bullet struck the vertebral column and rebounded, to become embedded in soft tissue or an organ often at some distance from the spine. The momentum of the modern bullet was so great at the time of impact that the vibrating force was transmitted to the cord with damaging effect. Spinal concussions were diffuse and irregular, and included edema, hematomyelia, hematorrhachis, disseminated foci of necrosis, softening and cavity formation, and parenchymatous changes, often over four or five segments in either direction. Another group existed in which, without either direct or indirect injury to the spinal column, the patient showed grave involvement of the spinal cord and all signs of a complete or partial transverse lesion. These were attributed to atmospheric pressure caused by shell explosion. Dr. Frazier maintained that accurate localization was absolutely essential to successful treatment. Hitherto sensory disturbances of the upper level had been considered the most important guide, but motor disturbances such as paralysis of groups of muscles of the trunk would be found of great value in determining the level of injury. For example, if the eleventh segment was involved, we would find paralysis of the lower portion of the external and internal oblique with bulging of the iliac regions, while the whole rectus abdominalis contracted when the pa-

tient raised his head or coughed. If the ninth segment was affected, the lower part of the rectus abdominalis was paralyzed, while the upper part contracted vigorously. The condition of the intercostals was also a very valuable aid in the localization of lesions, particularly of the upper thoracic segments. By placing the finger over an intercostal space, the muscle would be felt to contract strongly on each inspiration if it was not paralyzed. This was a valuable guide, since each intercostal muscle received its nerve supply from the corresponding thoracic root. In considering level symptoms of lesions between the second cervical and second thoracic mention was made of the results of disturbance of the cervical sympathetic, including the miosis or inequality of the pupils, the narrowing of the palpebral fissure, the enophthalmos, the diminution of tear secretion, flushing of the face, and diminution of sweat. An interesting syndrome in lesions of the lower part of the cervical enlargement was represented by slow pulse, subnormal temperature, low blood pressure, and scanty secretion of urine. The temperature in some cases was lower than could be registered by a clinical thermometer, the pulse rate from thirty to fifty, rising or falling with the rise and fall of temperature, and the urinary secretions sometimes entirely suppressed. This peculiar state of stupor and lethargy had been likened to the condition of the animal in hibernation, both in the symptom complex and in the way in which both reacted to the influence of external temperature. Dr. Frazier described a case recently under his observation with an acute inflammatory condition of the fifth and sixth thoracic segments in which polyuria had been a striking symptom, the patient, a boy of sixteen years, voiding for several weeks from 150 to 200 ounces of urine per day. In all probability the polyuria was due to arrest of function of the vasoconstrictor fibers of the kidney. The *x*-ray had proved disappointing for localization. Dr. Frazier recently examined two *x*-ray plates of gunshot injuries of the spine from the war zone; in the first plate one of the vertebral bodies appeared shattered to pieces but there had been no injury to the cord; while in the other the plate showed no evidence of fracture or foreign body but the case presented all the symptoms of a complete transverse lesion. Fracture of the spinous processes or depressed fractures of the laminæ were not easily brought out by the *x*-ray, and even with stereoscopic pictures it was not always easy to determine whether a bullet lay within or without the spinal canal. However, *x*-ray pictures should be taken routinely in the hope of eliciting the site of a bullet or the presence of a dislodged fragment and to determine if possible whether the bullet was within the spinal canal. The important problem to decide was whether an exploratory laminectomy was indicated and when it should be performed. In indirect injuries, even when the vertebral column was not involved, the symptoms might temporarily simulate a complete transverse lesion. In these cases early operation was contraindicated but if symptoms persisted it might be performed under favorable circumstances on the ground that they might be due to hemorrhage or undetected skeletal injury, and it must be remembered that clinical evidence of complete transverse lesion did not necessarily signify irreparable injury to the cord. Dr. Frazier stated that when dealing with direct injuries to the cord by bullet, shrapnel, or bone splinters the propriety of a laminectomy admitted of little discussion. An exploratory laminectomy should be performed, whether the picture was one of a complete or incomplete lesion, for there was nothing to lose and perhaps something to be gained. In twenty operations for gunshot injuries of the spine Guleke found the cord completely crushed in ten, and while only five of the twenty cases recovered, three of these would have died had not fragments of bone or bullets been removed. Such operations should not be performed until the patient reached a hospital from which he need not be moved, as absolute rest was essential during convalescence. Included among the later indications for operation were the symptoms attributable to the pressure of an organized exudate, of callus, of a traumatic pachymeningitis, or of a circumscribed serous meningitis, and in not a few instances the principal indication for operation was persistent and intractable pain. Dr. Frazier then described the technique and indications for opening the dura.

Dr. Allen B. Kanavel of Chicago, in discussing this paper, presented a lantern slide demonstration of twelve patients operated upon for traumatic injuries of the spine. Ten of these dealt with fractures of the spinal column causing pressure symptoms on the spinal cord. The results to be obtained even in cases operated upon some months after receipt of the injury varied with the site of the fracture. Injuries of the cauda equina presented the best prognosis. In several of these cases the bladder function had been restored, sensation greatly improved and motor power much improved, so that the patients were able to walk with a cane whereas they had previously been bedridden. He emphasized that the greatest care must be used not to injure the spinal cord. That whereas brain tissue might be handled with some impunity, the slightest injury to the spinal cord during the operation was followed by serious results. Two gunshot cases were shown, one in which the bullet had been imbedded in the cauda equina for four years. This was dissected out with care and the patient ceased to complain of the serious pains that he had had and his motor power improved markedly. The second case was one in which the bullet was lodged within the spinal canal at the junction of the base of the skull with the atlas. The patient complained of inability to flex and extend the head without great pain. An incision was made through the mouth and the posterior wall just to the inside of the posterior pillar, since the bullet lay on the anterior portion of the spinal canal. The bullet was removed and the patient made a satisfactory recovery.

Surgery of the Stomach.—Major William J. Mayo, M.R.C., U. S. A., of Rochester, Minn., stated that 30 per cent. of all cancers of civilized man were in the stomach, and that this condition was uncommon in primitive man and in the lower animals, although there was no mechanical and secretory difference in the construction of the stomach. He believed that chronic gastric ulcer was not often cured medically, and was not seldom a source of cancer. He called attention to heat as a source of irritation, and was of the opinion that cancer occurred more frequently in man than in woman because man was in the habit of taking his food and beverages hotter than the average woman did. Woman sat at the foot of the table and poured the tea and coffee, served the men of the household first and drank hers after it had cooled somewhat. In the Chinese the same rule held true with the rice that was eaten, for the woman ate at the second table and the food was cool. It was his opinion that food and drink should not be taken into the stomach hotter than could be borne comfortably in the mouth. The mouth and throat were protected by sensitive nerves, but the stomach was not. Early diagnosis of cancer depended upon the Roentgen examination. The antecolonic end to side anastomosis between the stomach and jejunum greatly accelerated closure. The results of operations for cancer of the stomach were now fairly good and were improving. He reported that 38.4 per cent. were cured.

Dr. A. J. Ochsner of Chicago said we were impressed at once with the fact that a condition to which everyone was exposed was an important condition in the production of this most fatal of all diseases. We had known for a long time that there was no superficial cancer anywhere which occurred without preliminary irritation, and that this irritation gave rise to disturbed circulation. He was of the opinion that human beings were afflicted with cancer because they were manure eaters. We fertilized our soil and in that way took unclean food into the stomach, which produced an irritation. Cancer occurred most frequently at the point at which there was interference with the circulation, and he was convinced that this was a large factor in its production; and that smoker's cancer occurred most often on the lower lip because the circulation was interfered with owing to the weight of the pipe. Although we had not yet found the organism that caused it, we had found the condition that made it possible for this agent to live successfully under those conditions. He thought we should endeavor to avoid all irritation, "stop boiling our insides," and at the same time insist on having clean food to put inside the alimental canal. He was sure that when that was done there would be an enormous decrease in the amount of cancer.

Dr. L. L. McArthur of Chicago agreed with Dr.

Mayo that irritation was a predisposing cause of cancer, and was convinced that irritation made a doorway through which the infective element finally gained access. This atrium he had called attention to in various ways. He was sufficiently neutral to call Dr. Mayo's attention to the fact that the male stomach in Germany had the same frequency of infection as the female, and yet in Germany the man sat at the foot of the table and poured the tea and had his cool. Cancer of the skin had been shown to be due to the yeast plant and had been sloughed off from the great group known as cancer proper. He thought the great lesson to be learned from Dr. Mayo's paper was that the operation formerly considered as formidable was being lessened, and that the extent of the operation continually increased. When hearing Dr. Mayo's remarkable statistics that 38.4 per cent were cured in the understanding of the term that for three years they had lived and were free from evidence of other disease, we were not to decide the fact that this represented the mortality of the stomach when operated upon, but only as the mortality which followed selected cases—not cases selected to improve the statistics to be presented to a medical society, but selected cases in which operation could be performed with reasonable hope of success. The diagnosis was very difficult in many cases even after the abdomen was opened, and when the diagnosis was made even then the prognosis could not be accurately prognosticated. He called attention to an operation for putting the stomach at rest after operation, especially in cases of cancer of the stomach complicated with gallstones, by inserting a tube into the gallbladder and bringing it outside the abdomen. In this way the bile was prevented from getting into the bladder, salt solution could be introduced into the duodenum, the intestines could be flooded, and the patient could be made much more comfortable. Lantern slides demonstrating this method were exhibited.

War Surgery of the Lungs and Pleura.—Colonel Sir Berkeley Moynihan of Leeds, England, read an exceedingly interesting paper on this subject, recounting the experiences of himself and others, from which he drew the following conclusions: (1) The approximate mortality from gunshot wounds of the chest at all parts of the line of communication is 20 per cent. (2) The causes of death are hemorrhage as a rule within twenty-eight hours; and sepsis after the third or fourth day. (3) The local conditions in wounds of the chest wall and lung are in all respects similar to those met with in wounds elsewhere. The missiles are the same, their destructive effects upon the tissues are the same, and the infecting organisms are the same. (4) The lung tissue is more resistant to attack than many other tissues. The opening of the pleural cavity and the resulting exposure of a large serous sac to infection and all its consequences add, however, a danger of the most threatening character. (5) The chief essential in all cases of penetrating wounds is rest. (6) In clean perforating wounds of the chest, rest, together with the cleansing and dressing of the wound of entrance or exist, will lead to the recovery of the great majority of cases. (7) In cases of 'open thorax' the earliest and most complete effort possible must be made to secure closure of the wound after an appropriate toilet. (8) In those rare cases of grave hemorrhage, where hemoptysis is present or when the blood escapes by the wound, a direct access to the source of the bleeding must be obtained, when all contingent circumstances permit, and the wound in the lung must be treated by suture, preferably; or by plugging of the cavity from which the blood escapes. (9) In cases of hemothorax when the blood effused is small in quantity and remains sterile, no active measures are necessary, unless absorption is long delayed. Aspiration, repeated if necessary, may then be performed. (10) In cases of hemothorax, when the blood effused is large in amount and remains sterile, aspiration after the seventh or eighth day, or earlier in cases of urgent dyspnea, certainly hastens convalescence, permits a more rapid expansion of the lung, and prevents the formation of firm adhesions which may permanently cripple the free movements of the lung. (11) In cases of hemothorax, whether the amount of blood is small or large, when infection takes place open operation is necessary. Early operation both when the Carrel-Dakin technique or Morison method are adopted saves many weeks of tedius convalescence and permits of a more perfect functional recovery. (12) Small foreign bodies, or rifle bullets, imbedded in the lung, often cause no symptoms; they become encapsulated and may safely be left. (13) Large foreign bodies retained in the lung may cause distressing or disabling symptoms for long periods. In such cases removal after resection or elevation of the fourth rib through an anterior incision will allow of the safe removal of the projectile from any part of the lung. Pieces of metal so removed are almost always infected.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Louisiana State Board of Medical Examiners.

New Orleans, June 7, 8, and 9, 1917.

(*Concluded from page 838.*)

THEORY AND PRACTICE OF MEDICINE.

1. Name the types of leucemia, and describe the blood pictures of each.
2. A patient presents a continuous type of fever as a cardinal symptom. What laboratory tests are necessary for a differential diagnosis? Describe in detail one of the tests mentioned.
3. (*a*) What symptoms and physical signs are present in gastric ulcer; (*b*) duodenal ulcer; (*c*) gastric carcinoma?
4. Treat a case of acute dilatation of the heart.
5. Differentiate hysteroid and epileptic convulsions.
6. Name five reflexes, and describe the manner of eliciting them.
7. State the symptoms, diagnosis, and treatment of amebic dysentery.
8. Differentiate acute morphinism, acute alcoholism, and apoplexy.
9. Outline briefly the dietetic management of a case of chronic nephritis.
10. (*a*) Describe locomotor ataxia; (*b*) state briefly the symptoms and physical signs in the initial and ataxic stages.

GYNECOLOGY.

1. Give distinguishing symptoms between a four months' pregnancy, a uterine fibroid, and an ovarian cyst.
2. Give the symptomatology and treatment of acute cystitis.
3. What are the methods of replacing the retroverted or retroflexed uterus when movable?
4. What is acute parametritis? Give treatment.
5. Describe the varieties of uterine fibroid, and give characteristics of each which differentiate it from the others.
6. Give a description of the physiology of menstruation.
7. Mention the changes of cervix uteri which may be felt on vaginal examination.
8. A patient presenting herself for examination with a mass in right lower abdomen—what might it be?
9. Give special symptoms pointing to tubal pregnancy.
10. What symptoms may follow retroversion of the uterus?

SURGERY.

1. Describe ligation of the external carotid.
2. What are the symptoms of post nasal adenoids, and their treatment?
3. How would you diagnose glaucoma?
4. Name a few complications liable to occur in a male suffering with gonorrhea.
5. What are hypothyroidism and hyperthyroidism; name the characteristic symptoms of each condition.
6. Give symptoms of fracture of the skull base.
7. What is a Pott's fracture? How would you treat it?
8. What is a carbuncle. How would you treat one?
9. Give diagnosis and treatment of acute osteomyelitis.
10. Make a differential diagnosis between coma due

to (*a*) apoplexy, (*b*) opium poisoning, (*c*) acute alcoholism.

MATERIA MEDICA.

1. Give action of chloral.
2. Give the physiologic action of a toxic dose of atropine, and mention its antidote.
3. What is amyl nitrite and what are its uses?
4. Name three emetics and give dose of each.
5. Write a prescription for a diuretic mixture.
6. What is emetine? Give dose and its action.
7. What is eserin? Give the average dose.
8. What is the action of urotropin?
9. Give the dose of Dover's powder, pulv. jalapæ co., elaterin, apomorphine, and strychnine.
10. What remedies would you give in a case of carbolic acid poisoning?

OBSTETRICS.

1. Name and describe the signs of pregnancy as determined by touch.
2. (*a*) What is the "second stage of labor"; (*b*) what conditions may cause delay in this stage; (*c*) how should such conditions be managed?
3. A primipara at the fourth month of pregnancy presents evidences of albuminuria, with no uremic manifestations; what treatment is indicated?
4. (*a*) What drugs are of use in labor; (*b*) state their indications and contraindications.
5. (*a*) State the maternal and fetal indications for the use of forceps; (*b*) what are the prerequisites necessary for their safe application.
6. What are the planes and axes of the pelvis, and mention briefly their obstetric importance?
7. A transverse presentation has been diagnosed, left scapula anterior; the membranes have been ruptured; how is delivery best affected?
8. What degree of pelvic contraction would be prohibitive of delivery by Nature's efforts at term?
9. (*a*) State the causes of precipitate labor; (*b*) dangers; (*c*) management.
10. Describe the application of forceps in the inferior strait.

ANSWERS.

THEORY AND PRACTICE OF MEDICINE.

1. There are two types of *leucemia*—(1) the *lymphatic*, and (2) the *splenomedullary* or *myelogenous*. In *lymphatic leucemia* there is an enormous increase in the number of white cells, chiefly in the lymphocytes, which may be 90 per cent. of the whole number; the polynuclears are diminished; there are no myelocytes; the red cells are not much affected, but may show a slight diminution in number and in hemoglobin content. In the *splenomedullary* variety the white cells are enormously increased (sometimes equaling or even exceeding the red cells in number); the polynuclears are relatively diminished, myelocytes are present in great numbers; the red cells are generally diminished, and the hemoglobin reduced; normoblasts and gigantoblasts are present.

2. Continued fevers are found in typhoid, pneumonia, tuberculosis, typhus, erysipelas, scarlet fever, smallpox. Laboratory diagnosis includes the Widal reaction and the diazo reaction for typhoid, and an examination of the sputum in the case of tuberculosis.

To demonstrate the existence of *tubercle bacilli* in the sputum: The sputum must be recent, free from particles of food or other foreign matter; select a cheesy-looking nodule and smear it on a slide, making the smear as thin as possible. Then cover it with some carbolfuchsin, and let it steam over a small flame for about two minutes, care being taken that it does not boil. Wash it thoroughly in water and then decolorize by immersing it in a solution of any dilute mineral acid for about a minute. Then make a contrast stain with solution of Loeffler's methylene blue for about a minute; wash it again and examine with oil immersion lens. The tubercle bacilli will appear as thin red rods, while all other bacteria will appear blue. The tubercle bacillus is rod shaped, is from 1½ to 3½ mikrons in length, and about one-third to one-half a mikron in breadth, is a strict parasite, is not motile, and has no flagella. It is slightly curved, does not form spores, is not liquefying, and nonchromogenic, is aërobic; it resists acids; it grows well on blood serum; stains well by Ehrlich's Ziehl-Nielsen's, or Gabbett's method; it is Gram-positive.

3. In *gastric ulcer* "the degree of digestive disturbance varies. The tongue is clean, there are generally nausea and vomiting. There is tenderness over the epigastrium, with pain in the same region from a half to two hours after food, also often referred to the back, and relieved by vomiting. Hematemesis may cause anemia with a hemic murmur and weakness. In the acute ulcer hemorrhage is copious, in the chronic ulcer small occasional hemorrhages are the rule. In a certain number of cases melena is present. Constipation is frequent; there is no fever.

"*Ulcer of the duodenum.* The signs and symptoms much resemble those of gastric ulcer, with the particular features that the pain is nearer the right costal margin and its time incidence is later—two, three or four hours after food. The pain is relieved by taking food which causes closure of the pylorus and so prevents the onward passage of acid chyme over the ulcerated surface. Vomiting is not so common and does not relieve the pain. Hematemesis is rare, but melena is common."

In *gastric carcinoma* "a tumor may be felt, most often in the region of the pylorus, next in the epigastrium over the transverse colon, or there may be merely rigidity of one rectus muscle (more often the right). Secondary nodules may be found near the navel, in the liver, lungs, and lymphatic glands: a group of the latter just above the left clavicle is frequently palpable. According to the situation other conditions may arise—a dilated stomach if the growth is at the pylorus, a contracted stomach if at the cardiac end, adhesions, fistula or peritonitis, ascites—from implication of the peritoneum—edema of the legs from secondary deposits in the retroperitoneal glands pressing upon the inferior vena cava. Pain between the shoulder blades, or in the lumbar region. It is more constant than in chronic gastritis or ulcer, and has no relation to food or the period of ingestion. Vomiting may be absent; if present it will not relieve the pain, and may also have no relation to food. Anorexia is almost always present. Hematemesis occurs in about 50 per cent. of cases only, the blood is only rarely like that in gastric ulcer, but is usually much altered—the so-called *coffee-grounds vomit*. Cachexia (a condition of the body resulting from wasting with anemia) is much more marked than in any other pathological condition of the stomach. A leucocyte count is of value, for post-prandial leucocytosis is absent. Constipation is often present."—(Woodwark's *Manual of Medicine.*)

4. "*Dilatation of the heart is incurable.* The symptoms may, however, be temporarily relieved and the course prolonged. In all cases the indications are to improve and maintain the general nutrition of the patient and to control and steady the cardiac action. The first indication is met by a generous diet, moderate exercise, and the administration of stomachics, red wine, iron, etc. The second indication is met by strict observance of the rules of hygiene, by moderate exercise, and by the administration of heart tonics, such as digitalis. The combination of tincture of strophanthus with digitalis is very beneficial. Strychnine sulphate, gr. 1/24, three times daily, citrated caffeine, gr. i to iii, three times daily, and sparteine sulphate, gr. ⅛ to i, three times daily, are also valuable heart tonics and stimulants. Morphine sulphate, in small doses hypodermically, often acts like magic in restoring the circulation, especially when compensation is failing, and dropsy and cyanosis become marked. The bowels, skin, and kidneys should be kept in action, using, if needed, purgatives, diaphoretics and diuretics. The treatment of cardiac dilatation and cardiac failure by baths and systematic exercise is sometimes advocated. Exercise is employed in one of three methods: (1) passive exercise and massage (according to the so-called Swedish or Ling plan); (2) movements with limited resistance (according to the Schott plan, which is really little more than a modification of the Swedish plan); (3) method of climbing or walking up graduated ascents (after the method of Oertel). The baths are those of the Nauheim (saline) natural waters.—(From Hughes' *Practice of Medicine.*)

5,

EPILEPSY.	HYSTERIA.
1. No apparent cause.	1. Cause, emotional.
2. Sudden and rapid onset.	2. Onset gradual, usually after some mental excitement.
3. Aura generally present.	3. Globus hystericus or palpitation.
4. Consciousness lost.	4. Consciousness generally preserved.
5. Pupils generally dilated.	5. Pupils normal.
6. Tongue often bitten.	6. Tongue never bitten.
7. Patient very liable to hurt himself.	7. Patient not liable to hurt himself; may injure others.
8. May be involuntary bladder and bowel discharges.	8. Never.
9. Of short duration.	9. Duration longer.

6. FIVE REFLEXES. *Plantar:* Elicited by stroking or scratching the sole of the foot, when the patient attempts to withdraw the foot. *Tendo Achillis reflex:* when the leg is extended and supported at the knee, and the hand is pressed firmly against the ball of the foot, a tap on the tendo Achillis causes contraction of the gastrocnemius and soleus, and the heel is jerked up. *Patellar reflex:* when the thigh is supported by being crossed over the other thigh, and the leg is flexed at the knee, a tap on the quadriceps tendon just below the patella causes the leg to be suddenly extended. *Ankle clonus:* if the half-extended leg be supported at the knee, and the ball of the foot be suddenly pressed up, putting the tendo Achillis on the stretch, there sometimes results a series of contractions of the muscles of the calf with alternate extension and flexion of the foot, which continues so long as pressure is maintained on the ball of the foot and ceases when the pressure is released. *Cremasteric:* when the inner surface of the thigh is irritated, the testicle on the same side is retracted.

7. AMEBIC DYSENTERY. *Symptoms:* It is usually ushered in by an attack of diarrhea, accompanied by slight fever, nausea, and vomiting. There are intense abdominal pain and a constant desire to go to stool. The stools become more frequent and bloody. Tenesmus is worse in the afternoon and at night. Temperature may be normal or slightly elevated (100° F.). Intermissions occur in the disease, and the *Amœba coli* is found in the stools. The *diagnosis* is made by finding the microorganisms in the stools, in conjunction with the symptoms. The *treatment* consists of rest in bed and liquid diet. Laudanum (30 drops), followed in half hour by ipecac, gr. 30, repeated, if necessary, has been recommended for internal administration. Rectal irrigations of plain water, silver nitrate solution (gr. 20-30 to the quart), creolin (4 drams to the quart), or quinine (1:5000 to 1:1000) constitute the best treatment. Pain is relieved by opium. Emetine hydrochloride, given subcutaneously or intravenously, is also recommended.

6. The following table is from Eisendrath's *Surgical Diagnosis:*

APOPLECTIC COMA.	ALCOHOLIC COMA.	OPIUM POISONING.
Deep coma; sudden onset. If any injury, only a scalp wound.	Can be aroused by supraorbital pressure unless very profound.	Can be aroused unless very deep.
Pupils unequal or dilated. Contracted in hemorrhage into the pons.	Pupils normal or somewhat dilated.	Pupils contracted to pinpoint size.
Pulse full and slow, often arteriosclerotic, high-tension pulse.	Pulse more rapid than normal, and full.	Pulse rapid, may be irregular.
Respiration slow and irregular.	Regular respiration.	Respiration very slow — may be 6 to 8 per minute.
Temperature higher on paralyzed side, but lower in rectum.	May be low or normal.	
Urine contains trace of albumin, but may be same as in uremia.	Normal.	Normal.
Hemiplegia with convulsions on one side.		

9. *In chronic parenchymatous nephritis* the *diet* is important. "An exclusive milk diet is impracticable, even harmful. The cereals, with fruits and the lighter vegetables are all permissible. Meats in small quantity are allowable, either light or dark. The water intake must not be regulated by any hard-and-fast rule, but it should be proportioned to the freedom of diuresis. If there is marked edema, especially if it be on the increase, attempted flushing of the kidney is provocative of harm. Under these circumstances water is among the most difficult substances for the kidney to excrete. If the edema is slight or subsiding rapidly larger quantities of fluid are not only permissible but advisable. The intake of salt should be limited to the minimum, as it is pretty generally conceded that its presence in the diet aids the development of edema." (Williamson's *Practice of Medicine.*)

10. *Locomotor ataxia* is a disease of the spinal cord, characterized by loss of coordination, characteristic and unsteady gait, a tendency to stagger when standing up with the feet together and the eyes closed, sharp and paroxysmal pains called *crises*, girdle sensation, Argyll-Robertson pupils, and loss of knee-jerk and other reflexes. In locomotor ataxia the posterior columns of the spinal cord and the posterior nerve roots are involved. The process is destructive and progressive; it is not a simple wasting, although the nerve fibers are atrophied, but it is characterized by irritation, changes in the axis cylinders, overgrowth of the connective tissue, and sometimes congestion. The spinal ganglia may also be affected and the membranes over the affected parts are adherent and opaque.

In the *pre-ataxic stage*, there may be found: Lightning pains, girdle pains, paresthesia, loss of knee-jerk, Argyll-Robertson pupil, ptosis, and optic atrophy. In the *ataxic stage*, there will be found: Incoordination, the ataxic gait, flaccidity of the muscles, loss of muscle sense, various visceral crises, perforating ulcer of foot, brittleness of bones, and Charcot's disease.

GYNECOLOGY.

1. *Pregnancy at four months:* The tumor is hard and does not fluctuate, and is situated in the median line; the cervix is soft, and some of the other signs of pregnancy are present. The rate of growth of the tumor, and the general condition of the patient's health may also help in arriving at a diagnosis.

Uterine fibroid: Menstruation is irregular and sometimes very profuse; absence of the signs of pregnancy; the tumor is nodular, firm, irregular in outline, and while generally placed somewhat centrally is not in the median line, and is not symmetrical; the rate of growth is irregular, being, as a rule, slow, and sometimes extending over years.

Ovarian cyst: Absence of the chief signs of pregnancy; there may be the characteristic facies, the tumor is soft, fluctuating, is more to one side, and does not show fetal signs.

2. ACUTE CYSTITIS. *Symptoms.*—Frequent urination with tenesmus and a burning sensation in the urethra later on pain in the bladder; the urine may be alkaline and turbid, and may contain blood, mucus, bacteria pus, and epithelial cells. Chills, rapid pulse, fever, and headache may also be present.

Treatment includes: Rest in bed; administration of plenty of cold water or milk, diuretics, bland and mild

foods, laxatives, hot sitz baths or vaginal douches, irrigation of the bladder with antiseptic solution followed by solution of nitrate of silver.

3. *Methods of replacing a retroverted or retroflexed uterus when movable* are: The bimanual method, with the patient in the dorsal position; replacement with the patient in the knee-chest position; (the uterus may then be kept in position by means of a pessary). Ventral suspension, and shortening of the round ligaments are the usual operative methods.

4. *Acute parametritis* is a pelvic cellulitis, consisting of inflammation of the connective tissue between the folds of the broad ligament. *Treatment:* "In the acute stages the patient is confined to bed, the bowels kept regular by means of saline purgatives, and warm vaginal douches should be frequently administered by a careful nurse. Glycerin tampons help to relieve the pelvic congestion. When there is much abdominal pain, warm fomentations to the hypogastrium give great relief. When suppuration occurs and the pus can be localized, an incision should be made into it and the abscess drained. It is preferable to evacuate a pelvic abscess through the belly-wall rather than by an incision into the vagina. Should the abscess burst into the vagina, the aperture of communication is apt to close, and defective drainage leads to re-accumulation of pus; under these circumstances, it is advisable to dilate the opening to insure drainage. When the abscess is due to suppuration of a gestation sac the sinus should be enlarged, and all fragments of bone and other fetal tissues removed. The patient's strength must be supported by nutritious and easily digestible food; quinine and iron preparations are useful, and health is finally restored by change of air."—(Sutton and Giles' *Diseases of Women.*)

5. *Varieties of uterine fibroid:* Fibroids may be situated entirely within the muscular wall of the uterus, when they are known as *interstitial* or *intramural;* they may bulge inwardly into the uterine cavity, when they are known as *submucous;* or they may bulge outwardly beneath the peritoneum, when they are known as *subserous* or *subperitoneal.*

6. *Physiology of menstruation:* "The endometrium, in the four or five days preceding the flow, becomes rapidly thicker and its superficial layers are congested with blood and, in places, small collections of blood may be noticed. Opinions differ very much as to the change undergone by this thickened membrane during the flow. According to some authors, most of the membrane is thrown off and the blood escapes from the denuded surface mixed with pieces of the membrane. According to others, no material destruction of the membrane occurs, the blood that escapes being due to small capillary extravasations or perhaps mainly to a process of diapedesis. It would seem that the amount of destruction of the endometrium must be subject to individual variations. After the cessation of the flow the mucous membrane is rapidly repaired by regenerative changes in the tissues; the surface epithelium, if denuded, is replaced by proliferation of the cells lining the uterine glands and the thickened, edematous condition of the membrane rapidly subsides during a period of six or seven days. The mucous membrane of the uterus may be said to exhibit a constantly recurring menstrual cycle which falls into four periods: (1) Period of growth in the few (five) days preceding menstruation, characterized by a rapid increase in the stroma, blood vessels, epithelium, etc., of the membrane. (2) The menstruation or period of degeneration (four days) during which the capillary hemorrhage takes place and the epithelium suffers degenerative changes and is cast off more or less. (3) The period of regeneration (seven days) during which the mucous membrane returns to normal size. (4) The period of rest (twelve days) during which the endometrium remains in a quiescent condition."—(Howell's *Text-book of Physiology.*)

7. By vaginal examination we can determine the following changes of the cervix uteri: Variations in its position, shape, size, or consistency; lacerations, erosions, ulcerations, discharges, and tumors.

8. A *mass in the right lower abdomen* may be: Appendicitis, fecal impaction, intussusception, floating kidney, pyosalpinx, ovarian tumor or abscess or cyst, hematoma or hematocele, inguinal hernia, fibroid tumor.

9. *Symptoms of tubal pregnancy* are the signs of early pregnancy, hypogastric or inguinal pains, probable history of a previous sterility, probable expulsion of decidual membrane or shreds, softening of the cervix, slight enlargement of the uterus, presence of a distended tube, contractions of the wall of the gestation sac; if rupture occurs, there will be sudden, excruciating pains over the lower abdomen and on the affected side, shock, collapse, and symptoms of internal hemorrhage.

10. The *following symptoms may follow retroversion of the uterus:* Backache, bearing-down pains, a feeling of pressure in the pelvis, constipation, hemorrhoids, frequent or painful urination, leucorrhea, menstrual disturbances, as dysmenorrhea or menorrhagia, sterility; there may also be *general symptoms,* as headache, indigestion, nausea, anorexia, neurasthenia, and general malaise.

SURGERY

1. *Ligation of external carotid artery:* "An incision is made about three inches in length, along the anterior border of the sternomastoid, or slightly in front of this border, from the level of the middle of the thyroid cartilage to near the angle of the jaw. Incise skin, superficial fascia, and platysma. Tie any veins which may lie in the line of incision. Divide the deep fascia and expose the anterior border of the sternomastoid and draw it outward. Find the posterior belly of the digastric at the upper angle of the wound. Next, locate the hypoglossal nerve crossing the external carotid below the origin of the occipital artery. Locate the tip of the great cornu of the hyoid bone, opposite which the lingual artery arises. Having fixed the location of these three structures, and avoiding the superior thyroid, facial, and lingual veins; expose the artery opposite the tip of the great cornu of the hyoid. Clear the sheath and pass the ligature between the superior thyroid and lingual branches—guarding the descendens hypoglossi nerve in front, and the superior laryngeal nerve passing behind the artery—directing the needle from the internal carotid."—(Bickham's *Operative Surgery.*)

2. *Symptoms of adenoids:* Mouth-breathing; snoring; open mouth; a vacant, dull expression of the face; modification of the voice (nasal twang), with inability to pronounce certain letters. The nasopharynx is more or less filled up by a mass of lymphoid tissue, which can be felt by the examining finger and seen by posterior rhinoscopy. The patient is very susceptible to nasal catarrh, deafness, and obstruction of the Eustachian tube. *Treatment* consists in thorough removal of the growths by a curette, under a general anesthetic. The child must be taught to breathe through his nose.

3. *Glaucoma* is a diseased condition of the eye, produced by increased intraocular pressure, and resulting in excavation and atrophy of the optic disc, and blindness. It is due to increase of the contents of the eye, hypersecretion, retention, old age, gout, rheumatism, nephritis. *Symptoms:* Visual disturbances, increased ocular tension, hazy and anesthetic cornea, sluggish and dilated pupil, shallow anterior chamber, ciliary neuralgia, cupping of optic disc, blindness.

4. The *chief complications of gonorrhea in the male* may be: Cystitis, epididymitis, prostatitis, vesiculitis, periurethritis, bubo, retention of urine, stricture, gonorrheal rheumatism, and arthritis.

5. *Hypothyroidism* is the name given to the symptom complex found when the thyroid gland is absent, degenerated, atrophied, or is functionally deficient. There is arrested growth, dry and swollen skin, pale and puffy face, swollen abdomen, hair thin and with a tendency to fall out, weak muscles, the nervous system seems undeveloped, mental dullness, lowered body temperature, diminished sexual activity, lower sensibility, and accumulation of adipose tissue.

Hyperthyroidism is due to an increase of thyroid secretion; there will be noticed lowered blood pressure, rapid pulse, excessive perspiration, nervous excitability, digestive disturbances, loss of fat, and in extreme cases exophthalmus, dilatation of pupils, sleeplessness, and tremors.

6. FRACTURE OF BASE OF THE SKULL. The *Signs* are those of (1) injury to the brain, (2) escape of cranial contents, (3) injury of cranial nerves. (1) *Injury to*

the brain may be of the nature of concussion, compression, or laceration. (2) *Escape of cranial contents*, which may be blood, cerebrospinal fluid, or rarely brain itself. (1) *Hemorrhage* manifests itself in various situations, according to the position of the fracture. In the *anterior fossa* the bleeding may be from the nose or into the orbit, or may pass back into the pharynx, be swallowed, and subsequently vomited. The eye may be pushed forward and pulsate if the cavernous sinus be ruptured. In the *middle fossa* blood usually runs from the ears; but slight bleeding from the ear may be caused by minor injuries, such as rupture of the membrana tympani, tearing of the lining of the auditory canal, and fracture of the tympanic bone. In the *posterior fossa* a hematoma may form behind the mastoid process. (2) The escape of *cerebrospinal fluids* is a certain sign that a fracture communicates with the subdural space. It may appear in the same situations as hemorrhage, but is usually found escaping from the ear owing to fracture of the petrous bone. The fluid is limpid, specific gravity 1005, with no albumin, but containing pyrocatechin, which gives the same reaction as sugar with Fehling's solution. The amount which escapes may be small or very large, but as a rule it soon ceases. (3) *Injuries to the cranial nerves* vary according to the site of fracture. That most commonly involved is the facial, in the aqueductus Fallopii, and the paralysis may come on immediately from rupture, or after two or three weeks from the pressure of callus. —(From *Aids to Surgery.*)

7. *Pott's fracture* is very common, and is due to indirect violence, such as turning over on the inside of the foot. The strain tears through the internal lateral ligament of the ankle or tears off the tip of the malleolus; then the astragalus is pressed against the inner side of the external malleolus by the continuation of the violence. The fibula is overbent, and breaks about three inches above the tip of the malleolus. At the same time the foot is displaced outward or outward and backward. In many cases, however, the displacement is slight.

Treatment: "An anesthetic should always be given, and the fracture reduced by relaxing the calf muscles and applying traction to the foot. The limb must then be fixed on the back-splint, with side-splints in addition. The foot must he at right angles to the leg, the bony points in line, and the posterior displacement corrected. The surest way of maintaining the foot in good position is to at once apply plaster of Paris. Other splints used are Dupuytren's and Syme's horseshoe splint. Massage and passive movement at the end of ten days are advisable, the fragments being firmly grasped to prevent displacement."—(*Aids to Surgery.*)

8. *Carbuncle* is a localized inflammation of the subcutaneous tissue, which has gone on to sloughing. Staphylococci are the exciting cause; diabetes, albuminuria, infective fevers, and lowered vitality are the predisposing causes.

The disease begins as an infiltration of a patch of subcutaneous tissue, which is hard, painful, and tender, and the skin over it red and hot. The infiltration may extend till it is the size of a dinner-plate, and the inflammation ends in sloughing and suppuration, not only of the subcutaneous tissues, but of small areas of the skin over it, so that openings develop in the skin, and allow of the exit of pus and sloughs. The openings extend, the sloughs separate, and the wound heals by granulation. The back is a common situation. Sometimes the face is affected, and there is then a danger of thrombosis extending to the cavernous sinus and producing pyemia.

Treatment: Anesthetize, scrape away the slough, treat the surface with pure phenol, dress with antiseptic gauze, and give the patient good food and tonics.

9. *Osteomyelitis* is inflammation of the bone and marrow; the term is often used now for inflammation of bone. It is characterized by: Sudden onset; pain, tenderness, fever, chills, swelling of soft parts; sometimes the joint can be moved gently without pain; septicemia or pyemia may be present

It is to be *diagnosed* from (1) *Rheumatism*, in which more than one joint is affected and the tenderness is *in* the joint, and not *near* it. (2) *Tuberculous arthritis*, in which the onset is slow and the trouble starts in the epiphysis rather than in the diaphysis. (3) *Cellulitis*, in which the bone and periosteum are not affected, and in which there is always a wound.

In *osteomyelitis*, the *treatment* consists in relieving the constitutional symptoms and preventing the bone from necrosing. An incision down to the bone is made; if pus is beneath the periosteum, the latter is also incised; a piece of bone is removed by chisel or trephine, pus is removed, the endosteum is hurt as little as possible, the wound is irrigated with hot bichloride solution and packed with gauze; the soft parts are closed and the wound well drained. In case this fails, amputation may be necessary.

10. The following table is from Eisendrath's *Surgical Diagnosis:*

APOPLECTIC COMA.	ALCOHOLIC COMA.	OPIUM POISONING.
Deep coma; sudden onset. If any injury, only a scalp wound.	Can be aroused by supraorbital pressure unless very profound.	Can be aroused unless very deep.
Pupils unequal or dilated. Contracted in hemorrhage into the pons.	Pupils normal or somewhat dilated.	Pupils contracted to pinpoint size.
Pulse full and slow, ofter arterioscleotic high - tension pulse.	Pulse more rapid than normal, and full.	Pulse rapid, may be irregular.
Respiration slow and irregular.	Regular respiration.	Respiration very slow—may be 6 to 8 per minute.
Temperature higher on paralyzed side, but lower in rectum.	May be low or normal.	
Urine contains trace of albumin, but may be same as in uremia.	Normal.	Normal.
Hemiplegia with convulsions on one side.		

MATERIA MEDICA.

1. *Action of chloral:* It is a hypnotic and antiseptic; it is a depressant of both the cardiac and respiratory systems; it lowers the blood pressure and the body temperature.

2. *Symptoms of poisoning by atropine:* "In the first stage, that of delirium, there are dryness of the throat, thirst, difficulty of deglutition and spasms upon swallowing liquids, face at first pale, afterward highly reddened, pulse extremely rapid, eyes prominent, brilliant, with widely-dilated pupils, complete paralysis of accommodation, disturbances of vision, attacks of giddiness and vertigo, with severe headache, followed by delirium, occasionally silent or muttering, but usually violent, noisy, and destructive, accompanied by the most fantastic delusions and hallucinations. Usually the urine is retained, and the body temperature is above the normal. The delirium gradually subsides, and the second stage, that of coma, is established, with slow, stertorous respiration, and gradually failing pulse, until death occurs from respiratory or cardiac paralysis, or sometimes in an attack of syncope during apparent amelioration."

Treatment: Lavage of the stomach; morphine may be given cautiously during the period of violent excitement. Maintain respiration; strong coffee by the mouth or rectum is beneficial. Pilocarpine may be given, in not too large doses, to stimulate the secretion of saliva."—(From Witthaus's *Essentials of Chemistry.*)

3. *Amyl nitrite* is a clear, yellowish liquid, containing about 80 per cent. of amyl nitrite $C_5H_{11}NO_2$; it has a peculiar fruity odor, and an aromatic and pungent taste. It is *used* to relieve high arterial tension, and to dilate the blood vessels; it is chiefly employed in cases of angina pectoris and cardiac dyspnea.

4. *Three emetics:* Apomorphine hydrochloride, dose 1/12 grain (to be given hypodermically); copper sulphate, dose 4 grains; zinc sulphate, dose 15 grains.

5. *Prescription for a diuretic mixture:*

℞.

Potassii acetatis.
Potassii bicarbonatis.
Potassii citratis āā ʒjss.
Aquæ q.s. ad ʒvj. M.

Sig.—One tablespoonful t.i.d.

6. *Emetine* is an alkaloid found in ipecac. It is used as an expectorant, emetic, and diaphoretic. The dose of emetine hydrochloride is 1/3 grain.

7. *Eserine* is an alkaloid obtained from physostigma. The dose of eserine salicylate is 1/60 grain.

8. *Urotropin,* when taken, is decomposed in the body, and formaldehyde is liberated and eliminated in the urine; hence it is used as a urinary (and intestinal) antiseptic.

9. *Dover's powder,* dose 8 grains; *pulv. jalapæ co.,* dose 30 grains; *elaterin,* dose 1/20 grain; *apomorphine,* dose of the hydrochloride 1/20 grain as an expectorant, 1/6 grain as an emetic (by mouth), and 1/12 grain as an emetic (hypodermic); *strychnine,* dose 1/40 grain.

10. In case of *carbolic acid poisoning,* sodium sulphate or magnesium sulphate should be given in water; alcohol is also of service; warm mucilaginous drinks, warmth to the body, emetics, and cardiac and respiratory stimulants are all indicated.

OBSTETRICS.

1. *Signs of pregnancy as determined by touch:*

(*a*) *Ballottement* is the passive movement of the fetus *in utero,* obtained by tapping the lower segment of the uterus with the index finger.

(*b*) *Hegar's sign* consists in a thinning and softening of a segment of the body of the uterus immediately above its cervix.

(*c*) *Braxton Hicks' sign* consists of intermittent contractions of the uterus at about the fourth month of pregnancy.

(*d*) *Rasch's sign* is fluctuation felt when the hand is applied to the cervix of the uterus in early pregnancy, due to the presence of liquor amnii.

(*e*) Active movements of the fetus, which can be felt by the physician's hand placed over the abdomen of the mother.

2. The *second stage of labor* is that part of labor which begins with the complete dilatation of the os uteri and ends with the birth of the child.

DELAYED LABOR. *Causes:* Obstruction, uterine inertia, uterine exhaustion.

Management: The case should be treated early; causes should be removed when possible; a warm vaginal douche, and the administration of morphine, chloral, or quinine have been recommended; delivery by forceps may be necessary.

3. *Albuminuria with no uremic manifestations:* "The urine should be examined every month in the first six months of every pregnancy, no matter how normal it may seem, and every fortnight in the last three months. If albumin is present, the amount should be estimated in an Esbach tube, and the urea in a Doremus ureometer. The total quantity of urine per diem should also be ascertained. The principles of treatment are to relieve the kidneys by free elimination by the bowels and skin, and by diminishing the nitrogenous part of the dietary; and at the same time to prevent any further interference with the renal functions by guarding against cold. In mild cases where the albuminuria is the sole symptom, the patient should be warned to rest and guard against cold. The diet should be restricted to milk food, with bread and butter, and a little fish or chicken once a day, and the bowels should be made to act freely once every day.—(Johnstone's *Textbook of Midwifery.*)

4. DRUGS USED IN LABOR. Bichloride of mercury, lysol, phenol, creolin, etc., are *indicated* as antiseptics for the vulva, and hands of physician and nurse. Boric acid and silver nitrate are *indicated* for use in the infant's eyes, to prevent ophthalmia. Quinine and strychnine are *indicated* in primary and secondary uterine inertia, but are contraindicated in eclampsia. Morphine is *indicated* early in labor in case of weak and inefficient pains and rigid os; if given later there is danger of fetal asphyxia. Chloral is *indicated* as quinine, strychnine and morphine. Veratrum viride is *indicated* in eclampsia and vascular hypertension; it is *contraindicated* in cases with slow and soft pulse. Chloroform and ether are *indicated* in the latter part of the second stage of labor to alleviate the suffering, and also in all obstetrical operations; chloroform is *contraindicated* in cases of very rapid fetal heart, and where the mother has cardiac disease; ether is *contraindicated* in cases of bronchiectasis, tuberculosis and eclampsia. Ergot is *indicated* in postpartum hemorrhage; it is given during the third stage to ensure good contractions of the uterus; it should *not be given* before the third stage of labor. Pituitrin is given for postpartum hemorrhage, secondary inertia, and induction of premature labor; it is *contraindicated* if the os is undilated, and must be used cautiously if the soft parts are not prepared for immediate delivery.

5. *Indications for the use of forceps* are: (1) *Forces at fault:* Inertia uteri in the presence of conditions lkely to jeopardize the interests of mother or child. (*a*) Impending exhaustion; (*b*) arrest of head, from feeble pains. (2) *Passages at fault:* Moderate narrowing, 3¼ to 3¾ inches, true conjugate; moderate obstruction in the soft parts. (3) *Passenger at fault:* A. Dystocia due to (*a*) occipito-posterior, (*b*) mento-anterior face, (*c*) breech arrested in cavity. B. Evidence of fetal exhaustion (pulse above 160 or below 100 per minute). (4) *Accidental complications:* Hemorrhage; prolapsed funis; eclampsia. All acute or chronic diseases or complications in which immediate delivery is required in the interest of mother or child, or both (Jewett).

Conditions necessary for the use of forceps are: (1) The rectum and bladder must be empty; (2) the os uteri must be fully dilated; (3) the membranes must be ruptured; (4) the pelvis must be of sufficient size.

6. The *planes of the pelvis* are imaginary levels taken at any place through the pelvic cavity. The most important of these are the plane of the inlet and the plane of the outlet. A knowledge of the size or diameters of these planes is of value in understanding the mechanism of labor. The *axes of the pelvis* are imaginary lines drawn through the centers of these various planes, and at right angles to their surface. The axes of a great number of these planes would form a sort of circular curve, which represents the course of the fetus through the pelvis during labor.

7. *In a transverse presentation, when the membranes have been ruptured,* "the treatment will vary according to the degree of dilatation of the cervix, the condition of the patient, as well as that of the fetus and uterus. If the cervix is only partially dilated, while the child is alive and freely movable in the uterus, bipolar version may be attempted. After a foot has been brought down the cervix should be allowed to dilate still further before extraction is completed. On the other hand, if the condition is complicated by prolapse of the pulsating cord, the cervix should be dilated manually, and the child rapidly extracted after internal podalic version. Whenever the cervix is fully dilated, internal podalic version should be performed at once, and followed by immediate extraction, provided the uterus is not so tightly contracted down over the child and the lower uterine segment so thinned out that such a procedure appears synonymous with rupture. Even in such cases anesthesia sometimes so relaxes the organ that version may be safely effected, although at first glance it had appeared to be out of the question."—(Williams' *Obstetrics.*)

8. In contracted pelves, with a true conjugate of 7 centimeters or less spontaneous delivery is not to be expected.

9. PRECIPITATE LABOR. *Causes:* Unusually large pelvis, small fetus, excessive force and frequency of the pains, excessive laxity or deficient resistance of the pelvic outlet. *Dangers:* Lacerations, premature detachment of placenta, rupture of the umbilical cord, postpartum hemorrhage, shock, asphyxiation of the fetus. *Treatment:* In cases where precipitate labor is considered a possibility, the patient should be kept indoors for the last week of pregnancy, and should previously have been forbidden violent exercise. She should be put to bed on the first indication of a labor pain, and she should be instructed not to bear down with the

pains; an anesthetic should be administered to diminish the violence of the pains. The nurse should exert pressure (with a sterile towel) against the pelvic floor.

10. *Manner of using forceps:* "They should not be used when the os is undilated, when the head is not engaged, except in placenta prævia, when the membranes are unruptured, when the disproportion between the child's head and the parturient canal is too great, or in impossible positions and presentations. Before applying the instruments they should be sterilized, preferably by boiling; and the patient anesthetized and placed in the lithotomy position. Two fingers of the right hand are introduced into the vagina; the left blade of the forceps is then held almost perpendicularly by the left hand, with the tip of the blade opposite the vulva; the tip is introduced into the vagina, passed along the floor toward the sacrum. The blade is rotated outward in its long axis in order to escape the promontory of the sacrum. The right blade is introduced in a similar manner. To facilitate locking, one of the blades must be rotated forward. If the head occupies the right oblique diameter, as in L. O. A. and R. O. P. positions, the right blade must be rotated; if it occupies the left oblique diameter, the left blade must be rotated. Traction is made in the direction of the pelvic axis until the perineum is well distended. The perineum is then protected by one hand, while the face is swept over it by an upward movement of the forceps. In posterior positions it is necessary to remove the instruments after the head is drawn down to the pelvic floor; after anterior rotation is secured they may be reapplied. If the occiput rotates into the hollow of the sacrum the hands should be depressed as the face is swept out under the symphysis pubis."—(*Pocket Cyclopedia.*)

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†	
Alabama*	W. H. Sanders, Montgomery	Montgomery	
Arizona*	J. W. Thomas, Phoenix	Phoenix	
Arkansas	T. J. Stout, Brinkley	Little Rock	
California	C. B. Pinkham, Sacramento	Sacrameoto	Jan. 8
Colorado	David A. Strickler, Empire Building, Denver	Denver	Jan. 1
Connecticut*	Chas. A. Tuttle, New Haven	New Haven	Mar. 12
Delaware	J. H. Wilson, Dover	Dover	Dec.
Dist. of Col'ba.	E. P. Copeland, Washington	Washington	Jan. 8
Florida*	W. M. Rowlett. Tampa	Jacksonville	Dec. 4
Georgia	C. T. Nolan, Marietta	Atlanta / Augusta	May 30
Idaho*	Charles A. Dettman, Burke	Pocatello	April 2
Illinois	F. C. Dodds, Springfield	Chicago	
Indiana	W. T. Gott, Crawfordsville	Indianapolis	Jan. 8
Iowa	G. H. Sumner, Des Moines	Des Moines	
Kansas	H. A. Dykes, Lebanon	Topeka	Feb. 12
Kentucky	J. N. McCormack, Bowling Green	Louisville	
Louisiana	E. L. Leckert, New Orleans	New Orleans	Dec. 6
Maine	F. W. Scarle, Portland	Portland	Mar. 12
Maryland	J. McP. Scott, Hagerstown	Baltimore	Dec. 11
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston	Mar. 21
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Ann Arbor	June 11
Minnesota	T. McDavitt, St. Paul	Minneapolis	Jan. 2
Mississippi	J. D. Gilleylen, Jackson	Jackson	
Missouri	G. H. Jones, Jefferson City	St. Louis	Dec. 17
Montana*	S. A. Cooney, Helena	Helena	
Nebraska	J. J. Hompes, Lincoln	Lincoln	
Nevada	S. L. Lee, Carson City	Carson City	May 6
N. Hampshire	Walter T. Crosby, Manchester	Concord	Dec. 10
New Jersey	A. MacAlister, Trenton	Trenton	June 18
New Mexico	R. K. McClanahan, East Las Vegas	Santa Fe	
New York	H. H. Horner, Univ. of State of New York, Albany	New York / Albany / Syracuse / Buffalo	Jan. 29
N. Carolina	H. A. Royster, Raleigh	Raleigh	June
N. Dakota	G. M. Williamson, Grand Forks	Grand Forks	Jan. 1
Ohio	, Columbus	Columbus	Dec. 4
Oklahoma	R. V. Smith, Tulsa	Oklahoma City	Jan. 8
Oregon	B. E. Miller, Portland	Portland	Jan. 7
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia	Jan.
Rhode Island	B. U. Richards, Pawtucket	Providence	Jan. 3
S. Carolina	H. E. Boozer, Columbia	Columbia	
S. Dakota	P. B. Jenkins, Waubay	Pierre	Jan. 8
Tennessee	A. B. DeLoach, Memphis	Memphis / Nashville / Knoxville	June
Texas	M. F. Bettencourt, Mart	Austin	
Utah	G. F. Harding, Salt Lake City	Salt Lake City	
Vermont	W. Scott Nay, Underhill	Burlington	Feb. 12
Virginia	J. W. Preston, Roanoke	Richmond	Dec. 11
Washington*	C. N. Suttner, Walla Walla	Spokane	Jan. 1
W. Virginia	S. L. Jepson, Charleston	Clarksburg	
Wisconsin	J. M. Dodd, Ashland	Madison	Jan. 14
Wyoming	H. E. McCollum, Laramie	Laramie	

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary for all the details regarding the examination in any particular State

Therapeutic Hints.

A Substitute Dressing.—Sterilized newspapers are being used in the dressing of clean wounds and have given great satisfaction, causing no irritation or disturbance whatsoever. Newspaper, however, was not found to be sufficiently absorbent for suppurating wounds. It can be used as padding under plaster, and paper bandages can readily replace the ordinary bandages, as they are pliable and strong. Paper such as is used in the making of towels, tablecloths, toilet paper, etc., can be applied to clean wounds with good results.—*Journal of the American Medical Association.*

Psoriasis.—In the treatment of this condition, Sutton advises as a preliminary measure the removal of superfluous scales by means of soft soap and warm water rendered alkaline by the addition of carbonate of soda or borax and applied with a stiff brush. This is to be followed by the application night and morning of the ointment of official ammoniated mercury alone, or with the addition of from 2 to 5 per cent. of salicylic acid. This may be alternated with an ointment compounded according to the following prescription:

℞ Tinct. picis carbonis compositæ (Duhring) ..... ʒj (4.0)
Amyli pulveris ..... ʒv (20.0)
Zinci oxidi ..... ʒv (20.0)
Calaminæ ..... ʒv (20.0)
Glycerini ..... ʒiiss (10.0)
Aquæ ..... q.s. ad. ʒ vj (180)

Ointments are best applied with a stiff brush such as an old toothbrush.

Arthritis Deformans.—Scott advises regulation of the diet and hygiene with constant watchfulness as to improvement of general health. Before serious structural changes have occurred, cod-liver oil should be massaged into the affected joints and this should be combined with the internal administration of effervescing lithium citrate in doses of one drachm three times daily, together with the following tonic:

℞ Mass. ferri carbonat. ..... gr. v (0.30)
Liquor. potass. arsenit. ..... ♏ v (0.3)
Vini xerici ..... f ʒ j. (4.0)
Aquæ destill. ..... f ʒ j. (4.0)

M. Sig.—After meals, well diluted.

Also the internal administration of guaiacol carbonate, gr. v to x (0.3 to 0.6 gm.) three times daily, together with painting of the joints, when painful, with the following:

℞ Guaiacol ..... 1 part.
Tinct. iodi ..... 6 parts.

M. Sig.—Paint over joints twice daily.—*Hughes' Practice of Medicine.*

Acne.—Stelwagon employs the following for internal administration in this troublesome condition:

℞ Sodii benzoat ..... ʒss to ij. 2 to 8 gm.
Tinct. nucis vomicæ ..... f ʒij 8 cc.
Fluidextract. cascaræ ..... f ʒij to iv. 8 to 16 c.c.
Tinct. cardamom. comp. ..... q.s. ad. f ʒiij 90 c.c.

M. et Sig.—Teaspoonful dissolved in water three times a day after meals.—*Hughes' Practice of Medicine.*

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PROBING THE MIND

NORMAL AND ABNORMAL.

FIRST REPORT.

FEELING, ASSOCIATION, AND THE PSYCHOREFLEX.

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BY mind we mean the psychical phenomena consequent upon cortical activity, the interaffection and modification of this, and the retraceable record of it stored in the brain. The study of these phenomena, when normal, we term psychology.

At first thought, it would appear as if the examination of abnormal mind would entail the same usual subjective method of observing function, and that this should be adequate in discovering and estimating the divergences from the normal. However, this is not the case, pathology having led us to consider and investigate not only the function—that is, disfunction—but its physiological antecedents, metabolic, chemical, etc., and many side effects and issues besides; and finally, or let us say before all else, the structure of the brain as well.

Physiology.—Hence we keep in mind the anatomical brain, both gross and microscopic, and, not being able to examine it *in vivo*, infer from the anamnesis and clinical abnormalities present whether real substance injury has occurred.[1] We then consider its cellular activity, *i.e.* its physiology, its metabolism: besides the cell assimilation and catabolism (which allows of no direct inspection) there is the blood flow to and from the cells, bearing nourishment and excretion, endocrine substances (which may be food, specialized stimulant, or anti-autotoxic, but at all events a necessity), and at times endogenous or exogenous chemicals, toxins and ptomaines, etc. (from food, drugs, beverages, intestinal, fatigue and disease products),[2] defensive ferments, antibodies, and finally, secretions elaborated in the brain cells themselves (an internal secretion?), cholesterin, etc.

Psychophysics.—Still another cellular activity is postulated, and this actually essential for our comprehension of mind, namely, a biomolecular activity producing *energy* and accumulating it to tension, with subsequent discharge on sufficient stimulation. The discharge produces *electrochemical changes* which, when intense enough, give us our subjective phenomenon (consciousness), and are in some way accountable for the "neural" or "neuropsychic flow," that something sparking through the nerves, coursing from the periphery and end-organs to the cortex and efferently out again into the muscles. This, too, is the psychodynamic force in the brain affecting the *associations*, and thus combination and the continuity of thought.[3]

Concomitant with this accumulation, tension, and discharge of energy, or rather dependent upon it, are our feelings of well-being, fatigue, and exhaustion.

But for our feeling components themselves, and the finer shadings of feelings which make up our moods, Ziehen ("Physiol. Psycholog. d. Gefühle und Affekte," Sonderabdruck, Leipsig, 1903, pub. by F. C. W. Vogel) offers the theory that they are due to, are identical with, not the discharge, but the explosibility or readiness to discharge (*Entladungsbereitschaft*) of the cortical cells. A perception or a memory is due to a change in the cells (let us say a chemical change). The readiness with which such change occurs may vary; that is, the ability, the disposition to propagate such excitation (the chemical change) out of the cells and along the nerves may be greater or less. A greater readiness to discharge corresponds to positive, a lesser to negative feeling processes. But what determines the explosibility is not known.

The energizing activity is far greater in some cells (cortex, centers), less so in others. Possibly consciousness and awareness are awakened when its potence is high; none where it is low. Or, it may be that the phenomenon of consciousness is developable in specialized cortical cells only.

Its engendering source are stimulations from without, stimuli to the periphery no doubt detonating stored-up tension in the receptive cells of the end-organs and starting electrochemical changes (the neural flow) afferently to the cortex. Here it is received (perceived) and, after psychical elaboration, reinforced through added cortical energy and discharged efferently, to terminate in expression, motor setting, action, or deed.[4]

It is in connection with this *psychical elaboration* that the tangles and pathologies of mind occur, and this, therefore, the field of phenomena with which our probing is so immediately concerned. The facts to be considered are perception, memory, tonal feeling, and the association of ideas, the mind through this operation transmuting the entire sensory income into dynamic force or discharge.

The Mental Process.—The process may be described briefly as follows: While the peripheral stimulation continues (whether to ears, eyes, nose, tongue, skin), the cells in the cortex that are activated are conscious and we perceive (*i.e.* per-

ception); directly the stimulation ceases, the conscious phenomenon ceases (perception is at an end). But something has happened in the ganglion cells thus excited, a trace of something has been left behind, a deposit or "residuum" formed, which thereafter remains in the cell, dormant and *revivable*. This "residuum" is memory, and when re-excited we consciously recall—we remember.

It is assumed with probability (Ziehen) that the cells which are activated in perceiving are separate and distinct from those cell complexes which, after the perception, retain the memory images (the concepts, ideas), and that these latter cell groups form the association fields or areas (Flechsig) in which ideation proper—*i.e.*, association of ideas—takes place, and whence the impulse is finally sent into the motor cortical area, if such impulse is to be sent (as in acting or doing, etc.). The excitation must extend from the perceiving cells to the association field before recognition occurs. One does not recognize merely by perceiving. If the fibers between the former and the latter cells are destroyed, or the latter cells themselves, then we perceive but do not recognize, do not remember (*i.e.* aphasia). The association fields need not be thought of as localized in one definite spot. Possibly cell groups in various localities of the cortex are brought into play for this purpose.

Associated in some way with the process of perceiving is a feeling, agreeable or disagreeable, of pleasure or displeasure, positive or negative. We speak of it in psychology as *positive* and *negative tonal feeling*. But not only are we affected positively or negatively while we perceive, but the memory of this tonal feeling is retained in the cortical cells—awaking with the memory to which it belongs whenever the latter is reactivated. We have, then, the memory of a thing (concept, idea) and the memory of the tonal feeling connected with it.

Tonal Feeling.—Possibly the tonal feeling is a part-deposit of the memory "residuum." Possibly, however, the memory of the thing (idea) and its tonal feeling may be stored in two different *layers* or sets of cells. The latter fact seems tenable inasmuch as the tonal feeling is occasionally brought to mind alone, or before the memory to which it belongs is recalled. Thus it sometimes happens that we pass some one whom we recognize and who affects us with a peculiar tone, let us say an agreeable feeling, and whom we nevertheless cannot for the moment place. Only later does the connection dawn upon us. So perfumes frequently are agreeably "reminiscent" an appreciable time before the person or place with which they are associated comes to mind. That tonal feelings may become entirely disconnected from the memory-content to which they belong, get lost, as it were, or last on (well into life) after the content has passed into oblivion, is more than probable. Many of our strange feelings, intimations, and "vague reminiscences" are possibly due to this.[6]

The tonal feeling may also be *reflected* to other associated concepts, or be *irradiated* to events which follow. As examples of the first, we may be disagreeably affected by the very name of a town because something disagreeable happened to us there. We now abhor the town, and its very name, too. Or we like a place and everything associated with it because some one whom we are especially fond of lives there. As examples of the second, bad news in the morning may make the whole day "glum." Or we have occasion to get angry because something goes wrong, and for hours after we flare up at everything and everybody about us, kick the dog, slam the door, fuss over the food, mutilate an unoffending cigar, and curse things generally. If the affectivity of the occasion is strong enough, the tonal feeling may be projected into all we do and experience, and for days or weeks. So the optimistic effervescence when in love and the gloom during a period of loss or failure. Or again, we dislike some one, and because of it cannot help but valuate negatively everything he does. (In this instance there is both reflection and irradiation.) The great importance of this tonal feeling as a really vital force may be judged from the fact that the majority of our perceptions and memories reflect and irradiate their feeling to associated perceptions and memories. What we term moods are the resultants of such irradiations.

We come upon strong reflected tonal feeling in yet another connection, and this, in fact, so frequently in mental pathology that it must always be thought of. For instance, a man has an intense dislike, or even terror, of going into a rowboat, or any boat, or out upon any body of water. The reason for this does not lie in the boat or water itself, nor in the momentary state of affairs, but in a past affective happening, a shipwreck, the shock of which made a lasting impression upon the man. The momentary state, therefore, is conditioned through special *constellation*—namely, the shipwreck.

It is quite possible that one may be strongly affected, positively or negatively, through constellations the incidental facts of which need not even be thought of at the time; occasionally even be entirely forgotten.

When an individual's momentary state (opinion, feeling, point of view, etc.) is strongly surcharged through some former *affective* happening or series of happenings, we say he has a "complex." Here, too, the tonal feeling is conditioned through special constellation.

Neither the positive nor the negative need be pronounced; often the feeling-tone is at the threshold, as it were—neither above nor below.[7] But usually, when we are concerned, anxious or interested, it has a definite potence one way or the other, and may even be remarkably strong. It is the tonal feeling that plays the deciding part in the function of will, and is likewise, and especially so if intense or pathologically accentuated, the momentum, as we shall see, in the constraining, coercing, and emotional interplay of mind.[8]

Association.—Between the ganglion cells or cell groups there are interconnecting nerve fibers. In the association of ideas several cell groups are stimulated at the same time and their linking filaments traversed by the neural or psychoneural flow. These filaments from now on prove paths of least resistance, and should a stimulation again come to one group the excitation will overflow and course down these once utilized tracts as fluid down a groove. Just touch or skirt one group, and an-

other is short-circuited into action. Smell the perfume of a rose, and, though you see nothing, "rose" is associated. Some one calls you on the phone; directly you hear the familiar voice you associate the person. You cannot, in fact, think of the voice without the association of its bearer. These, of course, are simple associations, and closely related. Take a somewhat more complicated example: The parts of a jingle or nursery rhyme have no special association until you learn it, and then it spins itself out from beginning to end. You start your phone number, and then automatically rattle it off. You get a tune, and it "sings itself" out. These are all cell or cell-group combinations, the interjoining pathways of which are well furrowed.

The brain is filled with such nerve channels along which the electrochemical charge must displode. Hence the phenomenon of an excitation with predetermined reaction, that is, ideational reaction, the ideas running off in series of *wonted* associations. There may, at times, be several possible paths of discharge. The path chosen is determined by the momentary constellation or a larger background constellation. The *association test* is founded on this. If affectivity constellates the momentary choice it may be pleasurable or displeasurable, and may be affectivity of any kind. The former Jung (Freud) theory that it is usually unconsciously sexual is erroneous, and has for the most part been discarded.

But we must distinguish two such processes—on the one hand that of ordinary thinking, *i.e.* a purposively pointed train of thought, or a similar series of associations ending in action (voluntary action), in all of which certain links may be intimately and automatically joined, but in which for the most part new combinations are essential—a breaking up of associations and recombining—necessitating varying amounts of effort and attention and a balancing or outbalancing of tonal feeling with a final summation of positives or negatives determining the action or the goal of thought—and on the other a kind of thinking that must be sundered from the above, namely, ideation that is almost wholly automatic and nearly as regular and constant as a simple reflex.

In order to make this latter clear, let us for a moment examine voluntary action and differentiate it from the ordinary reflex. In the former the afferent excitation after reaching the sensory cortical area is relayed into the association field and there modified (recombination) by past memory images (*i.e.* association of ideas, ideation, "play of motives," thinking) and finally—after a winning out of either positive or negative feelings resulting in the *to be* or *not to be* of the action (in our case the positives winning)—shunted into the motor cortical area and thence into the actual movements constituting action. Attention, effort and awareness accompany the process, and the greater the work of combination necessitated, the intenser the attention, effort and awareness. Such action, finally, is appropriate to the occasion, conformable to the object in view. Hence all such voluntary acts are individual, specific, never alike.

If in the above process you omit the first (afferent) and last (efferent) links, you have the function of thinking or reflection.

In the simple reflex act (as in being startled on hearing a sharp noise), the excitation from the sensory cortical area passes directly to the motor without traversing the association field—and thence out into muscle reaction. There is no modification through memory images, no attention, no effort; it is not determined through tonal feeling and awareness plays little or no part. Such reflex is not specific to the occasion, but general and always much the same.[9]

In the phenomenon of automatic ideation alluded to, there are elements of both these types of action. The afferent excitation is decidedly modified by past memory deposits before it is efferently discharged, therefore must pass through the association area. But the path taken is so thoroughly trodden, so well grooved, that no new avenues or bridges must be built (no work of combination), and the entire process runs off fleetly, one might even say precipitously—hence without effort, with little or no attention and an awareness that may be negligible or nil. Besides, the end result, whether thought, word or action, is always the same. It is ideation, a train of thought, but one that coursing over a least resistance route and regularly over the same, has become swift, uniform, and, for the most part, aware-less—*i.e.* reflex.

Thus are explained many of our modes of expression, our peculiarities in speech, thought and action, our crotchets, idiosyncrasies, dogmatic points of view and judgments, the theories we harp on, opinions that cannot be changed, mental tilts, dispositions, etc., and here, pathologically, one must add the "idées fixes," stereotypes, the insistence of many a delusion or abnormal or insane thought, etc., etc.

Automatic Acts.—Still another type of association occurs, between ideas and actions or series of actions; many of our acts at first learned consciously and with difficulty later lose their awareness and, once started, functionate automatically. Thus our walking, climbing stairs, dancing, skating, writing, washing, dressing, shaving, eating, swimming, playing musical instruments, using a typewriter, etc. These are the really automatic acts of the literature.[10] They may run off without any consciousness or voluntary (conscious) and automatic acts may interplay and alternate. Such sequences may be quite complicated, yet accomplished with scarcely any awareness, as the daily going to business or office, etc. Even wonted occupations are for the most part plied automatically—sweeping, tidying up a room, cooking, knitting, spinning, sewing, linotyping, dispensing drugs, etc.

We may have an *automatic* association, then, between ideas and ideas, between an idea and an act, between whole sequences of acts, the associations at one time having been consciously acquired, now running off without consciousness. They represent a great saving of central energy and expedite immeasurably the mental business. They are usually of benefit to us—but under certain conditions may be the reverse.[11]

The Conditioned- Association- or Psycho-reflex.—Far more important for us to keep in mind is still another type of association which occurs and may continue on with strong persistence. A person crossing the ocean has a stormy voyage and gets seasick. On a subsequent trip, though there is no storm, in-

timations of sickish feelings may continue to come and may be suppressed only with difficulty. More sensitive individuals may even be strongly overcome. (Thus far we are dealing with ordinary association only.) But it is quite possible for such an individual to get seasick on the mere inspecting of the ship (let us say in engaging a cabin) by the smell of oil and cabin odors, having once had his seasickness intensified by the presence of these odors.

Analyzing this last instance, we find that the ship's movement was originally the real cause of the seasickness. But a second stimulation was *acting at the same time,* namely, ship odors. This is an associated stimulation, which, though in itself not causing seasickness, subsequently, we see, is able to act precisely as the direct stimulation.

This brings up the discussion of a psychological mechanism, already fairly well known in Russian and German medical literature, but almost entirely, if not wholly, neglected in our own,[12] namely, the "conditioned" and "association reflex" or "psychoreflex" of Pawlow[13] and Bechterew.

Both reflexes depend upon the principle that if you have two (or several) stimulations *active at the same time,* one of which causes a reflex activity, the other, even if in itself incapable of producing the reflex, will, after a time, because of the temporal association, likewise be able to do so. For example: if you place food in the mouth (of animal or individual) it acts as a stimulation to the local nerves, the impulse traveling thence to the central nervous system and from here out again into the salivary glands. Thereupon saliva is secreted. This is an ordinary reflex action (termed by Pawlow "an unconditioned reflex"), occurring even in animals wanting the higher centers. Now, if (experimentally) one, let us say, rings a bell every time the animal is fed (every time the unconditioned reflex is functioning) it is found that very soon it is possible to induce salivary secretion by ringing the bell alone. In the latter case we have, according to Pawlow, a "conditioned reflex" and to attain it the higher centers are necessary.

As an everyday instance we may take the phenomenon of "making the mouth water": if hungry, the smelling of food (or mere thought of it) produces a salivary flow. Here nothing is in the mouth, there is no direct stimulation. But the former associations (retained in mind) of appetite and secretion of saliva occurring in connection with the eating of food are now reactivated through the association of smell, or a mental picture, and the salivation occurs psychically.

Bechterew approaches the problem a little differently.[14] It is chiefly through the *motor reactions* of an individual, he says, that we can determine his relationship to the outer world. Hence the importance of motor reactions. Thus Bechterew has worked with the motor instead of the secretory apparatus, and speaks of the reflex obtained as the "associated-" or "psychoreflex" (instead of the "conditioned"). His studies are possibly more far-reaching than Pawlow's and his deductions of special moment for us.

Experimentally, Bechterew irritated a dog kept quietly in the dark by making a sharp noise. This calls forth an inspiratory reaction in a dog. Simultaneously, each time, a light was flashed (which causes no inspiratory reaction). After a number of "irritations," the light flash alone produced the inspiratory reaction. This the "association reflex." Later on, an electrical irritation applied to the dog's paw was used instead of the sharp noise and a bell rung instead of the light flash. Thus an "association reflex" of the dog's paw (a contraction) was easily obtained, and through other irritations was modified, inhibited or enhanced. In fact, so exactly can this be accomplished that the dog differentiates between several sounds, if several are used, neglecting all save the one employed for the association reflex (and can differentiate up to one-seventh of a tone).

It is not possible to give an account of Bechterew's experimental work and conclusions in greater detail here. It may, however, be mentioned that he found he had an exact *objective* method and criterion of determining the sensibility of a perceiving organ, of its anesthesia or hyperesthesia (or of a part). When a special center was destroyed in the cortex of a dog, no association reflex could be obtained. Nor was it possible to do so on the paralyzed side of a hemiplegic. Upon this ground Bechterew used the method for the examination of simulation and found it serviceable.[15]

For Bechterew the "psychic" process is only a more complicated form of the "nervous" process; hence he prefers the word "neuropsychis." (Cf., what I have already said of the "neural" and "neuropsychic" flow.) This may make it easier to understand Bechterew's dictum that the "psychoreflex" is only a more highly organized form of the ordinary nervous reflex. The difference between the two is that the latter is hereditary (phylogenetic), "the result of a whole series of former biological generations," and the former ontogenetic, representing personal, or earlier experiences of the individual, *i.e.* depending on individual experience and training.[16]

These psychoreflexes are termed by Bechterew, according to their outer manifestations, offensive, defensive, concentrative or preparatory (Vorbereitungs), emotive, mimic, symbolic, and personal psychoreflexes.

Studied on human subjects, the following is a simple instance. A sudden, loud noise makes us start, *i.e.* draw together. This is a mere reflex act of our organism and occurs not only in an adult, but in a young child too. If the loud noise happens to be the roar of a lion, we not only have this "startle" reaction, but we take to our heels. Nor is this mater first reasoned out; the individual thus suddenly affrighted reacts by running quite as automatically as the child "startles." If the latter knew nothing of a lion or the dangerous nature of this animal, it would not be frightened by the roar (save by its loudness); it would not run off like the adult.[17] The adult reacts to his gathered "associations" of lion—and this reaction is an "association"- or "psychoreflex."

Should the individual, instead of running away, face the emergency and prepare for defense, this series of actions is also dependent upon past individual experiences (memories and modifying associations) and represents a more complicated motor reaction—a purposive reaction—but yet an association reflex. Still another illustration: One turns aside and throws up a defensive hand if the barrel of a gun is pointed at one. The inexperienced child

will not react this way. (The above are the paradigms of Bechterew.)

Therefore, given certain antecedents, we more or less closely apprehend how an individual will act under certain conditions. Reversely, we may judge (and this is Bechterew's method—his *objective psychology*) of an individual's antecedent experiences by his actions. The child that fears the flame has had its lesson ("The burned child dreads the fire").

The importance of this teaching lies for us in its frequent applicability to the understanding of symptoms in neuro-psychopathy, as well as to factors in child development, normal[18] and abnormal—and, as I have already suggested,[19] may possibly throw light on the pathogenesis of many symptoms and pathological associations in hysteria.

We might also remember this mechanism in connection with the "complex" of Jung and the "constellation" of Ziehen just mentioned. By way of illustration, think of two individuals attending a socialistic meet; one is an anti and the other a rabid pro. Though the speech is the same, the impression carried away by each is very different indeed, depending upon his training, mental environment and economic and personal experience.

Let me cite some actual cases to show how these "association reflexes" may occur.

A child is late for school, rushes through its breakfast, feels extreme anxiety as to the outcome (scolding, humiliation, being kept in, etc.) and finally speeds offto school. After reaching there it vomits. On the following day, though there is no rush nor anxiety, through association of what happened the day previous, it vomits again. The child I have in mind was congenitally neurotic; the quite normal child would probably not have reacted in this way. And, in fact, we see these pathological association reflexes forming in individuals who are "sensitive," or ingenitely predisposed.

An adult patient attended the opera on one occasion after a bilious attack. He holds a seat in the first row of the dress-circle. On looking over the balcony he became so dizzy that he presently had to leave. The week after, this time not bilious, he attended the opera again and, looking over the balcony, thought of the dizziness he had had and, in a way, meant to test his own feelings. Suddenly he "imagined" (thus he expressed himself) that he was again dizzy and really felt so uncomfortable that he could not sit through the performance. This state of affairs continued until finally he had to give up this very desirable seat.

In a restaurant recently a friend of mine shuddered when I ordered oysters. A week before he had bitten into one that was "bad." It will no doubt be some time before he can brave another. I knew a boy who could not touch a fig; he had once eaten one into which a portion of a cigar stump had been pressed and had chewed upon and swallowed a bit before he could spit it out. The taste was so loathsome that the memory of it still nauseates him. Should one, in such instances, Freudean-wise continue the search until one finds or interpolates a sexual "complex"?

The following is a still more instructive example:

A neurotic patient was brought to me because of persistent vomiting spells, at first but occasional, later very frequent. She had been "pumped," lavaged, dieted, physicked, and treated with innumerable drugs. Nothing had helped. My analysis brought out the fact that the parents of the girl wished her to marry a certain man (considering him a fine match) who was physically offensive to her. The girl objected and the parents persisted. There were arguments, quarrels, scenes. The man was disgusting to her (the word Ekel which she used is not easily translated). One night he called and the girl felt nauseated. After he left she vomited. Expecting him the following evening, she vomited before he came. Thereafter she had vomiting spells every time the man was expected or called. Even thinking about him brought on attacks.

Here a psychoreflex had been established through the vegetative nervous system with the stomach, and every mental association linking in this man brought on an upheaval.

Let me also refer to a remarkable case mentioned by Oppenheim[20] in which a strongly constipated, hysterical woman could attain a movement of the bowels *only* when she gave caster oil *to her child.* Taking it herself had no effect whatsoever! Nor did any other purgative have any effect upon her.

Fear.—In connection with this mechanism of Pawlow and Bechterew, one must likewise bear in mind certain states of fear anchored into memory through some inadvertent association and continuing to function as a psychoreflex. One must even remember the possibility of fear being reflected or radiated to other concepts precisely as the tonal feeling already alluded to, for fear is a kind of negative tonal feeling in itself, a special, peculiar composite of feeling with accompaniments of physical commotion.[21] We all know the example of the child fearing the doctor, all doctors, and even anyone resembling a doctor; the very word "doctor" if used in its presence puts it on the defensive.[22] The fear of the "policeman," "boogie-man," and of the dark also belong here. The fear a mouse produces among a group of girls—even the cry of "mouse," the fear of bulls, ghosts, haunted houses,[23] etc., and, in fact, a considerable element in the mass reaction termed "panic," all may be explained as psychoreflexes.

Czerny[24] has given us an interesting study of fear as a conditioned reflex and his conclusions must be looked upon as important by both pedagogue and psychologist. Fear for him is a normal presence in the life of the normal child, it being a usual adjuvant in the process of training. Every adjustment to the milieu (community environment), even the simplest, requires the renunciation of certain personal liberties. Such renunciation, even under normal conditions, is not obtained without some constraining measures. Punishment is the most usual—and this always works through the fear of punishment, or the recurrence of the same, or its intensification. This fear has never been dispensable in rearing the child (and is found in the tenets of every religion). The fear of punishment is only acquired through training; this is the *acquired fear.*[25]

In the highly sensitive child, acquired fear is rapidly cultivated; in the normal with greater difficulty; in the abnormal (feebleminded) very late, or not at all. The normal child, therefore, has, and must have, the ability under certain conditions to experience fear. It is the duty of the educator to see that this fear is generated only for suitable purposes (expedience) and is not raised above a certain degree.[26] In this way the normal inhibitions are attained.

If one assumes that ten repressions will produce an inhibition in the normal child (this is taken merely as an example), then two or three are all that is necessary in the sensitive (pathologically sensitive or neurotic) child; besides, the inhibition in such cases is more intense and abides longer—sometimes indefinitely. Thus we also see that the

sensitive child casts off its acquired fear with greater difficulty. This necessitates the utmost care in the training of such children.[27]

The attainment of inhibitions, therefore, is one of the real factors in the training of a child. If wrongly applied, however, or applied to unsuitable children, it may lead to trouble, inasmuch as undesirable inhibitions will occur—and persist.

In conjunction with this mechanism let us finally not forget the immense power of *suggestion*, and in our mental probing look for the possibility of suggestion, or autosuggestion, playing a part. The mother says to her child, "You will be sorry if you don't do as I tell you," and, repeating this often enough, the child adopts the idea, in later life somehow holding to the thought, even if the parent no longer lives, acting just so, "for mother would not have wished me to do otherwise," etc. In delinquent and criminal cases this psychoreflex upon the basis of bad example or suggestion by actual word or intimation must always be carefully considered.[28] The preponderant influence of the milieu, the environment (home, folks, haunts, companions, etc.), also belongs here, and influences by direct suggestion or the autosuggestion through the seen example.

In leaving this chapter on association-reflexes let me comment on one difference between the reflex as experimentally attained in animals and as seen in pathological states of human subjects. In the former the reflexes are easily acquired, easily inhibited, and just as easily again uninhibited (the reflex thus again becoming active). In the latter, the association occurs chiefly but not always under affect, the greater the affect the greater the intensity; and, when once formed, the reflex is very tenacious indeed. It may be inhibited again through affect or need,[29] etc., and therapeutically through suggestion and counter psychoreflex.* The sensitive or neurotic individual is, of course, the more readily affected, and in this connection one may recall Oppenheim's pointing out that the nervous child forms habits with decided ease and loses them with very great difficulty.

It is possible enough that the beginning, the source, the cause of such a reflex may be forgot, yet the reflex still persist. Bringing the knowledge of such source or cause into mind will not, cannot logically, lessen the tenacity of the association.[30] Hence, the Freudean assumption that finding the root of the evil by psychoanalysis obviates the evil and thus cures the patient, must, from the viewpoint of psychoreflexology and the conditioned reflex, prove untenable.

Thus, to attain a finer psychical index of the individual, so to speak, after sifting the story that metabolism, blood and serum might tell, the inferences to be drawn from symptoms and signs, and the facts evidenced in the anamnesis, one must probe his feelings, associations and psychoreflexes—his psychoreactionability—and these in relation to his environment (home, family, friends, occupation, avocation, play and playmates) and to himself (past and present) and finally his mental tilt toward his immediate and more remote future (plans, hopes, ambitions, strivings, points of view). And in our scrutiny, where possible, we analyze present trends and dispositions in terms of past experience, and thus sound the soul for its depths and shallows, search out the sources of its potential currents, and pry up its buried life, its hidden caches of still smoldering impulses. This, to reiterate, is not therapy, but out of it a rational psychotherapy ensues.

*"The Land of the Blue Flower" by Frances Hodgson Burnett is a splendid story to be read and reread by children who have fear. It tends to give a direct counter psychoreflex to fear.

REFERENCES.

1. In which case we must consider focal destruction and compression of ganglion cells, axones and association fibers, and injury to distant cells and "centers" through destruction of connecting tracts (the diaschisis of Monakow).

2. Many of our chronic abnormal mental states (mental diseases) are due to secondary toxemias of a deranged metabolism. Beside intestinal mischief one must keep in mind the absorption from diseased gums, and possibly tonsils, and the severe anemias, the last occasionally leading to minute hemorrhages or miliary foci of damage in the brain. It should also be kept in mind that brain damage with mental alteration through minute hemorrhages, etc., may occur on disturbance of circulation dependent upon affectivity. In other words, organic brain changes may be occasioned through purely psychic causes. (See in this latter connection Bonhoeffer's "Wie weit kommen psychogene Krankheitszustände, etc., vor, die nicht der Hysterie zuzurechnen sind?" All. Zeit. f. Psych. Bd. 68, 1911, p. 375.) Some of the present war's shell shock cases appear to substantiate this.

3. "Perhaps the nerve impulse is something in the nature of a propagated explosive wave in a continuous substance. Whether that wave is in the nature of an hydrolysis or an oxidation we cannot say, but at any rate it results in the liberation, in some manner, of carbon dioxide. This substance tells us whether the nerve impulse has passed this way or not. The change which liberates it may be the impulse itself. Three kinds of changes occur, then, in our brains when the nerve impulses are passing—an electrical, a chemical, and a psychical change. Which is the fundamental change?"—A Chemical Sign of Life, Shiro Tashiro, Univ. of Chicago Press, Chicago, 1917.

The study of this entire chapter is termed Psychophysics. For the most thorough account and analysis see W. v. Bechterew's "Psyche und Leben," second edition. Wiesbaden, 1908.

4. With an overflow into the vegetative or autonomic nervous system entailing visceral and endocrine changes —these again occasioning afferent stimulation (and thus the subjective manifestation of emotion, affect, etc.). For a study of the vegetative system and the internal secretions in connection with mind, see our later report.

5. In Ziehen's psychophysical theory of feeling this may be the unknown causal factor behind the *Entladungsbereitschaft*.

6. See, for instance, Stendhal's "Souvenirs d'egotisme, Autobiographie" (Paris, 1892), and the study of L. Dugas, "Les particularités de la mémoire affective d'après Stendhal." *Rev. phil.*, 1916, 81 (digest in *Psych. Bull.*, May, 1917).

7. There are individuals who are characterized by this constant balancing of the negative and positive, neither strong enough to provoke a decision. We say they lack will and initiative. Hamlet is an example.

8. When tonal feeling is strong, especially where cumulative feeling occurs, one notices the phenomenon of the minds hanging on to such surcharged thought or constantly reverting to it. The slightest association may explode the thing at full strength. Just mention woman suffrage, or pacifism, or Freud, etc., to interested individuals and see what happens!

9. This differentiation thus far follows the teaching of Ziehen, but likewise accords with the views of Bechterew taken up below. The remaining points are not brought out by either.

10. It has been suggested that these automatic acts are localized in the optic thalamus. In "automatic ideation" the *grooves* appear to be cortical.

11. A special type of automatism occurs, in which the series of actions becomes dissociated from the ego, thus in nocturnal somnambulism, hysterical and epileptic automatic acts.

12. I have not come upon mention of this subject in our own medical literature at all; it has, however, been broached in the psychological; so, for instance, in J. B. Watson's "The Place of the Conditional Reflex in Psychology," *The Psychological Review*, Vol. xxiii, No. 2, March, 1916.

13. J. P. Pawlow, "Naturwissenschaft und Gehirn," Wiesbaden, 1910, Bergmann. The subject was taken up by Pawlow in an earlier report (which I, however, have not seen), "Vorlesung über die neuen Erfolge d. Naturwissenschaft," etc., Berichte d. Akademie St. Petersburg, 14, 1907.

14. W. v. Bechterew, "Über die Anwendung der assoziativ-motorischen Reflexe als objectives Untersuchungsverfahren in der Klinischen Neuropathologie und Psychiatrie." *Zeit. f. d. g. Neurol. u. Psychiatrie*, Vol. 5, 1911, p. 299. "Was ist Psychoreflexologie," Deut. *Med. Woch.*, No. 32, Aug., 1912; "Über dia Entwicklung der Psychischen Tätigkeit," *D. Med. W.*, Nos. 47 and 48, 1913. Raissa Golant, "Über die Motorischen Associationsreflexe," Ergeb. d. Neurol. u. Psych., 1 Bd., 3 Hft., 1912, etc. The first publication out of Bechterew's laboratory came in 1909. The phenomenon, however, I believe was noted and studied by him as early as 1907 or before. Thus it appears that both Pawlow and Bechterew started their work along these lines at about the same time.

15. It appears to me that this production of an association or conditioned motor reflex could be employed for diagnostic purposes in cases of hysterical anesthesia or paralysis and might prove a very important diagnostic measure, just as it has in the testing for simulation.

16. Ziehen gives an almost identical account. "Die psychologischen Probleme in der Heilkunde," *Zeit. f. aerztliche Fortbildung*, 8te Jahrgang, 1911, Nr. 1, p. 4.

17. It is interesting to note in this connection that the animals in Yellowstone Park, never being hunted nor harmed and always well fed, are practically tame. It is not especially unusual to meet a bear on a road; one gives him the right of way—and he wabbles on, scarcely noticing you. No psychoreflex of fear has been formed with you in the animal's mind—no psychoreflex of self-protection.

18. See, for instance, A. Czerny, "Über die Bedingungsreflexe des Kindesalters," *Strassburger med. Zeit.*, 1910, Hft. 9.—Bechterew himself points out some exaples: The infant at first cries and smiles reflexly, the first on hunger, the second on feeling satiated after feeding, or if some one tickles his cheek, etc. But very soon he also cries if the breast is withdrawn or the nursing mother leaves him; the smile or laughter is provoked on seeing the mother come in, etc. Still later he cries if a toy is taken away. Through his experience (new associations), he soon learns to differentiate between the mother and the nurse and reacts differently to each. See also N. Krasnogorski's "Über die Bedingungsreflexe im Kindesalter," Jahr. f. Kinderheilk., 69, 1, 1909. The last named follows the Pawlow school.

19. "Brain-tumor or Hysteria," MEDICAL RECORD, Oct. 7, 1916. This idea is already intimated in Bechterew's work, is also applied to the mechanism of laryngospastic attacks in children by J. Ibrahim ("über respir. Affectkrämpfe im frühem Kindesalter," *Zeit. f. d. ges. Neurol. u. Psych.*, 5, 1911, p. 407, et seq.), and is again brought up in K. Dessecker's dissertation on Hysterical Attacks, out of Goldscheider's clinic, 1914. J. B. Watson seems independently to have come upon the same idea (*l. c.*—p. 95, footnote), bringing the conditioned reflex in connection with tics and with hysterical motor manifestations.

20. H. Oppenheim, Lehrbuch, Berlin, 1908.

21. Plus changes in viscera and the internal secretions (cf., our subsequent report on the mind and the vegetative nervous system).

22. This fear is due to the child's sometime unpleasant experience with a doctor. But associations out of story books, or experiences in the home may form mental connection with the fear phenomenon.

23. The intense fear of cats in some individuals has as yet proven inexplicable. Such individuals may become so ill with fear—panicky fear—at the sight of a cat that they lose entire control of themselves. S. Weir Mitchell studied the phenomenon, but gave no plausible explanation. For the Freudean, of course, with his "symbol" prestidigitations, the thing is easy. It is interesting to note that there is no analogous dog fear. The person who fears a dog has either been bitten or frightened by a dog.

24. Ad. Czerny, "Die Enstehung und Bedeutung der Angst im Leben des Kindes," in Beiträge zur Kinderforschung und Heilerziehung, Heft 121, Langensalza, 1915.

25. There is also a born fear. This will be taken up in our third report (on Psychopathy).

26. Falling far short of the baneful habit of scaring a child with threats of the "boogie-man" or of "calling a policeman," or "getting the doctor," etc.

27. In the case of the feebleminded, fear cannot be employed in their training; one can accomplish something with them only through continued repetitions, often entailing infinite patience.

28. See W. v. Bechterew, "Das Verbrechertum im Lichte der objektiven Psychologie," Wiesbaden, Bergmann, 1914, p. 35-36; also my study of "The Degenerate," etc., *Archives of Diag.*, April-May, 1917.

29. A remarkably patent example of how an accepted custom (psycho-reflex) may be passingly abandoned (inhibited) through affect and need is shown in Guy de Maupassant's story of "Boule de Suif," in which the wonted disapprobrium of unchastity is temporarily nullified and such an act made a praiseworthy *expedient*.

30. Though this fact may be made use of in suggestive therapy, telling a patient, for instance, that the cause being come upon, the condition will now mend; or, again, using the knowledge attained in building up new associations—reeducation, etc.

60 WEST EIGHTY-FIFTH STREET.

MALIGNANCY OF THE BILIARY APPARATUS.*

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FROM October, 1914, to the present time (March, 1917) about 22,000 patients have been admitted to the private rooms and wards of the New York Post-Graduate Hospital. During this same period there have been 15 cases in which malignant tumor of the liver was such an outstanding feature of the pathologic condition as to be made the principal diagnostic heading on the discharge card, and the same applies to 10 cases of malignancy of the gall bladder and one case of carcinoma of the papilla of Vater. It is thus seen that in about one in each nine hundred cases admitted to the hospital in the last two and one-half years the principal pathologic lesion has been malignancy of the biliary apparatus. This does not mean that during this period there have been but 26 cases in which malignant growths have been present in the liver, gall bladder, and bile ducts; for there have been many cases in which these structures, the liver particularly, have been involved by metastasis, but in which the discharge card merely records the site of the primary growth. The nature and location of the growths and the condition of the patients on discharge were as follows:

	Number	Cured	Improved	Unimproved	Died
Carcinoma of the liver	14	0	2	6	6
Sarcoma of the liver	1	0	1	0	0
Carcinoma of the gall-bladder and bile ducts	10	2	1	4	3
Carcinoma of the papilla of Vater	1	0	1	0	0

*Read before the Clinical Society of the New York Post-Graduate Medical School and Hospital, March 16, 1917.

It will be noted that but two of the twenty-six cases were considered cured when discharged. These were both early cases of carcinoma of the gall bladder.

Carcinoma of the Liver.—Primary carcinoma of the liver is rare; and still it is the most frequent of the malignant growths occurring in this organ. Of the carcinomata occurring in the liver a very small percentage are primary, nearly all being secondary to carcinomatous involvement elsewhere. Virchow found five cases of primary carcinoma in 6,000 autopsies. Hale White, in 10,000 autopsies found 10 primary carcinomata and 240 secondary to carcinoma elsewhere. Carcinoma of the liver may occur at any age, but is comparatively rarely seen before the age of 40. However, I would take this opportunity to call attention to the fact that, in general, we have not been sufficiently on the lookout for carcinomatous conditions in early life. For example, we are apt to consider cancer of the tongue a lesion of the middle or later decades of life; and yet including their own case, Gorse and Dupuich were able to collate 30 cases in which the age of the patient ranged from 10 to 30 years; while Castle finds that 42 cases of primary carcinoma of the liver in individuals up to the age of 16 have been reported. One case in this series, that of a boy 12 years old, occurred here in the Post-Graduate some years ago in the service of Dr. S. S. Burt. The youngest case was one day old and was reported by Noeggerath in 1854; another but three days old was reported in 1859 by Widerhofer-Wedel. While carcinoma of the gall bladder occurs much more frequently in women than in men, the opposite condition obtains as regards primary cancer of the liver, the proportion in the reported cases being approximately two cases in males to one in females; but secondary involvement is much more common in women than in men.

Pathology.—Primary carcinomata of the liver may be single or multiple and usually originate in the region of the gall bladder, the hilus of the liver or the bile ducts; rarely from the parenchyma cells. Lissauer inclines to the view, also held by others, that cirrhosis or syphilitic cicatrization is the primary affection and carcinoma development secondary.

Primary carcinomata of the liver occur in three forms: Primary massive carcinoma; primary diffuse or infiltrating carcinoma; and primary interlobular carcinoma. The description of these forms as given by Zeigler is essentially as follows:

In the first or massive form one or two large nodules are formed. These may occupy any part of the liver, but appear most frequently in the right lobe. The nodes are often of great size and consist of soft or hard white or slightly reddened tissue. At some points the tumor tissue is sharply marked off from the liver tissue, the latter being manifestly thrust aside and the biliary ducts and vessels compressed. At other points the tumor is continuous with the liver tissue, sometimes penetrating into the large blood vessels or bile ducts. The larger nodes are frequently softened or necrotic in the center, or contain extravasated blood. If the cancer is situated beneath the serous membrane, and a portion of the tissue in its interior is absorbed, an umbilicated depression forms on the surface of the nodule. In the course of time metastases are developed within the liver and the organ may thus become studded with numerous nodules.

The second, primary diffuse or infiltrating, form simulates the appearance of a granular or tuberculated cirrhotic liver, islands of whitish or brownish tissue being enclosed between stout anastomosing fibrous bands that traverse the organ in all directions. These islands consist, however, of cancer tissue and the condition is sometimes described as cancerous cirrhosis or cirrhotic cancer.

In the third, or primary interlobular, form the cancerous growths are seated in the interlobular connective tissue and wherever the portal vessels run they are seen to be accompanied by white tumid nodules in close mutual contact or actually coalescent, and varying in size with the size of the vessels.

In structure, some varieties of hepatic carcinomata are to be classed as cylindric celled adenocarcinomata; others as ordinary cancers of the simple or medullary type with solid cell nests. They originate either from the glandular cells or from the epithelial cells of the biliary ducts, the third form in particular being of the latter kind.

Metastatic carcinoma of the liver is most frequently secondary to carcinoma of the gastro-intestinal tract; more rarely of the uterus, pancreas, breast, or other organs. The growth starts from the carcinomatous emboli within the vessels. These embolic cancer cell nests multiply and force aside the liver tissue or follow the course of the vessels and pervade the parenchyma. The metastatic nodules may be few or exceedingly numerous and cases are met with in which the greater part of the liver is beset with miliary nodules. As the disease progresses these coalesce to form larger nodules. When the cancer nodules are large and numerous the liver is more or less increased in size, often enormously so, and its surface is uneven and tuberous.

Symptoms.—These depend largely upon the site, size and histologic character of the growth and the degree of involvement of surrounding structures. In the early stages of both primary and secondary growths there may be no recognizable symptoms. Even in well marked cases the sequence of symptoms is far from constant; for primary carcinomata occasionally reach a considerable size before any symptoms develop, while with metastatic growths the biliary symptoms may be so severe as to completely overshadow those of the original focus or, on the other hand, the liver involvement may not even be suspected during life and is found at autopsy. The usual symptoms are: Increase in the size of the liver, anorexia, cachexia, general weakness, vague digestive disturbances, jaundice, ascites, and a feeling of discomfort or actual pain in the hepatic region. Since the right lobe is the one most frequently affected the increase in the size of the liver, which may be considerable, is sometimes easily appreciated. Cachexia usually begins early and advances steadily and rather rapidly, particularly in the secondary cases. Jaundice occurs in at least 50 per cent. of the cases, usually begins gradually, but steadily increases in intensity and finally becomes very marked if the patient survives long. Occasionally the onset of jaundice is sudden and becomes

marked rapidly, while sometimes in the early stages the jaundice may for some time be slight in degree and of the intermittent type, later becoming constant and severe. Ascites also occurs in at least 50 per cent. of the cases, but varies widely in amount. Usually the amount is moderate; rarely excessive. When jaundice is present the ascitic fluid is bile stained; otherwise it is clear. Pain is seldom a marked feature in carcinoma of the liver. With deep seated growths there may be little or no pain. Marked pain may accompany involvement of the superficial portion of the liver with invasion of the capsule and consequent peritoneal irritation. Generally there is a feeling of discomfort or sense of weight in the hepatic region. When there is much actual pain it is usually due to perihepatic adhesions, with or without actual carcinomatous involvement of contiguous organs.

Diagnosis.—While vague symptoms perhaps referable to the liver may suggest the possibility of carcinoma of the liver, early diagnosis cannot be positively made without exploratory laparotomy. In the far advanced cases the combination of liver enlargement, progressive jaundice, ascites, cachexia and pain or persistent discomfort in the hepatic region make the diagnosis fairly evident. There is, however, a middle group in which, as in the early cases, exploratory laparotomy alone will make the diagnosis clear. Carcinoma of the liver is to be differentiated from amyloid and syphilitic liver and from hypertrophic cirrhosis.

The prognosis is very bad in any event, but without very early diagnosis and resection of the growth it is hopeless. In unoperated cases death usually occurs in from two to eighteen months, usually within six months.

Treatment.—Early radical operation offers the only hope of cure and in a few instances this has been obtained. Freeman, in 1904, reported a case in which he excised a nodular carcinoma and adjacent liver tissue and the patient was apparently perfectly well and with no sign of recurrence 16 months later. Schröder reported a case well seven years after operation and Roux has reported one successful case. A few other cases, at first apparently successful, died from recurrence from a few months to three years later. Castle has recently reported the first case of primary carcinoma of the liver in childhood in which the growth was completely excised. His patient was 10 months old and was operated upon by Jabez N. Jackson. The patient recovered from the operation, but died from gastro-enteritis shortly after leaving the hospital.

Sarcoma of the Liver.—Primary sarcoma of the liver is very rare. Knott, in 1910, could collate but 74 cases of primary sarcoma, but many metastatic cases have been reported. These are sometimes melanotic and due to metastasis from the choroid or following irritation and melano-sarcomatous degeneration of pigmented moles. The recorded observations show that sarcoma develops from the connective tissue in the hilum of the liver, from the fibrous sheaths of the larger vessels and bile ducts, and from the interlobular connective tissue. Nodules of varying sizes are formed within the liver, either singly or in large numbers, and these may give rise to sarcomatous metastases in other organs. Secondary sarcoma may consist of circumscribed nodules of large size, or of small disseminated nodules, or may infiltrate the liver in a diffuse manner.

The symptoms are similar to those of hepatic carcinoma. The treatment is practically hopeless, though temporary improvement may follow certain operative procedures and *x*-ray treatment. Aspinwall Judd controlled a case of this kind by *x*-ray treatment for some years.

Carcinoma of the Gall Bladder.—This is much more common than carcinoma of the liver. According to Deaver and Ashhurst it is found in about 5 per cent. of all cases of carcinoma, and the gall bladder is involved three to four times as often as the bile ducts. Among 3,908 operations on the gall bladder and ducts from 1890 to 1910, W. J. Mayo found 85 cases of malignancy. Bloodgood, in a series of 1,000 cases of gall-bladder disease at the Johns Hopkins and St. Agnes' Hospitals, found 60 cancer cases. Deaver found 6 malignant cases in one series of 262 operations, and 2 cases in another series of 159 operations. Erdmann, in a series of 270 cases of biliary surgery operated on between January, 1910, and April 10, 1914, had 4 malignant cases. *The prime etiological factor is gallstones.* Courvoisier found gallstones associated with carcinoma in 91 per cent. of the cases, Deaver in 87, Moynihan in 95, and Janowski in 100 per cent.; while W. J. Mayo, in an article on the prophylaxis of cancer, says: "In nearly all the cases of cancer of the gall bladder that we have had an opportunity to examine carefully gallstones were present or there was evidence to show that they had been present." He also states that cancer of the gall bladder occurred in nearly 3 per cent. of all the cases of cholelithiasis which came to operation at the Mayo Clinic. It is also interesting to note that in 2,538 cholecystectomies at the Mayo Clinic, papillomata not associated with definite cancerous lesions were found 107 times, and that Aschoff and Bacmeister believe that they are a predisposing factor in the development of cancer. Carcinoma in this situation may occur at any age, but in gerenal occurs later than carcinoma elsewhere, the larger number of cases occurring between the ages of 50 and 70.

Pathology.—The growth, which is of the cylindrical or epitheliomatous type, takes the form of a papillary or fungous tumor, or of a cancerous ulcer from whose floor start thickenings and indurations of the bladder wall due to neoplastic infiltration. From the gall bladder the cancer may invade the liver (nearly 50 per cent. of the cases), the gastrohepatic omentum and the duodenum. Carcinoma may also originate in the larger ducts, as well as from their intrahepatic radicles, and from the papilla of Vater. *Primary sarcoma* of the gall bladder is extremely rare, and according to Carson and Smith, who reported a case in December, 1915, only 10 well-authenticated cases are to be found in the literature.

Symptoms.—These are very similar to those of carcinoma of the liver, but in addition there is usually a history of gallstones. Practically all early diagnoses are made when operating upon the mistaken diagnosis of simple cholelithiasis or upon later microscopical study of the removed specimen. Taylor, summarizing the symptoms as tabulated by

various authors, finds that a dull pain referable to the region of the gall bladder is usually the first symptom, but that this pain may be referred to the stomach or appendix regions; that tumor below the liver is present in 50 to 75 per cent. of the cases, depending on the stage of the disease at which the case is examined; that jaundice was present in 69 per cent. of the 100 cases in Musser's series; that in Rolleston's series ascites occurred in 25 per cent. of the cases; and that among the complications may be rupture of the gall bladder with fatal hemorrhage, general peritonitis or general abdominal carcinomatosis; or there may be complete obstruction of the common duct, duodenum or colon.

Treatment.—Unless recognized very early, operation offers practically no hope of cure. In fact, it is generally recognized that when the affection has advanced to the stage when it can be recognized macroscopically, complete operative removal of all cancer nests is practically impossible; and the few permanently successful cases have usually been those in which malignancy was merely suspected at the time of operation or found after microscopical study in the laboratory. Mayo mentions seven cases of the latter variety and three of these patients were well three years after operation. In this connection W. J. Mayo says: "We have had no permanent cures after cholecystectomy for cancer of the gall bladder which had been diagnosed as cancer previous to operation. A number of cures have followed the removal of early cancer incidental to the removal of thick-walled functionless gall bladders, thus showing that it is not the nature or situation of the malignant process, but the delay in diagnosis which is so fatal." Bloodgood and Finney each had one successful case following cholecystectomy. Deaver advises that whenever possible, even in cases recognized as malignant, excision of the gall bladder, cystic duct, and the adjacent surface of the liver should be done. Certainly the removal of adjacent apparently healthy tissue is imperative; for when cancer of the gall bladder is distinctly recognizable at operation simple cholecystectomy offers but the faintest hope of cure. This is well shown in Terrier and Auvray's series of 16 such cases where there were 5 immediate deaths and the remaining 11 patients had rapid recurrences. If the involvement is not too extensive and the operation therefore too formidable, it is certainly justifiable to give these patients the bare chance that operation affords; especially in view of the fact that it is not always possible to differentiate at operation between inflammatory and carcinomatous infiltration, which accounts for the fact that a few cases have remained entirely well after drainage operations in what, at the operating table, appeared to be hopeless cases of carcinoma. On the other hand, drainage operations in non-carcinomatous cases have occasionally been followed by the development of carcinoma. Haggard and Willy Meyer have each reported one such case and Buchanan credits Graafe and Wiener with four.

Carcinoma of the Bile Ducts.—Primary carcinoma of the bile ducts differs from carcinoma of the gall bladder in a number of particulars. First, it is more frequent in men than in women, the proportion being about three to two; second, usually the first symptom that calls attention to the biliary apparatus is jaundice (Deaver). Most of the cases occur in the common duct or at its junction with the cystic and hepatic ducts. The growth is of the annular type or occurs as a papillary outgrowth into the lumen. The ducts above the point of constriction become dilated, and the same applies to the gall bladder unless previous disease has caused its contraction.

The symptoms are jaundice, which generally begins insidiously and gradually increases in intensity and which, when once established, is permanent; cachexia and rapid loss of strength; pain in the epigastric or gall-bladder regions, usually of a dull aching character, but occasionally colicky when the gall bladder attempts to empty itself; and enlargement of the gall bladder, this occurring, according to Courvoisier, in 84 per cent., and being palpable, according to Deaver, in 50 per cent. of the cases.

The principal condition from which carcinoma of the ducts must be differentiated is stone in the common duct. In this latter condition the jaundice usually occurs suddenly, is always intermittent, and the entrance of bile into the intestine is never permanently blocked. With carcinoma, on the contrary, once the passage of bile is blocked, acholia is permanent unless connection with the gastrointestinal tract is restored by operative means. The pain in calculous obstruction is sudden and severe and apt to radiate; while that of malignant disease is usually dull, dragging and persistent. Cachexia and rapid loss of strength would also point to malignant rather than to calculous disease.

Treatment.—This is one of the conditions whose cure really depends upon operation before the disease actually exists—that is, by the prophylactic early removal of gallstones. When the carcinomatous lesion is established, complete operative cure is almost impossible. The treatment employed is, therefore, usually palliative and consists in securing anastomosis of the gall bladder or dilated upper portion of the duct with some portion of the upper gastrointestinal tract, with or without coincident gastroenterostomy. The principles involved, indications for and character of operations employed for the relief of such cases in which there is chronic obstructive jaundice are well set forth in a recent paper by Erdmann and Heyd (*Am. Jour. Med. Sciences*, August, 1916), who report eight typical cases.

Carcinoma of the Papilla of Vater.—This is a rare condition. Deaver and Ashhurst, including those in Oppenheimer's tables, refer to 20 cases of transduodenal resection of the papilla of Vater, of which all but three were for carcinoma, and refer to three cases in which still more radical excisions have been made. Erdmann has reported two cases of carcinoma at this situation and cases have also recently been reported by Kammerer and by Tixier and Murard. The symptoms are those of interference with the flow of pancreatic fluid and the bile, together with symptoms of obstruction in the duodenum. The treatment, as already indicated above, is by excision if possible, together with provision for the reestablishment of the flow of bile into the gastrointestinal tract. In most cases gastroenterostomy is also required.

498 West End Avenue.

SOME OF THE NEWER METHODS OF TREATING WOUNDS.*

By FITCH C. E. MATTISON, M.D., F.A.C.S.,

PASADENA, CAL.

When requested by your program committee to prepare a paper on some of the "Newer Methods of Treating Wounds," I felt it was a task that could be done so much better by some of our members who have been at the front, and could give you their experiences in treating such wounds.

It is difficult for some of us to comprehend that in our age, when civilization has advanced to a point far beyond any that we know of, that any good can come out of the present conflicts; where weapons of destruction have become so mechanically perfect that the wounds inflicted by them are far more destructive, and conditions under which such wounds are made make infection almost certain, unless some benefits may accrue to mankind in the future by the necessity of the surgeon finding better methods in treating infected wounds.

It would be far beyond the limits of your patience to do more than mention some of the newer methods of handling such wounds. The present war has shown that sometimes necessity is the mother of invention, and when the soldiers commenced to burrow in the ground and sometimes were standing in mud most of the time wounds inflicted under such conditions were appalling. With clothing and their bodies covered with mud and trench filth, wounds under such conditions with splinters of shell, shrapnel, bullets, but especially pieces of clothing, were all infected. At first, such wounds were treated without regard for the possibility of tetanus, but it was not long before it became the rule to use tetanus antitoxin in all wounds.

In the Bradshaw lecture on "Wounds in War," Surgeon-General Sir Anthony Bowlby calls attention to the unfavorable conditions under which wounds are received. The country is thickly populated with human beings and supports many cattle and pigs; the soil is a rich loam, is heavily manured with excrements of men and animals; is covered by luxuriant crops; rainfall is copious; cloudy days are numerous, and every form of microorganism is abundant, and soil taken from a considerable depth below the surface bears pathogenical organisms. Men are covered by either mud or dust, and their comrades who help them are in a similar condition. Surgeon-General Bowlby speaks of the hypertonic salt solution of Sir Almroth Wright, and the use of antiseptics, and claims the object of each is the same in reality, for it is necessary for dead tissue to be disintegrated or cut off, and sloughs and granulation tissue to grow before healing can take place. He also states that one can appreciate more clearly now than ever before why the older surgeons spoke of "pus laudabile et bonum." "They understood that when velvety granulation and creamy fluid appeared destruction had ceased and repair had begun; and we recognize to-day, as they did, that there is such a thing as relatively healthy suppuration."

The following is the plan, on which all agree, when a patient is admitted to a line hospital:

1. Removal of infected bits of clothing, or other infected foreign matter.
2. Wide incision and drainage.
3. Immobilization.
4. Continuous irrigation by drop method with Dakin's solution of sodium hypochlorite; English surgeons as a rule seem to prefer Wright's hypertonic salt solution with the addition of citrate of sodium (sodium citrate 1 part, sodium chloride 4 parts, and water 85 parts), or continuous immersion in antiseptic solution of acetate of aluminum.
5. Continuous exposure of all wounds when possible to avoid foreign body reaction.

Many antiseptics were tried, but the most satisfactory one so far seems to be Dakin's fluid. The details of the preparation were worked out in the chemical laboratory attached to the Rockefeller Foundation Temporary Hospital 21, at Compiègne, and were published by Dakin in the *Presse Médicale*. After many experiments with a large number of antiseptic substances, Dakin made choice of the hypochlorite of soda, which has high germicidal properties, with the advantage of being the least harmful to the tissues.

The preparation of a solution of suitable strength for direct application to the tissues, that is, containing from 0.5 to 0.6 per cent. of hypochlorite of soda, is very easily made. One hundred and forty grams of dry carbonate of soda, or 400 grams of the crystallized salt is dissolved in 10 liters of ordinary water, and to this solution is added 200 grams of chloride of lime of good quality. The mixture is well stirred up, and after standing for half an hour the clear fluid is siphoned off from the precipitate of carbonate of lime, and filtered through cotton wool. To the filtrate, 40 grams of boric acid are added, and the solution thus obtained is ready for immediate use. The boric acid in this solution is not added for its antiseptic action, but for neutralizing the alkaline reaction, which in itself is irritating.

Dakin claims no credit for the "new antiseptic." He states that it was discovered by a French chemist, Berthallet, in 1788, and used for bleaching and disinfecting purposes, four years later, 1792. Percy of the Javel Works near Paris, made a similar fluid, and sold it under the name of eau de Javel. In 1820, Labarraque prepared a similar fluid which was known as Labarraque's disinfecting fluid.

This solution has been demonstrated by Alexis Carrel and his coworkers, Dakin, Dufresne, Dehelly, and Dumas, as being an energetic antiseptic solution, unirritating and of little cost. It should not, however, be used at the same time as alcohol, and must never be warmed. The solution should penetrate all crevices of the wound, and must be constantly renewed. After adequate drainage is provided, the solution is either forced into all portions of the wound, or the Murphy drip is used. The latter method has proven the most satisfactory.

Sir Almroth E. Wright's treatment of infected wounds by the use of hypertonic salt solution and vaccines, has met with some opposition from some of the surgeons at the front, and much of his work has not been correctly interpreted. He and his coworkers have worked out a very elaborate scheme for the phylacogogical treatment of wound infections. Briefly the scheme is:

*Read at a meeting of the American Therapeutic Society, held in New York, June 1, 1917.

At the First Aid Post after hemorrhage has been arrested, the wound has been cleansed, bandages, and splints applied, an injection of "antigangrene vaccine" is given. This is a vaccine containing the streptococcus, staphylococcus, and the bacillus of Welch. There would be, upon the inoculation, a rapid immunizing response, he claims, for all these wounds are infected, the predominating infection being the colon group. The most elaborate studies of these infections show that the clothing, bodies, and wounds of the men contain the colon group of bacteria.

Treatment in the field ambulance is: Washing and sterilizing, excision of projectiles and foreign bodies, procuring of efficient drainage, application of clean dry dressings, and injection of tetanus antitoxin. For the procuring of drainage, sufficient enlarging of the wound is made to permit of loops of sterile bandage previously steeped in a solution of 5 per cent. sodium chloride and 0.5 per cent. sodium citrate, these being carried down into the wound to serve as wicks. Previous to the introduction of the drain, the wound should be syringed out with the hypertonic saline solution. The ends of the wick are to be inserted between plies of lint well soaked in the same solution, and folded over so as to form a thick pad; one or two tablets of salt are planted in the dressing to keep the solution of proper strength when the lymph commences to flow, and over all an impervious protective dressing is placed. Wright claims that salt as a lymphagogue has no equal; 5 per cent. salt solution prevents clotting of blood, but not in the presence of pus, but the addition of the citrate of sodium prevents clotting of blood in the presence of pus.

Treatment at base hospitals consists of what he calls the full program of phylacogogic treatment. Cases of spreading infection, cellulitis, and gaseous gangrene are treated by free incision, supplemented by hypertonic salt solution until tissues are restored to their normal condition, and merely the surface is irrigated with a physiological salt solution until all surface infections are extinguished, then secondary suture of wounds, then irrigation with 5 per cent. salt solution or Ringer's or Locks' solution (without the sugar). The use of antiseptics and antiseptic precaution in all wounds is insisted upon.

Sir W. Watson Cheyne takes issue with Sir Almroth Wright on the latter's suggestion of the importance of serum for infection. Wright suggests that the main value of antiseptics is due to their production of a flow of serum. Cheyne also objects to Wright's hypertonic salt solution of 5 to 10 per cent., and contends that "brine," as he calls it, is good to preserve dead tissue, but is bad for live tissue. Cheyne makes a plea for the principles of Lister in the treatment of wounds, and contends that of late years, "A most unaccountable prejudice has arisen against antiseptics, with the result that students have not been educated in their use; indeed have been taught to decry their value and to look on them as old-fashioned and very objectionable substances." Cheyne recommends a strong antiseptic, Lister's strong mixture 1/20 carbolic lotion, to which is added sufficient bichloride of mercury to form also a 1/500 bichloride solution, in the early stages; but uses very weak antiseptics, if any, in the later stages. He has had no experience with Dakin's solution, but favors borsal (equal parts of boracic and salicylic acid), or a paste containing carbolic acid or cresol and borsal. A review of the controversy between the old Lister school as represented by Cheyne, and the school represented by Wright, which has possibly lost sight of everything but vaccines and hypertonic salt solutions, would lead one to take the middle ground between the schools.

Browning and his coworkers at the Bland-Sutton Institute lay down what they regard as the essential qualifications of a useful antiseptic. The bactericidal substance must have a great potency against all organisms in the presence of protein material, such as serum; it must be stimulating to granulation; it should have no delcterious effects on phagocytosis, no irritating action on tissue, and no toxic effect on the more highly specialized cells.

They found that a number of acridine dyes have an enhancing bactericidal power in the presence of serum and amongst these, the compound diaminomethyl-acridium chloride, which the authors, for the sake of convenience call "flavine," stands out foremost. This substance has been found to be 20 times more powerful than corrosive sublimate and 800 times more so than carbolic acid under these conditions.

Flavine and brilliant green are the two substances which hitherto have given the highest "therapeutic coefficient"; or in other words, the higher the germicidal power of a substance in the presence of serum, and the lower the effect in inhibiting phagocytosis, the more valuable that substance is as an antiseptic.

A practical formula for estimating the value of wound antiseptics, of arriving at their "therapeutic coefficient," as they put it, may be obtained by taking the ratio between (1) the highest concentration of the substance which does not reduce the phagocytic count below half that of the control, and (2) the weakest concentration of the substance which is sufficient to kill staphylococci in the presence of serum.

Delbit of Paris recommends a 12 per cent solution of magnesium chloride for irrigation, for dressings, and for subcutaneous injections. This fluid has over ordinary antiseptics the advantage of respecting the cells.

Rosenblith reports an analogous method. He had originally made use of magnesium chloride in the form of hypodermic injections of a solution containing in each c.c. 0.25 gr. of magnesium chloride and 0.02 of sodium iodide; later he used a stock solution prepared by dissolving 250 grams of magnesium chloride in one liter of boiling water. For use, 4 tablespoonsful of this are added to sufficient boiling water to make up to one liter, which is the normal solution employed at the Hospital Janson.

Dr. W. J. S. Ingram of Aberdeen, in deep infected wounds, uses silver nitrate stick very thoroughly and follows this by hot fomentations, and claims the wounds so treated clean up more quickly than after any method he has tried.

C. W. Duggan of Lincoln, England, uses equal parts of ichthyol and glycerine, this he applies with a camel's-hair brush, painting the surrounding skin as well as the wound.

The brilliant results obtained in the treatment of face and head injuries are due in no small part to some of the French surgeons whose patience and skill have won for them the admiration of the world, and when the history of this great European conflict is written, the French surgeon will share with the French soldier the praise they have so justly won.

When the surgeon of a few years ago had an ununited fracture or a comminuted fracture to operate on in a modern well equipped hospital, and got a satisfactory result, he felt justly proud of it, but consider the brilliant results obtained by some of the war surgeons, with badly shattered limbs in patients who are physically exhausted, with all conditions to make infection, and operating under conditions that are not ideal. Confronted with conditions such as they found, the surgeons had to meet difficulties such as are rarely, if ever, encountered in the usual run of hospital cases, where aseptic rather than antiseptic surgery is the rule, and where such wounds are taken to the hospital without delay.

Clinically the surgeons at the front who have paid close attention to thoroughly cleansing all wounds of all foreign substance, then rendering those wounds as free from infection as is possible, followed by thorough drainage by whatever means seemed best to them, have gotten good results; and if combined with all such means, a vaccine can be made for that particular case, we can all agree that the injured man is at least having all means known to science used for his benefit.

Capt. A. L. Lockwood of London has treated a large number of gunshot wounds of the knee joint along new lines. The cases he reports were admitted from two to five days following the injury. Where these is effusion, the joint is tapped and the fluid withdrawn to relieve tension, and if the fluid is blood stained or perceptibly purulent, he injects a 2 per cent. formaldehyde solution in glycerin (made up at least 12 hrs. before and not more than 7 days old), about 2 drams being used; or he employs ether and iodoform, pure ether, or 5 per cent. saline solution. The aspirated fluid is examined, the knee is immobilized, and screened or skiagraphed in two planes at right angle to each other. After it is determined to what extent the knee is injured, and the degree of infection, then the wound is excised *in toto*, and with another knife and forceps the capsule is excised, this knife and forceps being at once discarded; then, no necrotic tissue being left, and all foreign matter having been removed, all blood clots are irrigated out with saline solution. The capsule is stitched up, and drainage is made down to the capsule, but never in the cavity of the joint. Much tension is never allowed in the joint, but aspiration is made before tension becomes too great. Great care is taken in properly splinting all cases.

The points on which he lays most stress are: (1) That all foreign bodies, whether metal, loose bone, or clothing, should be removed from the knee joint at the earliest possible moment. (2) Perfect immobilization is absolutely necessary, do not start passive motion too early, wait at least three weeks after inflammation has subsided. (3) Absolutely complete excision of all necrotic or even edematous tissue. (4) The capsule should be closed at the first operation if at all possible. (5) Antiseptics other than those mentioned are never introduced into the joint. (6) Tubes should never traverse the joint surface.

W. Hale White of London calls attention to the low mortality of bullet wounds of the chest. According to Col. L. A. Lagarde, U. S. A. (Gunshot Injuries, 1914), the mortality of penetrating wounds of the chest in the French army during the Crimean War was 91.6 per cent., in the English army, over 70, and among those which survived to reach hospitals in the American Civil War was 62.5 per cent. But with the introduction of small bullets of high velocity, it began to fall. Thus in the Spanish-American War it was 27.5 per cent., in the Boer War 14 per cent., and among the Japanese in the battle of Mukden 3.67 per cent.; in the present war, although the mortality is low, it is probably not as low as the last figure.

Lieut. Col. A. Primrose, Canada General Hospital, does not favor Sir Almroth Wright's plan of treating septic wounds by applying a 5 per cent solution of sodium chloride and a 0.5 per cent. solution of sodium citrate, and applying a covering of "impervious protective tissue," as it hampers drainage by preventing a free evaporation from the surface and absorption into the dressing.

Col. A. W. Mayo-Robson contrasts the experience of treating gunshot wounds of the abdomen during the South African War, where it seemed to have been proven conclusively that opium, starvation, and rest in the Fowler position yielded better results than operation. His experience while serving in the Dardanelles, was that the wholesale expectant treatment was a failure. Where cases were seen late, and peritonitis had developed, he found that a small incision over the pubes, and the placing of a drainage tube, the patient being in the Fowler position, was the best treatment. He states that similar treatment is the best for typhoid perforation, as a good proportion of such cases are being saved in one of the large typhoid hopitals in France.

Dr. George W. Crile uses Winchester Doubouchet's method of treating wounds by the use of Dakin's solution and electric light. Crile uses bell-metal hoods or pasteboard cones. Electric lights are placed in these of a sufficient candle power to feel comfortable to the patient, and the results are very gratifying, infected wounds are exposed to the light without dressing, and wound secretions are cleansed with Dakin's or Wright's solution.

The writer has had very good results with this method, and especially in the treatment of extensive burns, and in skin grafting following burns. The wounds dry up very quickly under frequent cleansing with acetate of aluminum solution when there is too much moisture, or the use of Wright's solution to promote secretions when such wounds become too dry from lack of serum.

Dr. Rutherford Morrison of the Northumberland War Hospitals has used a paste composed of iodoform 2 ounces, bismuth subnitrate 1 ounce, liquid paraffin q. s.; any consistency may be made, but the most useful are those of soft butter or thick cream. All gangrenous and necrotic tissue is cut away, and the wound swabbed out with alcohol and a small portion (not to exceed 2 drams) is vigorously

rubbed into the tissue, a little being left in the bottom of the wound. No dressing is required for 7 to 14 days. He claims that (1) this paste maintains a continuous antiseptic action in the wound. (2) It acts as a lymphagogue and a free exudation of serum washes the wound from within outwards. (3) It does not prevent the escape of discharge. (4) Granulation tissue grows freely in contact with it. (5) Drainage tubes and gauze drains are unnecessary. (6) Septic wounds heal nearly as rapidly as non-infected ones. (7) Bone union is rapid and the tendency to form sequistrum is slight. Both constituents of the paste are toxic if absorbed freely, hence the use of more than 311 of the paste may prove toxic.

F. C. Lewis of the University of Liverpool produces hypochlorous solution electrically from hypertonic salt solution. He describes a very simple apparatus for its production from sea water and claims it is much more potent than the solution as ordinarily made, and wounds treated with the solution produced by electrolysis have given better results.

Sauerbruch, at the Swiss Surgical Congress in 1916, narrated his surgical war experiences in Germany, and is convinced of the necessity of immediate operative interference in all gunshot wounds of the abdomen, in which the peritoneum is involved, and believes that when this necessity is generally recognized, the arrangements for carrying out the operations will readily be improved at the front.

Dr. John O'Conor of Buenos Aires reports excellent results in the treatment of infected wounds by four-hourly irrigation with hot peroxide solution (2 ounces to the quart), followed instantly by hot carbolic acid lotion (½ ounce to the quart), followed by perchloride of mercury fomentations (wrung dry).

In going over the literature of the modern treatment of wounds, one is struck by the fact that there are two schools, or one may say factions. One which may be called the antiseptic school pins its faith on the use of some antiseptic, and there are many of these, with various combinations.

The other school, led by Sir Almroth Wright, the "Concentrated Saline School," depends for its success upon the fact that every precaution is taken to favor the rapid removal of all discharge from the wound by the hypertonic salt solution and a "salt pack." This pack, it seems, might be hurtful if one followed the directions by putting salt tablets in the dressings to be dissolved by the discharge from the wound, and in this way maintain the saline strength in the dressings. Might not such a "pack" act to dam back secretions from the wound, and prevent drainage? "Hot packs" of any sort, Dakin solution, hypertonic saline solution, or even sterile water, if such "packs" are changed frequently, not only facilitate drainage, but help to maintain adequate circulation and prevent lymph blocking. If any such hot pack be used and not used too long, drainage is facilitated. On the other hand adequate drains in a wound with a moderate amount of dry dressings that do not prevent drying of the wound quickly, are both rational and efficient.

Both schools agree thoroughly that all infected material must be removed from the wound, that drainage must be thorough and to all parts of the wound, and that such drains must drain the wound and not leave pockets; that drains, either tubes or gauze wicks, must be so placed that no obstruction is left to the free exit of secretions; that the antiseptic used must not be so strong that coagulation of the discharge takes place or irritation is caused; that, where practicable, wounds should be left open and not covered with thick heavy dressings that might by their saturation with the discharge act as a "pus poultice" and obstruct such discharge, clogging up lymph spaces, and favoring absorption rather than elimination of wound secretions.

The middle ground between these schools seems the most logical, as they both aim at the same ideals and for what surgeons have been striving for these many years, free mechanical drainage to all portions of the wound. If frequent irrigation of the wound by some solution that does not irritate tissue, and that is mildly antiseptic, will accomplish better mechanical drainage than will drainage tubes or wicks, such irrigation should be used, for war surgery differs from civil surgery only in so far as it is different in degree and character.

The handling of large numbers of cases under unfavorable conditions, necessitating prompt and efficient drainage, seems to have been met by both schools. They do not differ much in results. It seems to many of us that there are middle grounds between these schools that will prove of inestimable value; that the ingenious methods devised to procure adequate and prompt drainage, and to maintain such drainage until all infection has been removed, are used by all.

The selection of an antiseptic to be used in a wound is only one factor, but the way it is used is essential to its efficiency. Carrel claims that the rapid washing out of a wound with the strongest antiseptic and keeping the agent in contact with the infected area for a few minutes only, produces little or no results, and sometimes the application of strong antiseptics does harm rather than good. for if such agent produces coagulation of wound secretions or necrosis of tissue harm will result.

There are many problems in the treatment of wounds that are being worked out from a matter of necessity and so far it does not seem possible to use any of our present antiseptics in strong enough solution to sterilize wounds thoroughly by a few applications without producing either a coagulation of the wound secretions or necrosis of tissue, which favors bacterial growth.

The most effective way of treating such wounds is to use weaker antiseptics that limit bacterial growth, and do not irritate, but constantly cleanse the wound of all material favoring bacterial growth. The problem of reaching such wounds through the blood stream either by a vaccine or chemical agent has not been solved, but the downfall of autocracy may bring with it the downfall of the autocrats of wound infection, and although the price in human life seems appalling to us now, future generations may reap some benefits in the conservation of human life by the handling of wound infections.

Chamber of Commerce Building.

Salvarsan and Metasyphilis.—Le Pine is a pessimist on the use of the arsenobenzols in tabes and paresis. They are not only inert but actually injurious. Moreover a salvarsan cure does not always protect against tabes.—*La Presse Médicale.*

CESAREAN SECTION FOR ECLAMPSIA IN TWIN PREGNANCY, SAVING MOTHER AND BOTH CHILDREN.

By AUGUST SCHACHNER, M.D., F.A.C.S.,
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In view of the unsettled state that attends the treatment of eclampsia, coupled with a somewhat rarer feature of twin pregnancy and its successful issue for mother and both children, the writer deems the publication of this case a justifiable contribution to the subject.

The pathogenesis represents a fertile field still awaiting some patient investigator with the necessary time and perseverence to solve this obscure problem. As for the therapy, the writer is inclined to the belief that the quicker the uterus is emptied, the better, and the quickest way to accomplish this by means of a cesarean section.

The following extracts from McPherson[1] and Peterson[2] are instructive: "Regarding the frequency of the condition, 250 cases occurred in 14,899 labors, which means one case to every sixty labors, or 1.7 per cent. of all labors. This is a high percentage and is due to the fact that a hospital is the clearing house for so many of the cases occurring in the city, and the probability is that it is about eighteen times as frequent in hospitals as in private practice, the basis for this statement being that in our out-patient department, which represens private practice in 46,252 cases, eclampsia was encountered forty-three times, that is, one case in every 1,075 labors, or 0.09 per cent., as opposed to one case in every sixty labors in the wards of the hospitals, or 1.7 per cent. The condition is almost twice as common in primipara as in multipara, being 64.4 per cent in the former and 35.6 per cent. in the latter, which proportion is more nearly equal, however, than the figures commonly given. Multiple pregnancy is noted in this series in twelve cases, twins occurring eleven times and triplets once. In the series here reported, eclampsia was noted in the antepartum cases 140 times, or 56 per cent. In the postpartum cases eighty-six times, or 34.4 per cent., and in the intrapartum cases twenty-four times, or 9.6 per cent. Regarding the age of the patients, the youngest noted was fifteen and the oldest forty-eight years of age, the greatest number of cases occurring between the ages of twenty and twenty-five, which is in accord with the fact that the greatest number of eclampsias occur in primipara."

Frequency of Multiple Pregnancies in Eclampsia.

	Number of Cases.	Twins.	Percentage.	Triplets.	Percentage.
Esch	496	19	3.8	....	....
Glockner	147	9	6.1	1	....
Goedecke	403	19	4.7	1	....
Goldberg	81	4	4.9	....	....
Olshausen	200	16	8.0	....	....
Peterson (vaginal cesarean)	530	17	3.2	....	....
Peterson (abdominal cesarean)	500	21	4.02	....	....
Schauta	342	27	7.8	....	....
Zweifel	83	5	6.0	1	....
	2782	137	4.9	3	.13

It was found in the former investigation that the maternal mortality was higher among the multipara than with the primipara. In the 3134 collected cases it was 28.4 per cent., in the 771 multipara, while it was 22.35 per cent. or lower by 6 per cent. among the primipara. The age of the youngest patient was twelve and that of the oldest forty-six, the average age of 448 patients was 26.6 per cent.

The operative treatment of eclampsia has never been given a fair trial. To do this the uterus should be emptied quickly, as soon as possible after the onset of the first convulsion, not emptied after all kinds of medical treatment have been tried and failed.

Twins occurred twenty-one times in 500 cases of abdominal cesarean section for eclampsia or in 4.02 per cent. of cases. This is over three times as frequent as are twins in normal cases.

The maternal mortality in eclampsia after abdominal cesarean section steadily increases with the age of a patient, it being 23.63 per cent. between the ages of sixteen and twenty and 31.11 per cent. between the ages of thirty-one and thirty-five.

The mortality is distinctly higher after abdominal cesarean section in eclampsia if vaginal examinations have been made prior to the operations. The danger increases directly with the number of examinations made and the lack of asepsis employed. (Peterson.)

The following case was referred to the writer through the kindness of Doctors R. B. Scott and E. D. Whedbee:

Mildred B. (colored) age 19; occupation, housekeeper, primipara. Family history. Father died of asthma, age 48; mother living. Aside from the diseases common to childhood, she had never been sick. Menstruated normally since the age of 13 and continued so until interrupted by pregnancy in June, 1916.

Gestation normal until the eighth month when edema of feet and labia occurred. This increased until a week from the operation when the edematous labia reached a size as to interfere with the approximation of the limbs. A small amount of albumen was present in the urine when the edema began in the eighth month and increased to the time of operation, when large quantities of albumen were present. Eclampsia and premonitory signs of labor occurred simultaneously at the full term of gestation, March 12, 1917, at 7 A. M. For the control of the seizures the attending physician resorted to an anesthetic. The patient was removed to the Red Cross Hospital where the operation was performed. About noon, March 12, the writer assumed charge of the case.

Operation. Preliminary hypodermic of pituitrin was given just before making the incision. Gas ether anesthesia. Incision above the umbilicus and extending to about 5 cm. below umbilicus. The entire length of the incision in its stretched state was about 20 cm. This contracted to almost half after the delivery of the uterine contents and to fully half after recovery. The peritoneal cavity was in a measure protected by moderate packing around the interior circumference of the incision, together with a crowding of the edges against the uterine surface through pressure exerted by the assistant. An incision of hardly 15 cm. was made into the uterine wall with the membranes intact. The membranes were separated as far as possible from the uterine wall before they were opened. After as thorough a separation as possible, the membranes were opened and the children extracted by traction upon the feet with the delivery of the head last. This was carried out in each instance. Following the delivery, the separation and removal of the membranes was completed. The emptied uterus was almost outside of the abdominal incision, at least sufficiently so as to enable the closure of the uterine incision, outside of the peritoneal cavity. The uterine wound was closed with three layers of sutures. The first, No. 2, chromic gut,

including the endometrium and part of the muscularis. The second, a No. 4 catgut plain, involving the muscularis, and taking a liberal purchase with each stitch. The last, a serous stitch (Cushing) with No. 1 Pagenstecher. The wound healed primarily. The post operative course was practically uneventful, except for a mild rheumatic attack that occasioned some joint pain and a temperature curve varying from 99 to 102° F. During the first postoperative days, the breasts were inflated with air and massaged by Dr. Gary, who had employed this treatment in other cases and believed it to be of value. If any benefits attended the treatment in this case, they remained unobserved. The sex of the twins was female. The weight, 48 hours after the operation, was 2½ and 4 kilos, respectively, and at the time of leaving the hospital, almost six weeks after the operation, their weights were 5 kilos and 6½ kilos, respectively, or jointly almost double their weight at birth. There were five seizures on the same day following the operation, as follows: 3:40 P. M., 6 P. M., 6:45 P. M., 8:10 P. M., and 11:40 P. M., and four additional seizures the day following, namely, 2:45 A. M., 8 A. M., 11:10 A. M., and 1 P. M., making in all nine seizures after delivery.

The records show no seizures thereafter. At the time of writing, a little more than four months after the operation, both mother and children are doing well.

REFERENCES.

[1]McPherson, Ross: A Study of Eclampsia. With the Results in Two Hundred and Fifty Cases. *Bulletin of the Lying-in Hospital of New York*, December, 1909.

[2]Peterson, Reuben: A Critical Review of 500 Published and Unpublished Cases of Abdominal Cesarean Section for Eclampsia. *The American Journal of Obstetrics and Diseases of Women and Children.* Vol. LXIX No. 6, 1914.

BLOOD IN THE STOOLS IN DUODENAL ULCER.*

By AUGUST J. P. PACINI, M.D.

NEW YORK.

WHEN a suggestively characteristic history is obtained the finding of occult blood in the stools warrants a confident diagnosis of duodenal ulcer. To be sure, in deciding the importance of the blood in the feces one must feel certain of having excluded that arising from food, from hemorrhages in other parts of the gastrointestinal tract, from hemorrhoids, and, in the case of female patients, from blood occasionally present in vaginal discharges which may become admixed with the feces at the time of defecation. It is a matter of no inconsiderable importance carefully to choose the test employed to detect the blood, and further rigidly to adhere to the detailed technique incident to whatever test selected. Adler's benzidine test has registered against it a few objections, but it embraces so many commendable features as to place it preeminently first in consideration. In this test, preliminary extraction of the stool with a mixture of alcohol and ether is a necessary requisite.

Fresh blood is readily detected, but blood which has undergone chemical change from physiological or pathological influences, or which has become most intimately mixed with the feces, may be so disguised or occluded as to render its recognition a matter of difficulty. In a series of thirty-two cases of duodenal ulcer wherein the clinical diagnosis was rightly confirmed at operation, routine benzidine tests were positive in twenty-six, or 81.25 per cent., and negative in six, or 18.75 per cent. of the cases.

The first case in the series presented unmistakable clinical and roentgenological evidence of duodenal ulcer, though the laboratory examination of the feces was negative for occult blood. It had developed in the history of this case that marked hemorrhages, and occasional tarry stools, had been noted at intervals of four or five months, some three years before, and while recurrence was not again observed, the acuteness of the present attack so simulated the previous ones attended by free hemorrhage that it seemed improbable that bleeding was entirely absent now. Accordingly, other tests were conducted, and included the guaiac (Van Deen's) test, spectroscopic examination for hematin, and microscopic search for crystalline blood pigments.

Common opinion, based upon established laboratory investigations, agrees in concluding that the benzidine is more delicate than the guaiac test. This was not possible to confirm in the short series studied. It is not denied, however, that in watery solutions of blood benzidine will react in dilutions with which guaiac has failed. In explanation of this apparent contradiction, the suggestion is tendered that, rarely, there is eliminated in the feces a substance which inhibits the benzidine though permitting the guaiac reaction for blood. As a precaution against occasional error revealed by this finding, it appears advantageous to conduct both tests upon the same stool.

If oxyhemoglobin is destroyed, as in the digestive tract when acted upon by the gastric or duodenal juices, a decomposition product, hematin, is formed. To this pigment is due the dark color of "coffee ground" vomitus in gastric cancer and the tarry appearance of the stools in some cases of duodenal ulcer. Arnold demonstrated three modifications of hematin, each showing a spectroscopic difference. These are acid hematin, neutral hematin, and alkaline hematin. Neutral hematin is without clinical interest. The differencce in the spectra of the acid and alkaline variety is distinct, and is recorded in standard text-books on clinical diagnosis. By noting the reaction of the stool to litmus it is usual to foretell the type of hematin (acid or alkaline) expected. Inspection of the tabulated findings will disclose that in two instances both the guaiac and benzidine tests had failed, but the spectroscopic examination revealed alkaline hematin (cases No. 1 and No. 28).

A striking observation which prompted this report was made in the last case of the series. Here the guaiac and benzidine tests had failed, the spectroscopic examination did not reveal any hematin, yet the microscopic search revealed occasional crystals of hemin; that is, hematin hydrochloride. These were identified with absolute certainty crystallographically. It is further noteworthy that the crystals were found in a stool which reacted strongly alkaline to litmus, a condition which adds to the complexity of the situation from a chemical viewpoint, inasmuch as the conversion of hematin to hemin is occasioned by the addition of hydrochloric acid. Anatomically, the ulcer at operation was located quite close to the pyloric ring, and it would seem that the conversion of the oxyhemoglobin to hematin, then to hemin, took place readily at that point high up in the gastrointestinal tract, and that

*From the pathological laboratories of the American Telephone and Telegraph Company.

the hemin passed unaltered until expelled with the feces, the alkalinity of the feces along the tract being insufficient to destroy it.

TABLE SHOWING CONDITION OF BLOOD FOUND IN FECES FROM THIRTY-TWO CASES OF DUODENAL ULCER, THE DIAGNOSIS CONFIRMED AT OPERATION.

Case No.	Reaction.	Guaiac Test.	Benzidine Test.	Hematin.		Hemin Crystals.
				Acid.	Alkaline.	
1	Acid	−	−	+	+	−
2	Alkaline	+	+	+	−	−
3	Alkaline	+	+	−	+	−
4	Alkaline	+	+	−	+	−
5	Acid	+	−	+	+	−
6	Alkaline	+	−	−	+	−
7	Alkaline	+	+	−	+	−
8	Alkaline	+	+	−	+	−
9	Alkaline	+	+	−	+	+
10	Alkaline	+	+	−	+	−
11	Acid	+	−	+	−	−
12	Alkaline	+	+	−	+	−
13	Alkaline	+	+	−	+	−
14	Alkaline	+	+	−	+	+
15	Alkaline	+	+	−	+	+
16	Alkaline	+	+	−	+	+
17	Alkaline	+	+	−	+	+
18	Alkaline	+	+	+	+	−
19	Alkaline	+	+	−	+	−
20	Alkaline	+	+	−	+	−
21	Alkaline	+	+	−	+	−
22	Alkaline	+	+	−	+	−
23	Acid	+	+	−	−	−
24	Alkaline	+	+	+	+	−
25	Alkaline	+	+	−	+	−
26	Alkaline	+	+	−	+	−
27	Alkaline	+	+	−	+	−
28	Alkaline	−	−	−	+	−
29	Alkaline	+	+	−	+	−
30	Alkaline	+	+	−	+	−
31	Alkaline	+	+	−	+	−
32	Alkaline	—	−	−	−	+

In conclusion, the following suggestions are submitted:

1. Blood in the feces is a finding of positive value (in this series it was present in every case in some form), when extraintestinal sources are absolutely eliminated, in cases of duodenal ulcer.

2. The examination should include the guaiac test, the benzidine test, spectroscopic search for hematin, and microscopic search for hemin crystals.

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HENOCH'S PURPURA.

BY M. B. WESSON, B.S., M.D.,

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THIS case belongs in the group which Osler designated as "exudative erythema," and illustrates the difficulty of classification. The etiology is unknown. There were polymorphic skin lesions, edema, hemorrhage, arthritis, gastrointestinal crises, and acute nephritis. In July it would have been called peliosis rheumatica, but in September it was clearly a case of Henoch's purpura.

Onset was with subcutaneous nodules over hips in July, 1916, accompanied by rheumatism; these disappeared at the end of one month and were followed by gastrointestinal crises; then an asthma with rapid respiration and subnormal temperature developed; gonorrhea present. Urine contained 1 per cent. albumin, with fine granular casts; on September 5 a purpura developed; anasarca of feet, legs, and hands appeared, and death followed on September 23, 1916, from terminal pneumonia.

Miss M. H., age 21, normal weight about 140 pounds, cabaret dancer, no previous history of illness aside from operation in 1912 for removal of tonsils and adenoids. For the past three years has been a moderate user of alcohol. Denied venereal infection. She gave a history of the development on July 1, 1916, of a number of subcutaneous nodules about the hips. She stated that these were not stationary, but disappeared and reappeared and changed position without any apparent reason. When they were present, her knees were painful but not swollen, and eventually other joints became involved. All symptoms had disappeared by August 1, at which time gastrointestinal crises appeared, anorexia, pain, diarrhea, and vomiting without any reference to the time of food ingestion. Eventually, an asthma developed, and when I first saw her on September 3 she was markedly emaciated, not weighing over 90 pounds, and was sitting upright in a chair, having considerable trouble to get her breath—had not been able to breathe in a recumbent position for ten days. Her diet consisted largely of dill pickles and lemonade, she having been under the care of a Christian Science healer for one month. Her temperature was 95° F. (mouth), pulse 124, respiration 44.

Lung examination showed diffuse rales, an apparent hypostatic congestion of bases, with prolonged expiration at apices. Heart, point of maximum impulse visible and palpable in 5th I. S., 8 cm. to left of midsternal line; no murmurs and no accentuations. Abdomen was more or less rigid and painful to the touch, spleen not palpable, and liver edge extended to costal margin. No evidence of pyorrhea alveolaris. Sputum was difficult to obtain, never rusty, and contained no pneumococcus or acid fast bacilli. Vaginal examination: Uterus immovable and pelvic contents seemed to be matted into one mass; urethral smear negative, but uterine showed gonococci.

Urine (24 hr. spec.), 26 oz., amber color, sp. gr. 1020, acid reaction; no sugar, 1 per cent. albumin, few fine granular casts, numerous pus cells, no R. B. C.

Blood: Red cells, 4,640,000; white cells, 20,000; Hb., 85 per cent.; differential polynuclears, 87 per cent.; small lymphocytes, 3 per cent.; large lymphocytes, 3 per cent.; large myelocytes, 6 per cent., and transitionals, 1 per cent. Wassermann test was negative.

On Sept. 5, purpura developed on chest, which gradually extended to entire front of body and extremities; back not involved. Bowels moved daily, but after a thorough catharsis followed by strong enemas three full bed pans of feces were removed at one time.

Throughout the illness, the temperature ranged from 95° to 100° F., generally subnormal; the pulse ranged from 108 to 124, and the respiration 40 to 44.

The patient gradually improved under symptomatic treatment (arsenic, as suggested by Dr. Osler, was used in form of sodium cacodylate), but on September 18 a general anasarca developed and death occurred on September 23—due to terminal pneumonia.

The case is reported on account of the rapidity of progress and the question of the gonorrhea as being the etiological factor responsible, as there had evidently been a very malignant gonococcal infection which had spread to peritoneum and caused adhesion with resultant coprostasis and autointoxication.

212 ROBERTS' BANNER BUILDING.

The Tongue Signs in Pernicious Anemia.—Zimmermann refers to burning pains in the tongue, which not infrequently accompany this condition and to actual redness, fission and miliary vesicles, which are sometimes added. These phenomena have not been seen in other severe anemias. — *Muenchener medizinische Wochenschrift.*

Schauta on Irradiation for Cancer of the Uterus.—As a pioneer in the radical operation for uterine cancer Schauta is sceptical as to the wearing qualities of the new methods of treating this affection. He has treated eighteen operable cases with radium and has four "cures" after one year and one three-year cure, but seven patients have already died, while the others have disappeared. Radium is on trial. The idea of irradiation is popular with patients, and that is an advantage to be considered.—*Correspondenz-Blatt für Schweizer Aerzte.*

Military Medicine.

MEMORANDUM ON THE TECHNIQUE OF THE SUTURE OF WAR WOUNDS.

By CLARENCE A. McWILLIAMS, M.D.

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In a tour of the British hospitals of the Third Army, the conclusion was arrived at that no standard method of treating wounds had been reached as yet. Two principles had, however, won universal recognition: first, the earliest possible treatment of the wounds after their reception, and, second, the necessity of the thorough excision of the tissues of the damaged tract together with the missile. There seemed to be general recognition of the value of the Carrel method of treating wounds, but efforts were being made to overcome the difficulties of using the Carrel treatment, while the patients were en route to the base hospitals from the front, by the employment of various antiseptic pastes. The regimental aid posts are the first-aid stations, situated usually in dugouts in the second-line trenches. From this station the patients are brought along the communicating trenches to the advanced dressing station, situated in the cellar of some ruin, where more pretentious first aid is given. The patient then is carried in Ford ambulances to the main dressing station (a field ambulance), which has 150 beds. Here few operations are performed except those of urgency, such as the stoppage of hemorrhage. The main dressing station is situated from three to four miles from the trenches. Patients in severe shock are kept here until recovery from this is sufficient to warrant their removal to the casualty clearing station, which is located five or six miles from the firing line. This station has a varying number of beds, usually from 600 to 1000. This is where all operations are performed and missiles extracted, an *x*-ray plant being in immediate proximity to the operating room. The casualty clearing station immediately adjoins a railway track by means of which all patients are evacuated by trains to the base hospitals as soon as their condition warrants this. The treatment of wounds in Casualty Clearing Station No. 3 is as follows:

A. *Excision of the Wound.*—1. After sterilization of the skin, every endeavor is made to stain all the tissues of the wound tract or surface with a ½ per cent. solution of brilliant green or ½ per cent. methylene blue. The stained tissues render the thorough excision of the whole damaged area easier. In the case of a tract this staining is done by injecting the stain through a rubber tube closed at one end like a Carrel tube, and perforated by many very fine holes; at the distal end are two larger holes. Tubes perforated for a distance of 2, 4, 6 and 8 inches are used. A suitable tube is passed along the wound tract, if possible, up to the foreign body or fracture. No force must be employed in spraying the dye in order to avoid forcing it along intermuscular planes. In the case of a surface wound, a syringe and a mop are used. After two minutes the excess dye is wiped away. Hemorrhage prevents staining.

2. The wound is then excised, using the stain as a guide. A wide exposure of the parts is made, including incisions through healthy skin; an incision of 8 or 9 inches long to expose a fractured femur is frequently required. Whenever possible the whole of the tract should be seen and not simply felt. Damaged muscle does not twitch or bleed on being cut. All this should be removed, as gas gangrene occurs most frequently in damaged muscle, until the muscle twitches and bleeds on being cut. The excision proceeds from the skin to the missile, which is removed last, preferably wrapped in the tissues which surround it. Dirty bone is gouged out. Fragments of bone which are attached are not removed, only loose ones being taken away. Having regard for important structures, all stained tissue must be removed. The tissues and clothing around the missile ought to bear traces of the dye.

B. *Application of Paste.*—One of the first pastes was "*bipp*," which consisted of bismuth, iodoform, and paraffine. On account of a number of poisonings which have occurred after its use the army has recommended that it be given up.

The present paste in use has the following formula:

℞ Boric acid.....11 oz.
French chalk.....1 oz.
Liquid paraffin.....8 fl. oz.
Brilliant green.....17½ grains, *i.e.* 1-500

The boric acid and French chalk must first be intimately mixed in a mortar, then the liquid paraffin worked in, and, finally, the brilliant green, dissolved in rectified spirit, added. Considerable time and energy are required to avoid a paste with many isolated masses of boric acid. It is kept in jars and in large syringes with very wide nozzle apertures. A grease pump is useful.

As to brilliant green, the conclusions of an article in the *British Medical Journal*, June 30, 1917, p. 870, are: (1) Brilliant green is undoubtedly an active and efficient antiseptic. (2) It is non-irritant. (3) It acts well in the presence of serum. (4) It possesses very definite "auxetic properties." (5) It stains dead tissues green, and in this way may aid the surgeon in determining what to excise. (6) As it is soluble in "saline," it can be used in conjunction with the "salt pack." (7) It can be used after the method of Carrel.

Use of the Paste.—1. All bleeding having been arrested, the wound is dried throughout with spirit or 1 per cent. picric acid in spirit.

2. The paste is rubbed in as with "bipp" and it must be done with all thoroughness into every recess; five minutes ought to be so spent in dealing with extensive wounds. The syringe is used to bring the paste to all deeper parts before rubbing it in and later to fill the cavity. The deepest parts are treated first. Bone fracture areas must be packed with it. Sutures are occasionally inserted to bring together skin edges which have been divided by the knife. Dry gauze dressings are used. A paste made of the aniline dye flavine is also used and seems to be as efficacious as that of brilliant green.

C. *After Treatment.*—Where the case (1) progresses favorably the wound is not looked at until the temperature is normal in the evening, which usually occurs on the third or fourth day in wounds of soft parts. A smear count is then made; an average of 4 cocci per field should be the maximum for

suturing. If for any reason suturing is not advisable, the wound is repasted if that originally put in has disappeared.

2. Progresses unfavorably, the excision or pasting has been incomplete. Then further operative measures and repasting are necessary. The temperature may be slow in coming down, although the wound is clean. Here boric fomentations have proved of value.

D. *Suture of Wounds.*—Under an anesthetic the wound is wiped out and dried with spirit and the edges freshened. A very thin film of paste is then everywhere rubbed in and the excess wiped away. Silkworm sutures are inserted, some undermining being often necessary to close the cavity. Tension sutures have fine rubber tubing threaded in to them. There should be no tension in the skin, this being overcome by undermining. No drain except a minute one in some fractures is used.

A dressing is taken down only because of an unfavorable prognosis, for a count, or for the removal of sutures. A string scar usually results. Nitrous oxide anesthesia is occasionally necessary for deep repasting in the ward. Where the foreign body has not been removed, this treatment should not be followed. Abdominal and head wounds (primary suture), excisions of joints, etc., are treated in the same way.

Amputations.—All amputations in which flaps are cut (and the only exceptions are in some cases of gas gangrene) are pasted in the same way, the flaps being apposed by one or two sutures. Complete suture is done when the temperature is normal, fresh paste being applied.

Primary suture may be performed in selected cases of wounds of soft parts where a complete excision of damaged tissue has been possible.

The results of this treatment as I saw it seemed most favorable. Where a clean excision of all damaged tissues is done, one would expect a good result without the paste, although one could scarcely hope to obtain an absolutely uncontaminated wound. The object of the paste is to take care of infection of the wound coming from the damaged tissues during the excision. Excision of damaged tissues seems to be the one clear procedure which experience in this war has proved to be the most life saving with the Carrel treatment a close second. Whether some form of paste will take the place of the Carrel treatment in overcoming sepsis remains to be seen.

SANITARY STATISTICS OF THE AUSTRO-ITALIAN WAR.

BALESTRA has compiled some interesting figures, having both sanitary and military significance, which appeared originally in the *Giornale di Medicina Militare* and have been summarized in the *Office International d'Hygiene Publique* for August. A chronological division is made for purposes of comparison. The first period extends to Dec. 31, 1915, and the second from January, 1916, to June, 1916. Figures on morbidity are limited to hospital cases, although it must be understood that there was much illness in the ranks which was not deemed serious enough for hospitalization. The average daily hospital morbidity for the first period was 2.71 per 1000; for the second period, 1.57 per 1000. These figures seem particularly gratifying because the calculated morbidity for large units was 4 per 1000. The chief credit for this result should be awarded to sanitary prophylaxis. The figures for individual sectors show great seasonal and other variations and a definite idea of morbidity could not be obtained save in grand averages. The hospital admissions showed the following percentage distribution of diseases: Ordinary medical maladies, 58.81 for the first period and 66.81 for the second period; ordinary surgical affections, 12.49 and 17.80; endemo-epidemic diseases, 7.57 and 3.59; affections of the eyes, 9.06 and 4.44; venereal diseases, 9.05 and 4.62; scabies, 3.02 and 2.74. The reduced morbidity in the four smaller categories naturally raises the percentage of the ordinary medical and surgical cases.

Next in order come the figures for the wounded by character of weapon used: Artillery, 46.91 per cent. in the first and 54.74 in the second period; portable weapons, 52.60 and 39.16; side arms (bayonets, etc.), 0.36 and 0.59; gas, 0.13 and 5.61. A comparison of these figures with corresponding figures of the Russo-Japanese war shows marked differences. At the earlier period gas was unknown and the percentages of wounds were, infantry weapons, 80; artillery, 15; side arms, 5. In the Italian figures bombs and grenades are classed under artillery. The low percentage of sabre and bayonet wounds in the Italian service is readily explained by trench warfare, which has largely eliminated them, since the grenade does the work of the bayonet.

In regard to severity of wounds the serious injuries made up 31.60 per cent in the first and 23.62 in the second period; the figures for the medium wounds were 55.38 and 63.01. Finally wounds so slight that the victims returned at once to the ranks were 13.02 and 13.07. The site of wounds (head and neck, trunk and extremities) agrees with those on other fronts, the majority being in the extremities (64.3 and 56.4). The percentages for the head and neck were 18.4 and 21.92; for the trunk, 17.3 and 21.63.

In regard to mortality from wounds the figures for deaths on the battlefield were 5.47 and 7.87; for deaths resulting later from wounds, 11.24 and 10.16; totals, 16.71 and 18.03. These figures are much lighter than the calculated mortality of 25 per cent.

Care of the Tuberculous Soldier in France.—The organization for the diagnosis, treatment, and aftercare of tuberculous French soldiers is divided into four sections: (a) Special consultations. (b) "Centres de Triage." (c) Hospital sanatoria. (d) After care. Special consultations are held by the Army Medical Service from time to time to examine any soldiers thought to be infected with tuberculosis.

All soldiers suffering from tuberculosis, or in whom there is the slightest indication that they are likely to develop the disease, are sent to the "Centres de Triage," which are in direct connection with the above mentioned service. The examination of the men is there carefully carried out. Those found to be suffering from tuberculosis are sent to sanatoria established under the

direction of the Minister of the Interior. The Military Medical Service made an agreement with the Ministry of the Interior that no soldier should be discharged until he had received at least three months' treatment in one of these institutions. Thirty sanatoria have been established in various parts of the country. These are intended not only to afford treatment of the disease, but also for the education of the patients in the best way of caring for themselves and of preventing the spread of infection to those around them after they leave the hospital. A number of other institutions for the treatment and care of the tuberculous have been established by private enterprise.

In spite of all that has been done, however, the accommodation provided for the tuberculous soldier is lamentably insufficient. It was stated recently that there were more than 25,000 soldiers in need of sanatorium treatment for whom no place could be found.

Department Committees have been formed for the purpose of watching over the welfare of men discharged on account of tuberculosis. The Prefect of each Department is furnished with a list of men treated in the sanatoria, and on their discharge he informs the Department Committee. Then visitors, chosen as far as possible from the class to which the tuberculous person belongs, are appointed under the committees to go to the men's homes and find out what can be done to insure their living under conditions favorable to themselves and to their families.—*Recalled to Life.*

Health of the United States Expeditionary Forces.—Reports to the Surgeon General of the Army on health conditions of the American Expeditionary Forces for the week ending November 9 give the following information: The annual admission rate per thousand (the ratio of new cases of a disease which would be found per thousand men per year if the proportion continued throughout a year the same as during the period covered by the report) was, for pneumonia, 16.6; dysentery, 2.0; malaria, 1.0; venereal disease, 181.5; typhoid, 0.0; paratyphoid, 0.0; measles, 27.1; meningitis, 1.0; scarlet fever, 1.9. The noneffective rate (the number of men per thousand who on the day reported were excused from duty for any injury, sickness, or indisposition whatever) was 31.6. The total of deaths for the week ending November 9 was 8; from disease, 4; 3 from pneumonia, and 1 from heart disease; from wounds received in action, 3; from accidental gunshot, 1.

Civilian Practitioners May Help Prevent Camp Scourges.—Medical officers of the Army and Navy have been somewhat concerned over the frequency with which infectious diseases of all kinds develop among recently drafted men, which stands out in contrast to the remarkable freedom from infectious diseases in the regular army. Following a conference held in Washington last month between various prominent officials and medical officers of the Army and Navy, a call has been issued to the medical profession practicing among the civilian population in the territory in the vicinity of military camps to exercise the greatest caution in preventing the spread of infectious diseases to the men of the camps. A meeting to consider the ways in which the civilian practitioner could best do his bit in this direction was held by the Kings County Medical Society in Brooklyn on November 20. Major William F. Snow was detailed by the Surgeon General's Office to address the meeting. The Queens and Nassau County Medical Societies held a similar joint meeting in Long Island City on November 27. The goal to be reached through the cooperative efforts of the civil practitioners and military authorities is to reduce the amount of infectious disease in all military camps to as low a figure as that of the regular army.

Stricter Physical Examinations for Drafted Men.—At the suggestion of Dr. Robert L. Dickinson, Assistant Chief of the Medical Committee on National Defense, Charles E. Hughes, chairman of the District Board of Appeals of New York, has appointed a committee of five physicians whose duty it is to try to find a way of reducing the number of physically unfit men who are sent to the army cantonments for service in the National Army. The members of this committee are Dr. E. E. Hicks, Dr. George E. Doty, Dr. J. E. Shuttleworth, Dr. H. T. Raden, and Dr. J. S. Waterman. It is authoritatively stated that from 2 to 9 per cent. of the men sent to camps have been rejected after reaching the cantonments. Officials wish, if possible, to reduce this percentage to zero.

Dr. Blake's Hospital to Care for American Soldiers.—The hospital which Dr. Joseph A. Blake of New York established in Paris soon after the war began, and which has been caring for wounded soldiers ever since, has come under the supervision of the American Red Cross, and is hereafter to be known as American Red Cross Military Hospital No. 2. It will care primarily for wounded American Soldiers.

Army Food Inquiry.—The War Department is about to undertake an investigation of food conditions in the army cantonments because of complaints of waste, most of which were made while the camps were in the hands of contractors. Surgeon General William C. Gorgas has been selected as head of the committee to make these investigations in cooperation with the Quartermaster General's Department and the Food Administration The Food Administration has thus far made no attempt to control, either directly or indirectly, the feeding of the army. It is quite generally felt that the country wishes every American soldier to receive every particle of food necessary to his adequate nourishment, yet it is recognized that some waste exists in the camps. This is explained on the ground that the Government furnishes an adequate supply of plain food, and at the same time the civilian population in the neighborhood of camps make many gifts of large quantities of food. It is pointed out that this is a mistake, and that the only gifts needed in the way of food are delicacies.

Bellevue Hospital Unit Mobilizes.—The Bellevue Hospital Unit, New York City, known as Base Hospital No. 1, has mobilized its 300 members at the Twelfth Regiment Armory. The unit includes 300 members, of whom 35 are doctors and 83 nurses.

Lectures in Military Medicine.—Col. Louis A. La Garde, Medical Corps, U. S. A., retired, has again entered the service, and has been ordered to proceed

to New York for the purpose of presenting a course of eight lectures on military medicine and camp sanitation, and additional lectures on military surgery at the University and Bellevue Hospital Medical College.

Dr. Philip Marvel of Atlantic City has been appointed by Provost Marshal Crowder as an officer of the Medical Reserve Corps to assist in organizing the medical advisory boards of New Jersey in connection with the new draft. Dr. Marvel will have the rank of major.

Deaths in the Service.—A despatch to the Navy Department announces the death of Assistant Surgeon Dudley W. Queen, attached to the destroyer Cassin, which was recently damaged by a German torpedo, in Ireland, on November 20. He joined the naval reserves last May. At the same time General Pershing reported that First Lieutenant Orlando Gochnaur, Medical Officers' Reserve Corps, attached to the British forces, was killed in action on November 6. On the same day, First Lieutenant Alexander J. Gillis of the Medical Reserve Corps, attached to the British Army, was slightly wounded.

Flower Hospital Raises Flag.—Flower Hospital recently unfurled a service flag bearing 120 stars, the gift of Major William Tod Helmuth and Mrs. Royal S. Copeland. When the presentation exercises were over 300 medical students in uniform paraded in the neighborhood of the hospital.

To Increase the Supply of Nurses.—The committee on nursing of the General Medical Board of the Council on National Defense has invited the assistance and cooperation of the woman's committee in its efforts to increase the supply of nurses for home and foreign service. A survey of the present nursing facilities of the country, including trained, untrained, and volunteer workers, has been authorized by the Council on National Defense, and will be conducted under the supervision and direction of the American Nurses' Association. To be effective it must have the cooperation of all private agencies and public boards and bureaus. It is proposed that a campaign of public education be carried on through extensive circulation of personal letters, through a magazine campaign, and by means of public addresses before women's clubs, to stimulate the interest of educated young women in nursing as a war service. The main purpose of the committee on nursing is to keep the nursing care of the same quantity and quality as before the war, without interfering with the future supply of nurses through a breaking down of the machinery of nursing education.

Work of the American Red Cross in France.—Major Grayson M. P. Murphy, Red Cross Commissioner for Europe, has submitted a report of the work in military relief now being conducted and organized by the American Red Cross in France. The preamble to the report states that "First of all the American Red Cross stands ready, as a semi-official voluntary body, to put its money, supplies, and organization at the call of the American Army at every point and at any time, wherever and whenever they can be of use." It organizes and turns over to the Government absolutely the hospital units that are employed in France. The mere titles of the various activities described in this report give some idea of the exceedingly broad scope of the work being carried on. Among the various branches of the work described are the following: Caring for the wounded, rest stations, guarding the soldiers' surroundings by making the region in which American troops are quartered a healthier place, portable kitchens, laundries, baths, ice plants, dental ambulances, ophthalmological ambulances, portable sterilizing plants, portable lighting plants, artificial limb shops, medical and surgical research work, including a study of "shell shock," emergency medical stores, non-medical work, canteens, libraries, help in getting reports of sick, wounded, or missing. The distributing service of the American Red Cross has now 3,617 hospitals on its lists, situated all over France, but most numerous in the departments back of the front. Hitherto a hospital was given one-half the supplies it asked for; now it is given perhaps three-fourths, the French to supply the remainder. It is prepared to furnish expensive equipments, such as radiographic installments, sterilizing plants, and special instruments needed by surgeons. The Red Cross in France is being reorganized, and is attempting to build up reserves that will enable it to meet any emergency of any size that may present itself. Although they have been adding to the number of hospitals at the rate of 100 a month, there are not at present hospital accommodations sufficient to care for the rapidly growing personnel of the American civilian workers in case of an epidemic. Thus far, arrangements have been made for 30 beds at the American Hospital at Neuilly for the care of Red Cross workers.

Model Section Hospital.—A model of a "Liberty" field hospital, built in sections, and suitable for use in the army, and in Red Cross and general hospital work. has been designed by Dr. Henry Fairfield Osborn, president of the American Museum of Natural History, in cooperation with H. F. Beers, superintendent of construction of the Museum. A large model is on exhibit at the American Museum of Natural History, New York. The hospital is ingeniously constructed in five-foot units, so that it can be taken apart and reconstructed by unskilled labor, and so that space can be saved in transporting it. The average hospital of this kind is from 150 to 160 feet in length and 24 feet wide.

More Bombing of Hospitals.—The Belgian minister has sent to the Department of State in Washington a protest against the Teuton practice of singling out hospitals for bomb targets. He writes that "On the evening of September 26, 27, 1917, German aeroplanes wilfully bombarded the Belgian sanitary formations at Calais and Petit Fort Philippe, and, notably, dropped three bombs on the military hospital at the Gravelines gateway, causing several casualties. The Red Cross emblems were conspicuously displayed on those establishments." The minister, in the name of his government, "denounces this new and flagrant violation of international law to the international committee of the Red Cross and to the allied and neutral governments which have signed the Geneva international convention of July 6, 1906."

MEDICAL RECORD.

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THE EDEMA OF CHRONIC PARENCHYMATOUS NEPHRITIS.

THE causation of edema has long been a fertile topic for speculation by pathologists as well as clinicians, and while the explanation of certain forms of edema, the mechanical for example, seems comparatively easy, the mode of production of certain other forms, that associated with kidney disease, for instance, has never been satisfactorily elucidated. Among the theories advanced to account for this we find alteration in the secretory power of the endothelium of the blood vessels, pathological changes causing increased permeability in the vessel walls, retention of water in consequence of lessened permeability of the renal blood vessels, retention of salts in consequence of the inability of the kidneys to excrete them, altered composition of the blood, and acidity of the body colloids causing them to absorb and retain water. Although the toxic theory is supported by the results of experiments with uranium nephritis and by the fact that the injection of the blood serum from edematous nephritics into animals will cause an increased production of lymph and also that the fetus is usually edematous in the nephritis of pregnancy, nevertheless the most generally accepted hypothesis is probably that there is an inability of the kidney cells to eliminate sodium chloride, the accumulation of the latter in the body naturally causing a retention of water and consequent edema.

All these theories are rejected by Albert A. Epstein (*American Journal of Medical Sciences*, November, 1917), who holds that the edema in chronic parenchymatous nephritis is a direct result of the loss of albumin. The tissue fluids and the plasma in health are of practically identical composition except that the plasma contains more protein than the tissue fluids. The result of this is that the osmotic pressure of the blood is greater than that of the tissue fluids and so the direction of flow is from the tissues into the capillaries. In parenchymatous nephritis, however, this balance is disturbed by the lessened colloid content of the blood resulting from the albuminuria; the osmotic pressure of the blood is reduced with the result of imbibition and retention of fluid by the tissues.

The practical therapeutic application of this theory is rather startling. If there is any consensus of medical opinion regarding the dietary management of chronic parenchymatous nephritis, it is that the intake of protein and of animal protein in particular, except that of milk, must be restricted in order to reduce the amount of waste products and so prevent their accumulation and poisonous action in the body, and likewise to lessen the work of the kidneys. Epstein, however, with the courage of his convictions, advises the administration of protein in large amounts, up to 120 to 240 grams daily, in order to compensate for the loss in the blood content caused by the sustained albuminuria. The protein in the diet which he prescribes is derived not only from peas, beans, and other albuminous vegetables but also from veal, ham, eggs, and oysters. If this theory of the production of edema in chronic parenchymatous nephritis is correct, this excessive protein intake ought naturally to reduce the anasarca, but the latter is only one symptom of the disease and it is difficult to understand how the local pathological changes, which preceded the dropsy, can be cured or even appreciably benefited by reducing the latter at the cost of increasing the albuminuria and so adding to the burden of the damaged kidneys. However, Dr. Epstein says that the results obtained in the small number of cases treated after this plan have been very encouraging, and he promises a detailed report of these cases in a later publication.

ARGYRIA.

OF the two forms of argyria, industrial and medicamentous, the latter has become very rare, save for certain local manifestations due to topical applications. It is, however, well known that the year long use of the silver stick in the mouth and pharynx can produce universal argyria. Industrial argyria, including the universal form, was exhaustively considered by Koelsch in 1912. The internal medicamentous use of silver salts is almost a thing of the past, but this is largely offset by the increasing local use of numerous organic silver preparations and of colloidal silver. Hence, basing his work on that of Koelsch, with personal cases of medicamentous argyria, Steiger has written exhaustively of the general condition in the *Correspondenz-Blatt für Schweizer Aerzte* for September 15. In regard to its pathology, argyrism resembles in certain respects other impregnations with salts of heavy metals. The gums are the site of the initial deposits of the minute particles of silver, and a silver line, grayish violet, is formed, which is quite analogous to the lead line. The deposits in the skin show a striking affinity for the elastic fibers, while the collagenous tissues are practically spared. Of the internal organs only the brain and cord show immunity, but as a rule the organ pulp is spared and the deposits occur in the interstitial supporting tissue, in which elastic fibers are present. These minute foreign particles seem to cause no irrita-

tion and it is supposed that the silver unites with the tissues with formation of an organic compound (albuminate). The weight of evidence goes to show that no silver is excreted by the kidneys. It never enters the epidermis or hair and so cannot be eliminated in this manner.

Despite its inert behavior argyria is attended by certain symptoms, of which the subjective ones are perhaps due in part to suggestion. A sort of withdrawal syndrome is said at times to follow prolonged cessation of the exposure to the drug. This subsides when the applications are renewed. Argyria may be in evidence within 6 months after steady brush applications to the tongue of solution of nitrate, corresponding to two months' internal exhibition, but there are plenty of cases in which strong solutions have been used for a much longer period (several years) before the appearance of the discoloration. In the industrial type over 20 years may elapse before the appearance of the peculiar discoloration (glass pearl workers).

Since the silver deposit in the skin is practically a tattooing with an insoluble, unabsorbable substance, argyria is beyond our therapeutic resources. The only chemicals which in theory could dispose of the silver particles are strongly toxic. In a solitary case the use of hexamethylenamin was followed by the clearing up of a dark blue deposit. The author reports four personal cases. In the first one the nitrate had been given in pill form to a middle-aged woman with multiple sclerosis. In 7 months she took nearly 4 gm. of actual silver and developed total argyria. The uncovered areas of the body were silver gray with metallic luster, while the protected localities were pale gray. Silver was found in the stools. At the time of menstruation the skin looked darker. The second patient was a middle-aged woman with gastric ulcer. During a period of 13 years she ingested 2.6 gm. of silver as nitrate. Argyria did not appear until 10 years after treatment began. The condition was universal. A slight paling of the skin after cessation of treatment was computed to emigration of some of the granules to the proper lymph nodes. The third patient, a man of 56, received the nitrate for tabes dorsalis for a period of 5 years. Argyria began after 4 years and became universal. The fourth case was one of local argyrosis of the conjunctiva. The patient had received over a hundred brush applications of nitrate solution for trachoma.

A word as to industrial argyria. Bohemian glass workers in silvering glass pearls suck into the mouth a solution of silver nitrate, ammonia, and potash lye, and constantly, although unintentionally, swallow a little of it. The conditions therefore parallel those of medicamentous exposure. Again, girls who work in silver inhale a dust slightly impregnated with the metal. Koelsch saw 2 cases of total argyria of this origin. The subjects bore out the ancient dictum of Hebra that anemic blonds are predisposed to this accident. Finally, total argyria has followed injections of colloidal silver into the bladder, although this accident very rarely follows injection of this solution directly into the blood.

AN UNJUST DISCRIMINATION AGAINST PROFESSIONAL MEN.

In the war revenue bill passed just before the adjournment of Congress a couple of months ago, is a section which will bear very heavily on all medical men having an income from their profession in excess of $6,000. After providing in section 201, for graded taxation upon excess profits, above those of the pre-war period, earned by partnerships or individuals, after the deduction of an amount calculated upon the basis of a percentage of the invested capital and of $6,000, the bill contains a section which reads as follows: "In case of a trade or business having no invested capital or not more than a nominal capital, there shall be levied, assessed, collected, and paid in addition to the taxes under existing law and under this Act, in lieu of the tax imposed by Section 201, a tax equivalent to 8 per cent. of the net income of such trade or business in excess of the following deductions: In the case of a domestic corporation, $3,000; and in the case of a domestic partnership or a citizen or resident of the United States, $6,000. In the case of all other trades or business, no deduction."

In a previous section it is stated that "the terms 'trade' and 'business' include professions and occupations." The consequence of this is that any medical man whose income, derived from his practice, exceeds $6,000 per annum will have to pay a tax of 8 per cent. of the excess, in addition to the income taxes payable under other sections, without regard to whether such income is in excess of the pre-war income. If this tax were levied on all incomes in excess of $6,000, no matter whence they were derived, there would be no complaint registered by members of our profession. But the bill in effect discriminates against the professional man in favor of the inheritor of wealth. For instance, a man whose father or grandfather left him an estate which brings him in $10,000 a year without any labor on his part beyond that of clipping coupons, which he has his secretary or a clerk do for him, pays $320 less tax than the physician with a laborious practice bringing in an income of the same amount. Thus the law puts a penalty on industry, and it bears with special weight on the medical profession which is already doing more than its share, and doing it gladly and without complaint, in the war. There is no other profession or trade that has given such a large proportion of its members to the cause. Already 15 per cent. of the physicians of the country, irrespective of age, are in the service, and if the army is increased to 5,000,000 men, as it will be if the war continues two years longer, at least 25 per cent. will be taken. If, in addition to this, 10 per cent. or 50 per cent. of the income of those too

old or otherwise unfit for service is taken in taxes there will be no complaint, provided it is taken in equal measure from all. But there should be a strong protest against the injustice of this bill which spares the drone and penalizes the hard-worked professional man.

An effort will be made during the coming session of Congress to repeal this section of the income tax bill, and there is reason to hope that the effort will succeed. To make the repeal certain every physician should, whether his income has yet passed the limit of exemption or not, write to his representative in the lower house and to the senator from his State, setting forth the unfairness of the tax and urging a repeal of the obnoxious section.

PROFESSIONAL APOPLEXY.

DESPITE the fact that medical men look upon apoplexy as nine-tenths predisposition, the courts and laity have at times regarded it as almost traumatic in its nature. The physician thinks in terms of the blood pressure, hypertrophy of the heart, and vascular degeneration, and to a much less extent of muscular effort and emotional stress, for these factors only precipitate an inevitable accident. An exciting cause may be minimal, as sudden exposure to cold, or absent altogether. The following case, however, seems unique throughout.

In *Il Policlinico* for September 23 is an account of a judicial decision which awarded to the widow a pension in the satisfaction of a claim against the State of a magistrate who died in a few hours of apoplexy while engaged in his regular occupation. It was the first instance of its kind in the history of that tribunal, and the judgment was rendered with the approval of the sanitary chief of the jurisdiction. The victim was but 43 years of age. Two physicians, called in haste, made the diagnosis by lumbar puncture. In the opinion of the judge the victim was too young to have senile vascular degeneration. Precocious arteriosclerosis, except as stated later, was improbable, because there was no evidence adduced which pointed to such a factor (absence of gout, no history of typhoid). The "apoplectic habit" was not in evidence, but the very reverse. Syphilis, malaria, nephritis, were all excluded, as were alcoholism, plumbism, and other intoxications. There was no apoplexy in the family.

The victim's occupation was the only factor judged able to produce such a condition of the blood vessels as to make rupture inevitable. He had been an indefatigable worker for many years, with very long hours, and while other forms of arteriosclerosis could be presumably excluded, it was held that the accident could not have occurred in the absence of this condition, which was termed "professsional arteriosclerosis" in correspondence with "professional apoplexy." The man had been a slave to duty, as he understood it. The fact that many other professional men work as hard with impunity had no practical bearing on this case. Contributory neglect does not seem to have entered into the merits of the case. The operation of an exciting cause, which elevated temporarily the blood pressure, was assumed to have been present, but so many factors could have been active here that there was no attempt to isolate a particular one. In any case, the direct, immediate cause of death was a condition of the cerebral blood vessels, due to intense and sustained mental activity. The exciting factor, if any, could only have existed in an attempt to finish the task of the hour within a specified time, and this devotion to duty was characteristic of the man.

News of the Week.

Workmen's Compensation Laws.—At the annual meeting of representatives of insurance companies composing the Workmen's Compensation Publicity Bureau, held in New York City, on November 23, the report of the secretary on the year's legislative record showed that only eleven States were without any kind of workmen's compensation laws. Of these all were in the South except North Dakota. The legislative policy of the bureau is "not merely to assume the hands-off attitude towards proposed reasonable and practicable workmen's compensation legislation, but to be of every possible assistance to all organizations in formulating, initiating, promoting, and effecting such legislation."

The Fatal Grade Crossing.—A report by the Committee on Grade Crossings of the National Association of Railway Commissioners states that of 10,785 trespass accidents in 1914, 3,437 happened to men between the ages of 21 and 30—in other words, the country lost over 3,000 men of draft age. There are, according to this report, 200,000 grade crossings in the United States and on an average 2,000 persons are killed each year at these crossings. In the work of eliminating grade crossings Illinois stands at the head with an expenditure of fifty-five million dollars. In the opinion of the committee, the more attention paid to the dangers of grade crossings the better it will be for all who journey upon the highways.

Fire in Hospital.—A fire in the Blake Memorial, a maternity ward of the General Hospital at Elizabeth, N. J., early on the morning of November 18 caused damage estimated at $2,000.

Red Cross Christmas Seals.—The State Charities Aid Association announces that Christmas seals for the tuberculosis fund are on sale throughout the State of New York. It is expected that the State, outside the city of New York, will buy $150,000 worth of these seals.

Insane Women Doing War Work.—About 100 patients in the State Hospital for the Insane at Middletown, Conn., whom heretofore it has been difficult to keep employed, are said to be contentedly engaged in knitting and making bandages.

Free Dental Clinic.—The New York College of Dentistry has opened a free clinic Saturday afternoons from one to four o'clock. The teeth of poor children between the ages of seven and fourteen years will be cared for entirely without charge.

Street Accidents.—According to the report published by Police Commissioner Woods, there were 2,389 persons killed or injured in street acci-

dents during the month of October. Of these 777 were children and 383 more than 50 years of age. The total casualties are smaller than those for September, which were 2,503. Automobiles killed 19 persons on the streets and injured 755; motor trucks killed 11 and injured 267.

Fewer Drink Cases in the Courts.—A report recently submitted by the chief statistician of the City of New York shows that there has been a reduction in the number of intoxicated persons dealt with in the magistrates' courts of the city for the first nine months of the present year. During this period there were 4,508 intoxicated persons dealt with, as against 5,050 during the corresponding period of 1916.

Resolution Before the County Medical Society.—The following preamble and resolution were offered by Dr. John P. Davin at the meeting of the Medical Society of the County of New York, held November 26, and were referred to a special meeting, to be called at an early date, for discussion:

Whereas, The Medical Society of the County of New York has for the past 120 years been deeply interested in and devoted much labor to the public health conditions of New York City; and

Whereas, The aims of this organization are the same as the New York City Board of Health, namely, the betterment of health conditions in New York; and

Whereas, The Board of Health and the medical profession, as represented by the Medical Society of the County of New York, must cooperate if the best results are to be obtained; and

Whereas, For several years the medical profession has had to contend against measures and methods which were inimical to the welfare of those connected directly or indirectly with the private practice of medicine, and such measures and methods were promulgated without the knowledge of the organized medical societies; and

Whereas, This condition should now be obviated by the Medical Society of the County of New York by offering to the incoming municipal authorities its point of view on these conditions, and assuring such authorities of our desire to cooperate with them in every way, in order to avoid a continuation of this condition; therefore, be it

Resolved, That there be appointed from the body of the Medical Society of the County of New York, a regularly organized medical body of this city, a committee to carry out the spirit of this resolution, as a matter of duty on the part of this society to its members in defense of their rights as lawful practitioners of medicine.

Sanitary Squad Out After Spitters.—In order to make more effective certain of the sanitary ordinances the Health Department of New York City makes it a practice to occasionally concentrate attention on certain ordinances. This being the season when the prevalence of respiratory diseases usually increases and when these diseases are most likely to be spread through the carelessness of infected individuals in disposing of their sputum, a campaign is being actively prosecuted against those who spit in public places. Commissioner Emerson has written to the police magistrate requesting him to "act with determination in imposing suitable sentences on all such offenders." Last year 1,500 persons were arrested for violating this ordinance and in many instances a fine of $5 was imposed. On the first day of the campaign 88 spitters were fined $2 each and 206 were given suspended sentences. Violators of the ordinance will be served with summonses to appear in court instead of being arrested.

The Control of Venereal Diseases in Rochester.—The health officer of Rochester, Dr. George W. Goler, has devised a unique method of keeping venereal disease patients under dispensary treatment. The plan calls for regular periodic visits to the department's clinic by each patient. He is told upon leaving when he is expected to come back again, and if he does not appear a written notice is sent to his house, stating that unless he presents himself immediately for further advice and treatment he will be visited by a police officer. If he still persists in neglecting treatment a warrant for his arrest is sworn out and he is haled into the local police court and committed to the care of the health department for an indefinite period.

Dr. Katherine B. Davis, who was recently appointed head of the New York Parole Board, has resigned the position to accept the secretaryship of the Rockefeller Bureau of Social Hygiene.

Dr. Theron J. Vosburgh has been appointed superintendent of the city farm at Warwick, N. Y., which is conducted by the New York City Board of Inebriety, to succeed Dr. Charles S. Stokes, who resigned a few months ago. The position pays a salary of $5,000.

Charitable Gifts and Bequests.—The Home of Our Merciful Savior for Crippled Children in Philadelphia is the recipient of $5,000 and one-half the income from a trust fund, bequeathed by the will of the late Sarah M. Gardner of Providence, R. I.

The Germantown Hospital and Dispensary of Philadelphia has received a bequest of $100,000 by the will of the late Mary Warden of Herkness, N. Y.

A benefit for the babies' ward of the Post-Graduate Hospital, New York, has netted that institution $1,000.

Positions in Health Service of Alabama.—The Health Board of Alabama calls attention to three vacancies which pay $150 a month, with additional expense money for rural sanitary work. These salaries will be increased to $175, with expense money, on January 1. There are also two places open for full time health officers, one of which pays $3,000 and the other $2,500.

The Southern Gastro-enterological Association, which met in Memphis, on November 12, reelected the following officers: *President*, Dr. J. G. Johnson of Atlanta, Ga.; *Vice-President*, Dr. J. T. Rogers of Savannah, Ga.; *Secretary-Treasurer*, Dr. M. H. Smith of Jacksonville, Fla.

The Late Dr. Richard Weil.—The following minute has been adopted by the board of trustees of the Memorial Hospital: Dr. Richard Weil, Major in the Medical Reserve Corps, U. S. A., died while on active duty at Camp Wheeler, Macon, Ga., November 19, 1917. By his death the Memorial Hospital loses one of the most highly trained and successful workers of its medical staff, and American cancer research one of its recognized leaders. Since

1906 Dr. Weil has been an active member of the staff of the Huntington Fund, and throughout this period of eleven years he was constantly engaged in the problems of cancer research. His contributions in the field of the serology of cancer and in the general problems of immunity gained for him an international reputation. He was one of the founders of the American Association for Cancer Research, and largely through his efforts was founded the *Journal of Cancer Research*, of which he was editor-in-chief. At the reorganization of the Memorial Hospital in 1913, Dr. Weil assumed the position of assistant director of cancer research and attending physician to the hospital, and in this capacity he labored energetically to establish an efficient organization of the routine and research work of the hospital. In 1915 he resigned the position of assistant director upon his appointment as professor of experimental medicine in Cornell University, but he continued without interruption his experimental work in cancer. Upon the declaration of war he was among the first to offer his services to the Government, and spent the summer at Fort Benjamin Harrison in the Medical Officers' Training Corps. Quite recently he was detailed to take charge of a large military hospital at Camp Wheeler, Macon, Ga., and here in the performance of strenuous military service he fell a victim to pneumonia. During his brief but brilliant career he attained eminence as a devoted laboratory worker, a skillful experimenter, a broadly trained clinician, and a forceful writer, while his untimely death places his name among the first on his country's honor roll in the great war.

Obituary Notes.—Dr. ARCHIBALD G. THOMSON of Philadelphia died, on October 22, at the age of 46 years. He was a graduate of the medical department of the University of Pennsylvania, in 1892, a member of the American Ophthalmological Society and the Medical Society of the State of Pennsylvania and a Fellow of the College of Physicians of Philadelphia.

Dr. HONORE J. COTE, a graduate of the Boston University School of Medicine, in 1899, died at his home in Boston, on November 10.

Dr. JOHN Z. CURRIE of Cambridge, Mass., a graduate of Harvard University, in 1873, died suddenly on November 10, aged 70 years.

Dr. PAUL S. MORRISON of Bancroft, Kan., a graduate of Ensworth Medical College, St. Joseph, Mo., in 1909, died in an Atchison hospital from injuries received in an automobile accident, on November 2, aged 34 years.

Dr. GEORGE LINDENMEYR, a graduate of the College of Physicians and Surgeons, New York, in 1888, died at his home in New York City, on November 15, aged 51 years.

Dr. MARY J. GREEN, a graduate of the Woman's Medical College of Pennsylvania, in 1878, died at her home in Philadelphia, on November 4, aged 76 years.

Dr. JOSEPH M. GERHART, a graduate of the Homeopathic Medical College of Pennsylvania, in 1868, died of pneumonia at his home in Philadelphia, on November 19, aged 75 years.

LIEUTENANT G. WALTER H. CONRAD of the Medical Reserve Corps of the United States Army, a resident of Philadelphia, died at San Antonio, Tex., on October 29, aged 29 years.

Obituary.

AMI JACQUES MAGNIN, M.D.

PARIS, FRANCE.

DR. AMI JACQUES MAGNIN, formerly of New York City, died suddenly in Paris, November 26. Born in 1858, he was graduated from the Bellevue Hospital Medical College in 1881. He was interne in Bellevue Hospital in 1882.

Having practised in New York for several years, Dr. Magnin accepted the position of assistant to the medical director in Paris of the Equitable Life Insurance Company. Possessed of a high order of professional and social talent, he soon acquired an acquaintance of unusual extent and value. His versatility as a practitioner was remarkable, his knowledge of clinotology in particular being extensive and accurate.

More than ten years ago the need of a special hospital in Paris for the care of visitors from the United States suggested itself to Dr. Magnin. He at once secured the cooperation of several influential friends and organized the American Hospital. This institution, with the aid of well-chosen associates, he developed into the best model of its kind in Europe.

At the outbreak of the present war he selected the building now occupied by the American Ambulance and aided in the organizing of a surgical staff for the new institution from the staff of the already existing American Hospital. Always unsparing of himself, the added burdens of the war have overwhelmed him. D. B. D.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

MEDICAL EXAMINATIONS—VICTIMS OF AIR RAIDS.

LONDON, November 2, 1917.

SIR RYLAND ADKINS told the Select Committee on medical reexaminations his experience as a member of an appeal tribunal and chairman of a county recruiting committee. He felt in an increasing degree that the arrangements for examination, and more particularly for reexamination, were not working in a way to give the tribunals all the assistance they would like. "We are faced," he remarked, "with remarkable contrasts in the classifications of persons who come before the tribunals. When we have men who have been rejected in 1915, and again last year, coming before us, passed A or B1, with an unvarying record from private doctors, it is very difficult to know where our duty lies." Sir Ryland said that his experience was that the difficulty of getting medical decisions thoroughly satisfactory to act upon had become greater since the act authorizing reexaminations. The impression produced on him, said Sir Ryland, regarding complaints as to tearing up certificates, was that while he would be the last to ask the committee to believe every story of the kind, one could not sit week after week and listen to these stories without coming to the conclusion that there was some ground for them. One remedy for the existing state of things was that certain doctors, of at least 50 years of age, should give up one or two days a week to

sit upon the board, two-thirds of which should be composed of experienced local practitioners of recognized character and prominent in their profession. Sir Ryland further referred to some instances of the raising of men from low to high degrees with almost inexplicable quickness, and declared that this want of security produced a bad effect on public opinion. The fact that presidents of boards were in a position to overrule the decision of the other members affected public opinion to the prejudice of the army. In reply to a question, he said there had been complaints about examinations being too rapid and too cursory, and on one case being further inquired into it was found that it was not so perfunctory as had been represented. He admitted that, logically, men who had been taken into the army with lowered category should have the right for their cases to be reconsidered by the tribunals. Out of 38 men who had been passed for general service and sent by the tribunal to the Special Medical Board 7 were rejected, and the remainder placed in a lower category.

Mr. Crooks attested to the splendid behavior of the people of East London during the last air raid, and said the Germans had found out that they could neither starve nor make cowards of us. At the inquest on 46 victims of the explosion at Ashton under Tyne, Mr. Slater, chemist at the works, said he was there on June 13, about 4 o'clock, with Mr. Dreyfus, who was killed. He saw flames coming out of windows of the works where chemicals were boiling in a pan, and ran up the steps to the room to let the heat out. He did everything he could until he was overcome by the fumes. The packing room was on fire and full of fumes. Mr. F. Slater said he was blown across the street in the midst of fumes and flames, and remembered no more. Jas. Jones said that while working at the gas holders, next to the munition works, he heard an explosion, and saw smoke and flames coming from the works. He heard another terrible report, and hot pieces of metal were blown with great force against the gas holders and made holes in them. The liberated gas caught fire and enveloped the holders in flame and smoke, but the holders did not explode. The whole of the chemical works was in a blaze. The flames passed him, and he was slightly burned. He lay on the ground stunned for some time and then dropped over a wall into the street. The coroner referred to the heroism of the workmen and others in trying to subdue the flames before the explosion, well knowing they were imperiling their lives for their country just as much as soldiers on the field.

OUR LETTER FROM PARIS.

(From Our Regular Correspondent.)

WAR ORPHANS—NEW SCHOOL FOR THE BLIND—RECEPTION TO AMERICAN NURSES—THE FIELD AMBULANCE SERVICE.

PARIS, October 16, 1917.

EVER since the organization of the American National Committee for the raising of a vast sum of money to be expended for the war orphans of France, the various societies of that country have been eagerly inquiring where, how and when they could secure some part of the money to aid their work.

A committee composed of Americans was appointed in Paris to work in conjunction with the American coimmittee, and the members of this committee have had their hands full in listening to and investigating the claims of a great number of societies organized for the relief and care of these most unfortunate of all unfortunates of the war.

The work of this committee has just been taken over by the Red Cross, in pursuit of the highly important purpose of centralizing the relief work of all American societies in France under one national organization. From an administrative point of view as well as for the systematic collection of funds, it is highly important to centralize war relief appeals and executive methods of distribution under one national organization. In fact, the Government has demanded that all relief organizations be coordinated under Red Cross control. Turning over to the Red Cross the responsibility of caring for the existing lists of orphans and of the thousands of others who will be deserving of future solicitude and help, it is believed they will profit by the specialized and scientific knowledge of the distinguished men who are devoting themselves to the Red Cross service.

Following this general plan of absorption and centralization, a new school for the superior reeducation of the blind was turned over to the board of directors on Monday by M. Eugène Brieux of the Académie Française and president of the French section of the fund, and the school will be formally opened for the blind next Monday. It is located at 27 boulevard Victor Hugo, Neuilly, in a spacious building with extensive gardens which was formerly a seminary for young ladies. The premises have been leased and thoroughly equipped for a school for the blind by Mrs. Kessler, and given over in the name of the Permanent Blind War Relief Fund to the French section. It will add another chapter to the already extensive work of this unusual war relief fund, which not only promises aid to the blind for the duration of the war, but permanent aid to the victims during their entire lives.

This fund has already guaranteed a pension of 1,200 francs a year for life to every soldier both blinded and seriously maimed, in addition to purchasing cottages for many of them. It has opened extensive workshops where a full stock of raw materials is kept and supplied, at cost price, on credit, to every reeducated blind man. It has a knitting and weaving school at 35 boulevard du Château, Neuilly, Paris. It sends every blinded man who has no private means, after his reeducation in no matter which school, to his country town or village, paying his rent for one year and furnishing him with the means of reestablishing himself and earning his own living.

The American Group of the Lyceum Club of Paris placed its Salle des Fêtes at the service of the delegation of twenty-two head nurses from America, who met in conference yesterday afternoon for the consideration of their future work. Miss Martha Russell, formerly superintendent of the Sloane Hospital in New York, and now head-nurse serving under the American Red Cross in France, presided.

At the close of the conference Miss Russell and her coworkers were received at tea by the Group.

Mrs. Sharp, who has recently accepted the honorary presidency of the Group, was present. The acting president, Mrs. Arthur Valois, assisted by Duchesse d'Uzès and the women of the special committee, received the guests.

The Group has been approached with the suggestion that it should concern itself with the American nurses, of whom there are already one thousand serving under the Red Cross in France, and has been asked to consider the matter of taking an active part in giving welcome to nurses during their period of rest and recreation which they will pass in Paris.

The American recruiting officers for the United States Army Ambulance Service, which is absorbing the American Field Service and the Harjes-Norton Red Cross Service, have recently returned to Paris after visiting the scattered sections of the two services along the French front for the purpose of enlisting the men in the army. They report the percentage of enlistment is but little over fifty instead of eighty, as was indicated by the first two or three sections which were enlisted in the Field Service. The large number of American boys who are now observed on the streets of Paris wearing the uniform of the American Field Service and the Harjes-Norton Service are principally those who have not enlisted in the United States Army and have been released from the two services. They will either enter other services of the army or return to the United States to try their hands at getting commissions.

146, Avenue des Champs Elysées.

Progress of Medical Science.

Boston Medical and Surgical Journal.

November 15, 1917.

1. Study of the Operative Treatment of Osteoarthritis of the Hip Joint. Dr. Ozarki.
2. Observations on the Treatment of Myelocytic Leukemia by Radium. Herbert Z. Giffin.
3. Lymphocytosis: A Clinical Study from Group Diagnosis. J. Marion Read.
4. The Vegetative Nervous System from the Clinical Viewpoint. Malcolm S. Woodbury.
5. Health Insurance and the Medical Profession—from the Financial and Administrative Point of View. R. M. Bradley.
6. Goitre Surgery, with Report of 28 Cases Operated Upon, with One Death. Gaston Torrance.

2. Observations on the Treatment of Myelocytic Leukemia by Radium.—Herbert Z. Giffin. See Medical Record, July 7, 1917, page 38.

3. Lymphocytosis: A Clinical Study from Group Diagnosis.—J. Marion Read states that the lack of consideration which a lymphocytosis receives at times is, in part, accounted for by the great number of pathological states in which it is present. On account of this the field of differential diagnosis is considerably widened if one tries to fit this blood-finding into the clinical picture. Ofttimes it is a part of some minor, concomitant disease, and thus its existence is accounted for. He made a study of lymphocytosis from the viewpoint of grouping the pathological conditions, because this type of clinical investigation unearths every pathological condition that a patient may harbor. Every abnormal sign finds its place, or the investigation is continued until the clinical picture is clear. He groups the pathological conditions characterized by an increase in the lymphocytic elements in the blood into two groups, according to the mechanism of their production. One form is a true lymphocytosis marked by hyperemia of the lymphatic structures of the body, with an actual increase in the total number of large and small lymphocytes. The second form is a pseudolymphocytosis, and is produced by a mechanical forcing of the preformed cells into the general circulation from their recesses in the spleen and other lymphatic structures. This is not marked by an actual increase in the total number of mononuclears in the body and is only transient in the greater number of cases. Mention is made of the experimental lymphocytosis produced by the injection of certain substances such as adrenalin, muscarine, pilocarpine and barium chloride. Harvey showed that this was purely mechanical and produced by contraction of the arterioles of the spleen, which was actually reduced in size. This comes in the second group. He gives four physiological states marked by a mononucleosis: (1) In infancy and childhood, the spleen, thymus, tonsils and lymphatic structures in general are large and active, with a consequent increase in the lymphocytes even to half of the white cells. Children respond quickly with a rather high lymphocytosis to many infections and abnormal conditions, which in adults are accompanied by little or no change in the blood picture. It is quite likely that to this fact can be attributed many of the lymphocytes which have been observed to occur in measles, scarlet fever, mumps, anterior poliomyelitis, ringworm, and other diseases more prevalent in childhood. (2) Attitude has been shown to be a cause of lymphocytosis by Bar and Engelmann in Germany, and Stains, James, and Rosenberg in this country. The mechanism of this increase is most likely that of the second group. (3) The ingestion of fat and carbohydrates seems to call forth lymphocytes. Rous has shown an increased output of mononuclears from the thoracic duct after the administration of glucose, and maintains that the number of hyaline cells in the blood is materially increased through this mechanism. But, as another possible explanation, we have Bergel's demonstration of the chemotaxis which exist between lymphocytes and lipoid substances in the blood. (4) A sudden mononucleosis occurs after exercise, the absolute number even being doubled in some cases. This mechanism is, of course, that of the second group. The numerous pathologic states characterized by an increase of the hyaline cells can, for the purpose of study, be grouped with considerable advantage. As a result of his investigations he states that, remembering the chronic mouth infections discussed in his paper, he is inclined to think that these, other than tuberculosis and syphilis, may be accompanied by a mononuclear increase. The most typical example of lymphocytosis and leukopenia among the infectious diseases is typhoid fever, in which, during the third to sixth week, the hyaline exceed the granular casts. This so called "crossing of the leukocytes" is regarded as having considerable prognostic value, for in unfavorable cases it does not occur. Glinchikoff found an increase in lymphocytes during vaccination against typhoid. Read's conclusions are: (1) The lymphocytosis occurring in tuberculosis is more apt to be a relative than an absolute one and is more marked in healed cases. (2) A lymphocytosis in syphilis is less frequent than in tuberculosis, but an absolute lymphocytosis, especially when accompanied also by eosinophilia, is suggestive of luetic infection. Those cases of syphilis which show a lymphocytic increase are most apt to have a positive Wassermann reaction. (3) An absolute increase in lymphocytes is often accompanied by an eosinophilia. (4) Chronic mouth infections, especially when associated with diseased or hypertrophied tonsils, cause an increase in the mononuclear elements of the blood.

New York Medical Journal.

November 17, 1917.

1. The Röntgen Ray in the Diagnosis of Pneumonia, Pleural Diseases, and Pulmonary Tumors. Morris Manges.
2. Labyrinthine Vertigo and Past-pointing. Walter A. Wells.
3. A New Conception of Arteriosclerosis. Ignatz L. Nascher.
4. Suprapubic Prostatectomy with Mechanical Drainage. Courtney W. Shropshire and Charles Watterston.
5. The Wassermann Reaction in the Duplicate. Maximilian Schulman.
6. A Case of Acute Erythematous Lupus. George Arnold Brown.
7. A Case of Amyotrophic Lateral Sclerosis in the Form of Progressively Developing Triplegia. G. B. Hassin.
8. A Study of Some Functional Inefficiencies of the Teeth Associated with Occlusal Anomalies. Milo Hellman.

3. A New Conception of Arteriosclerosis.—Ignatz L. Nascher considers that the conflicting views of arteriosclerosis are so at variance that it is impossible to

harmonize them. He offers another conception of this condition, which he believes is clear and true to the literal meaning of the term, and gives a distinct impression of a definite reality. Arteriosclerosis is literally a hardening of the arteries, but the term is too often used to imply conditions which have but this one feature in common. He thinks that the term should be restricted to its literal significance. It may be a fibrosis, a calcification, a muscular hypertrophy, or an inflammatory thickening. It may be a relative hardening while in a state of contraction or an actual hardening without histological change. It may be physiological or pathological, primary or secondary, temporary or permanent, local or general. The essential feature in every case is a hardening of the arterial wall, whether local, as compared with the walls of arteries elsewhere, or general, as compared with the healthy arteries of a person of the same age. As arteries harden normally from birth to old age and harden more rapidly in advanced life, it is impossible to fix a standard of hardness. The term hardness is here purely relative. The term arteriosclerosis is applied to a number of pathological arterial degenerations as well as to the normal physiological degeneration occurring in old age, and as the only test of hardness aside from the tactile sense is the blood pressure which is dependent upon a number of other factors than the hardness of the vessel, the term is frequently applied to conditions in which the arteries are normal. Indeed, the term is often applied to any condition presenting high blood pressure without albuminuria. He finds eight distinct forms of arteriosclerosis. In three forms, the pure sclerotic, the vasomotor, and the hypertrophic, there are no histological changes, but these forms may become degenerative. There are probably several varieties of the irritative or inflammatory form, depending upon the character of the irritant. The gummatous formation occurring in syphilis does not occur in any other form of arterial degeneration. Other pathological degenerations may give other distinctive characteristics by which they may be distinguished. The mechanical form always begins in the media, while in the perverted nutritional form the whole vessel is involved. The nutritional form begins in the vasa vasorum, where an endarteritis can be demonstrated long before the endothelium of the main vessel is affected. In the perverted nutritional form there is no vasa vasorum endarteritis. The embolic form presents the characteristics of the irritative form and the nutritional changes of the nutritional form without the histological changes in the nutrient vessels. General causes, as ageing, adrenal hyperactivity, thyroid inactivity, and constitutional disease in which soluble toxins are elaborated, affect the entire vascular system. Local factors will influence the site, rapidity, and extent of local degenerations even where there are general causes. In parts doing excessive work the vessels degenerate early, and hence we find usually earlier and more pronounced arteriosclerosis in the right arm than in the left. The aorta receiving the entire amount of blood from the heart and being subjected to the greatest strain is most frequently and most extensively involved. Brain workers present symptoms of cerebral arteriosclerosis much more frequently than manual laborers, although the latter show more marked mental impairment in old age. It is rarely possible to determine clinically the form of arteriosclerosis. In many cases the etiology gives the clue, occasionally the result of treatment clears up the diagnosis. He points out a factor which is usually not considered among the factors concerned in blood pressure. All authorities declare that blood pressure depends upon heart action, arterial tension, and peripheral resistance. None takes into account the viscosity or density of the blood itself. Yet it is known that under the same pressure a dense or viscid fluid will flow through a tube, whether rigid or resilient, more slowly than a thin fluid, as the thick fluid offers greater frictional resistance to the walls of the tube and is itself more resistant to pressure. In some conditions, as anemia, tuberculosis, and underfeeding, the blood is thin and of low specific gravity, and the blood pressure is low. In nephritis and other diseases in which the specific gravity of the blood is high the blood pressure is high. Blood of high specific gravity passes through the arterioles and capillaries with greater difficulty, increasing the peripheral resistance, and adding another factor to its own density to raise the blood pressure. In the aged the specific gravity of the blood is from 1050 to 1060; there is a physiological mechanical arteriosclerosis, increased activity of the heart to overcome the lessened tonicity of the vessels, and increased peripheral resistance. Thus all factors raising blood pressure, including greater density of the blood, combine to raise the blood pressure in the aged.

Journal of the American Medical Association.

November 17, 1917.

1. Pneumonia in Early Infancy and in Childhood: Its Mortality and Treatment, with Special Reference to the Use of Alcohol. Henry Koplik.
2. Toxic Factors of Some of the Common Anesthetic Substances. Evarts A. Graham.
3. Chronic Diarrheas Due to Enterocolonic Conditions. Julius Friedenwald.
4. Rectal and Sigmoid Conditions in Chronic Diarrhea. John L. Jelks.
5. Gastric Conditions in Spastic Constipation. William G. Morgan.
6. The Rectangular Flap Incision for Operations Within the Upper Abdomen. Willy Meyer.
7. Intravenous Foreign Protein in the Treatment of Psoriasis Francis J. Scully.
8. Large Vesical Calculus. J. P. Browne.

2. Toxic Factors of Some of the Common Anesthetic Substances.—Evarts A. Graham. See MEDICAL RECORD, June 16, 1917, page 1075.

6. The Rectangular Flap Incision for Operations Within the Upper Abdomen.—Willy Meyer. See MEDICAL RECORD, June 16, 1917, page 1071.

7. Intravenous Foreign Protein in the Treatment of Psoriasis.—Francis J. Scully gives a report of eight cases of chronic psoriasis treated by this therapeutic measure, which had responded slowly or were resistant to other forms of treatment. The treatment was conducted in the Cook County Hospital, Chicago, where the patients remained during the entire course of therapy. The foreign protein employed was typhoid vaccine prepared from an active culture, grown twenty-four hours on agar slants, washed off with saline solution, killed by heating at 70 C. for two hours, and preserved by the addition of 0.5 per cent. phenol. It was diluted so that each cubic centimeter contained 100,000,000. From three to five injections were given at intervals of from three to four days. The average dose was from 75,000,000 to 100,000,000, the same dose being used for the succeeding injections as for the initial injection. Following the third injection, 2 per cent. chrysarobin ointment was applied daily to the lesions on the body, and 5 per cent. ammonated mercury ointment to the face and scalp. No internal medication was given. The reaction following the vaccine was similar to that observed in acute articular rheumatism, except that the rise of temperature and the leucocytosis were not so marked. The succeeding injections were followed by a less marked reaction than the preceding injection. The maximum rise of temperature was to 103° F., and the maximum leucocytosis was 1,600. Headache was noted in two cases, and nausea and vomiting in one case. No other ill effects were observed. He offers his results as follows: (1) Intravenous vaccines alone do not clear up the lesions of psoriasis, though they do lessen the induration and inflammatory reaction. (2) When used in conjunction with weak chrysarobin ointment, the lesions clear up rapidly. (3) Favorable results were obtained in chronic generalized cases resistant to other forms of treatment. (4) Chrysarobin dermatitis is prevented by the vaccine, and when present yields promptly. (5) The action of the vaccine is not fully understood, but it seems to lessen the sensitiveness of the skin to local medication, allowing uninterrupted treatment.

The Lancet.

October 27, 1917.

1. The Harveian Oration: Harvey's Work Considered in Relation to Scientific Knowledge and University Education in His Time. Robert Saunby.
2. The Treatment of Trench Feet and Allied Conditions by Bier's Method of Passive Hyperemia. Philip Turner.
3. On the Treatment of a Series of Recently Inflicted War Wounds with Flavine. Hamilton Drummond and J. W. McNee. With an Introduction by Anthony Bowlby.

4. Ether-oil Anesthesia by the Rectum. H. M. Page. With a Note by G. B. Mower White.
5. A Cartilege Prosthesis for the Eye. J. L. Aymard.
6. Departmental Committee on the Welfare of the Blind: Notes on the Report. Arnold Lawson.

1. The Harveian Oration: Harvey's Work Considered in Relation to Scientific Knowledge and University Education in His Time.—Robert Saunby delivered this oration before the Royal College of Physicians of London on October 18, 1917. In referring to the impulse given by Harvey to British physiology he states that there can be no doubt that in the sixteenth and seventeenth centuries those Cambridge men who desired to study scientific medicine could not do so at home, and resorted to the Italian universities to study under such great masters as Vesalius, Fallopius, and Eustachius, whose success was rather in descriptive anatomy than in physiology. Harvey's work was of great importance because, although he added no new facts, he placed a new interpretation on what had been more or less common knowledge for 2000 years, and stimulated an advance in medicine which has continued up to the present time. This advance was mainly due to his employment of vivisection, by which method he laid the foundations of physiology and thereby of the progress of medicine. Physiology has been rightly called the Institutes of Medicine, which must march hand in hand with pathology and be its guide. Its progress depends upon the advance of many sciences, especially of chemistry, in that department which we call organic or physiological. This was a new science 40 years ago, and has been built up within the lives of many of us. It has opened out a wide prospect and gives promise of revolutionizing medical study.

The impulse that the work of Harvey gave to British physiology is shown by naming those who followed him in the next 100 years.

4. Ether-oil Anesthesia by the Rectum.—H. M. Page states that this method of producing anesthesia originated from James T. Gwathmey of New York. While employing it in operations of the thyroid gland when hyperthyroidism was present, after 1914 he began to use this method for the wounded in cases of plastic face and jaw operations. Some fatalities have occurred in this particular class of case under the ordinary methods of anesthesia. He therefore advises the more frequent use of Gwathmey's method, which is simple, easy, and he believes, safe. The apparatus required is very simple: An indiarubber catheter; a funnel; a medicine measure; an empty medicine bottle with a cork, to shake the mixture in—this shaking must be done forcibly for two minutes. The following is the technique employed: A simple wash-out of the bowel an hour or two before the injection, in addition to the usual preliminary dose of medicine, is an advantage, but can be dispensed with if necessary. A subcutaneous injection of morphia gr. ¼, atropine gr. 1/100, is given half an hour before the time fixed for the ether-oil injection. He has used the paraldehyde rectal injections, but prefers morphia subcutaneously. From 20 to 25 minutes before the time of operation 6 ounces of a mixture containing two parts of ether to one of oil (ether 4 ounces, oil 2 ounces) are slowly run into the rectum. Six minutes are spent in making this injection. The indiarubber catheter is passed 3 or 4 inches into the rectum, never more than 4 inches. When the operation is finished the remaining ether-oil must be washed out, using a large rectal tube and funnel. The wash-out must be done thoroughly and methodically, as on this depends the rapidity with which the patient recovers consciousness The tube is gradually passed up and as much as possible of the remaining ether-oil mixture withdrawn. The tube is then drawn down again near the anus, and some water or saline is run in and siphoned off. This is repeated gradually higher up the bowel until no oil or ether can be detected in the returning fluid, when the tube is gradually withdrawn lower and 3 ounces of olive oil are passed in and left there. The temperature of the water or saline must not be above that of the rectum—in fact, only the chill off. Following the use of this technique there have been no rectal, pulmonary, or gastric sequelæ. The return of consciousness is not delayed when the washing out is done satisfactorily. He says that soldiers, unless they are very ill, are resistant to the effects of ether, and there is also the loss of ether in the breath, from the venous blood as it passes through the lungs, so that to procure a full anesthesia in a reasonable time it is often necessary to administer a little ether with a Clover's apparatus and allow some rebreathing; if preferred, either by the open method or some A. C. E. can be given. If it is not possible to give the injection 20 minutes before the time for operating some anesthetic vapor by the mouth will certainly be necessary for induction to prevent delay. He has used this method in face, mouth, and nasal operations 17 times; they all made uninterrupted recoveries, and there were no rectal or other sequelæ. This is not a large number of cases in itself, but he has used ether-oil rectal anesthesia in 47 cases altogether. The operations in which he has used this method are as follows: Plastic operations on the face, operations on the jaw, radical cure of antral disease, esophagoscopy, bronchoscopy, laryngoscopy, removal of nasal septum, cholecystotomy, cholecystectomy, gastrostomy, gastroenterostomy with partial gastrectomy, exophthalmic goitre, laminectomy, trephining, appendicectomy, amputation of the breast. All these 45 cases recovered from the operation except 2. These 2 cases were laminectomies; they died some time after the operation from ascending myelitis. In 2 of his early cases, in which a 75 per cent. solution of ether was used, there were rectal irritation, mucus, and a slight trace of blood lasting a day or two. In another case there was looseness of the bowel for a couple of days; since then he has never used a stronger solution than 2 to 1, as recommended above. Mower White adds a word in recommendation of this method in which he states that the results have been uniformly good both as regards the condition of the patient during the operation and as regards the absence of untoward symptoms afterwards.

British Medical Journal.

October 27, 1917.

1. The Harveian Oration on Harvey's Work Considered in Relation to Scientific Knowledge and University Education in His Time. Robert Saundby.
2. The Cure of Inguinal Hernia. Alfred J. Hull.
3. Modern Artificial Limbs and Their Influence Upon Methods of Amputation: General Consideration. E. Muirhead Little. Demonstration. R. C. Elmslie.

3. Modern Artificial Limbs and Their Influence upon Methods of Amputation. General Consideration.—E. Muirhead Little states that at first sight it may seem this subject is being considered with an implication of putting the cart before the horse; that the artificial limb should be influenced by the amputation which calls it into being, and that the converse should not occur. In order to produce good results the surgeon and the limb-maker must have some knowledge of each other's limitations. The surgeon should not design and carry out an amputation to which an artificial limb cannot conveniently be attached. On the other hand, it is useless to devise a limb if it could not be borne by the patient's stump. Conditions of the problem differ in the upper and lower extremities. In the lower extremity the functions of the lost part are crude compared with the delicate and nicely-adjusted and co-ordinated movements of the upper extremity. Its chief duties are to support the weight of the body at rest and in motion and to act as the propellent force in the process of locomotion. End pressure and leverage are the strains to which it is most exposed. The upper extremity is mostly employed in prehension and traction-functions to which the foot of boot-wearing man is a stranger, and end pressure, therefore, is not one of the most important strains to which it is exposed, while leverage is all-important. As the movements of the hand and fingers are highly coordinated and often very delicate, it follows that the problem here is a very difficult one. The best artificial arm and hand is but a poor substitute for the living member, while the artificial leg can be made to do nearly everything that is required of its living predecessor—to do it, that is to say, more or less, though not so well as the latter. In both extremities provision has to be made to maintain the appliance in place when in action and when in rest against the force of gravity. Weight is borne in two ways. Often or generally combined—(a) by direct pressure of a part of the body downwards, such as the

end of the stump, or of a convenient bony process, such as the tuberosity of the ischium, or (b) by oblique pressure, when the artificial socket forms a more or less conical cavity into which a conical portion of the body fits. Leverage is exerted by the lateral surface of the stump pressing against the side of the surrounding socket. An ideal amputation stump would be as long as possible, it would be covered by sound movable parts, and the scar would be placed in a position where it would not be exposed to pressure, and it also would not be adherent to the bone. It would have enough muscles attached to it to move it with adequate force, and no inflamed or hypersensitive nerve ends would be palpable in it. The end or ends of the bone or bones would be rounded so as not to hurt the soft parts under them, and the blood supply would be free and the skin well nourished. The well known objections to exarticulation are given. An analysis of the records of 549 cases of amputation of the lower extremity seen recently at Roehampton shows that in 275 of these—almost exactly half—it was found advisable to fit an end-bearing pad. As might be expected, the proportion varied widely in the different regions. In the upper third of the thigh only 9 per cent. were thus fitted, in the middle third 32 per cent., in the lower third 77 per cent. It was found that the stumps in the lower third of the thigh are more sound than those in the upper and middle thirds, which latter region is the seat of nearly half of the total number (43 per cent.). The surgeon who has to deal with many of these end results cannot fail to be struck by the prevalence of wide adherent scars in the upper two-thirds of the thigh. Some of these, not many, are unmodified guillotine operations; the majority are not, and many are, the results of later operations in which attempts have been made in vain to produce a stump covered by sound skin. Some of these unfortunate persons have suffered as many as seven amputations on the same limb. In the upper extremity the question of end pressure does not arise, and here the condition of the lower part of the anterior and external surfaces of the stump is of most importance, because these surfaces have to take much of the pressure of the leverage action on the bucket. Many arm stumps with large adherent guillotine scars covering the end of the bone have been found to be quite satisfactory in practice. The presence of osteophytes is rarely any hindrance. These are seldom large, except in the thigh, and then they are usually situated about the femoral insertions of the adductor muscles, which are not exposed to much pressure.

Le Progrès Médical.

September 22, 1917.

Spontaneous Rupture of the Heart from Atheroma and Thrombosis of the Anterior Coronary Artery.—Tapie reports the case of a soldier aged 49, never ill before the war, vigorous, without taint, who presented a hypersonorous percussion note with subdulness over the bases, effort dyspnea, and subscrepitant rales over upper regions of both lungs. He complained of intermittent asthmatic crises with suffocation, slight cyanosis, expiration, dyspnea, and orthopnea. Temperature subfebrile, pulse 90. Shortly after admission he developed asystolia—edema of ankles, irregular pulse, and diminished urine, with albuminuria. He was improving under cardiotomics, when, upon rising from his breakfast, he collapsed and expired. The autopsy, held 22 hours after death, showed externally only edema of the lower extremities. There were bilateral pleural adhesions and hydrothorax. The lungs showed some emphysema with edematous congestion of the lower lobes. Pericardial sac greatly distended with fluid blood and clots "as if patient had been bled" into this cavity. There was no lesion of the great vessels and no aneurism. The hypertrophic, spheroidal heart showed an area of softening in which were visible two tears. There was an enlarged, congested nutmeg liver. The kidneys were congested but peeled readily. The heart was the only viscus to require a detailed description. The hypertrophy was limited to the left ventricle. Upon section the myocardium was firm, greyish and sclerotic, cutting with difficulty. The softened area represented an infarct toward the apex, triangular, with base 7 to 8 cm. in width. In addition to two ruptures directly into the ventricle there was a third, blind opening. The left auricle was slightly dilated with the lesions of sclerous endocarditis near the mitral. The left ventricle was dilated with pillars thickened and a little sclerosed. The softened area was surrounded by sclerotic tissue. The right heart by contrast was notably normal. The aorta, slightly dilated, was of the consistency of cardboard, with areas of atheroma throughout its extent. The aortic valves were normal as to function but exhibited traces of sclerous endocarditis, as did the subjacent endocardium. The orifices of both coronaries gaped and were free from atheroma. The right vessel was permeable while its fellow was notably atheromatous, especially in its two branches. There was no narrowing or thrombosis in the main trunk nor two main branches: only the anterior descending ramus showed at its lower third the condition which explained the mechanism of death. It was not completely obstructed but the walls were thickened and atheromatous with an obliterating thrombosis beneath the infarction. The condition is extremely rare, even in the aged, and in a vigorous man in middle life almost unique.

Le Progrès Médical.

September 29, 1917.

The Foot Stasis of the Trenches.—Renard and Blum apply to the socalled trench foot the term stasis or stagnation foot of the trenches. The causal factors are prolonged standing plus constant exposure to mud or cold water. In most cases the feet swell and are painful for a few days; after which the symptoms subside save for vague suggestions of neuritis. In other cases phlyctens appear with serous or blood-tinged contents. For a long time this affection was held to be nothing but frostbite; and it is true that exposure to cold alone can cause gangrene of the immobilized feet—a dry gangrene. This, however, is a special form of exposure. But a chilled foot is not a frozen foot, nor is the question one of relative temperatures. A trench foot can be initiated by simple exposure to cold, but other factors as humidity and constriction of the legs may be involved. Certain authors believe that the condition is one of infection which has its début about the toe nails, or in chafes, etc. The theory is ingenious and derives some support from animal experiment, but actual inspection shows that in the great majority of cases there is absolutely no evidence of infection or even of an abrasion which could serve as a port of entry for germs. Standing in water in summer does not produce anything like trench foot, yet a study of the dirt about the toe nails would show an abundant flora. Nor is trench mud the sole cause of trench foot, for artillerymen sometimes present the same lesion. The authors describe a typical case of trench stasis. Soldier, infantry, age 29, entered a trench April 21. This trench was relatively shallow yet the water in it came to the ankles. The soldier's station was directly under fire and he could not budge an inch more than necessary. He stood but little and for the most part sat or kneeled. For four days he did not complain, but after that he shivered with cold and his feet were cold. This sensation increased until it became painful, so distressing in fact that the soldier wept. But these sensations gradually ceased as the feet swelled and throbbed. After this period pain appeared only in crises. The feet felt dead and the patient soon became unable to walk. When he trod he felt pins and needles. Removed to a dressing station, examination showed a swollen foot, violet red on the dorsum, macerated. The great toe and fourth toe were white, livid. Between the second and third toes there was a large phlycten which contained a pinkish fluid. These symptoms receded save for the lividity of the toes. Later the patient complained of severe lancinating pains in the heels and toes and was unable for that reason to stand. At night, in bed, they were also severe and radiated upwards along the legs and thighs. There was slight edema of the ankles. The great toe was insensible. Finally the swelling of the foot subsided but the affected toes showed a trace of dry gangrene. The eschars did not come away for 12 days. The entire tip of the fourth toe was lost. Aside from lancinating

pains at intervals the patient has completely recovered. The authors analyze this case with extreme thoroughness. While suggesting a frost bite the entire history of the case indicates the existence of an arrest of circulation. The component of stasis must be distinguished from the component of cold. Stasis is evident at first from the mild edema, and later from the livid color. A higher degree causes the phlyctens at the base of the toes, a still higher one causes superficial sloughs and finally there is slight sloughing *en masse*. The cause of this circulatory stagnation is compression by the boots. The only prophylaxis is removal of the latter as soon as the symptoms of stasis appear. They should be replaced by some soft covering, even bath slippers. Experience teaches that with such footwear soldiers can march even through cold mud or water without the development of stasis foot. In cases in which phlyctens have not yet formed it is only necessary to raise the foot of the bed and make use of sunlight or hot air; the latter in connection with an apparatus devised by the authors, which causes profuse sweating. If ulceration has developed antitetanus serum must be injected. Eschars and gangrene require ordinary surgical measures.

La Presse Médicale.

October 4, 1917.

The Effort Test of Tachycardia.—Aubertin refers to some of the resources in use for testing the action of the heart through induced tachycardia. His own method is based upon that of Martinet and Lian who after a given effort take the blood-pressure and pulse. He provokes effort-dyspnea by muscular exertion, effort-tachycardia by the same resource and finally notes the degree of cardiac acceleration produced by standing. The results thus obtained are constant in normal subjects. Patient is examined at a time in which digestion is believed to be quiescent, *i.e.* not long before meal time. The pulse is now counted until the emotional reaction is found to have disappeared (from 3 to 10 minutes), the patient being recumbent. He then stands up with muscles not tense and his pulse is taken over a period of 3 minutes, after which he lies down for a second recumbent count. He now exercises in his socks in some manner which can be controlled and measured for one minute, after which his pulse is at once taken. He then lies down for the same purpose. In this position his respiration is also noted. The various pulse rates are charted in curves. Two maxima correspond to the rate on simple standing and after exertion, but the latter varies greatly with the character of the effort. The mere acceleration proves nothing for the test is really meant to ascertain the length of time required for the heart to reach its normal frequency. In the normal subject we sometimes see a "reaction-bradycardia." Subjects with organic disease who have good compensation may react as normal subjects because the test is not of the patient *per se* but of his circulatory apparatus. On the other hand, subjects with a very marked tachycardiac reaction may come to equilibrium during the normal interval. When tachycardia persists and remains high for a prolonged period—this is a rare phenomenon—the cause may not be apparent.

In theory the myocardium should be weak and easily dilatable but if such is the case why is it not the rule in uncompensated organic heart disease? Transitory arrhythmia due to extra systoles is seen after the subsidence of effort tachycardia. The clinical value of the test lies as already stated in the length of interval required for equilibrium which in the great majority of cases is reasonable and not paradoxical. The value of the method consists in part in its simplicity, for no apparatus is necessary—the blood-pressure is not taken and even the stethoscope is not required save in the special case.

Finska Läkaresällskapets Handlingar.

June, 1917.

Studies in Comparative Anatomy of the Musculus Palmaris Brevis.—Kajava communicates his observations on the occurrence of the palmaris brevis and flexores breves manus in the vertebrates including 82 different species of mammals from nearly every order. There is also a description of the hand with special reference to the ulnar carpal fixation with which the musculus palmaris brevis appears to stand throughout in intimate connection. The author enhances his own observations with references from the special literature. The investigation gives the following results: The muscle in question is absent in the lowest mammals (monotremata, marsupials, and insectivora as well as the non-climbing edentates) although in individual cases it is present in marsupials and insectivora. In the rodents, the climbing edentates, the carnivora and prosimians, as well as in most apes, it is well developed; but in the anthropoid apes and hylobates it is weakly developed or absent. In the chiroptera, pinnepades, cetacea, sirenes and ungulates it is absent because of a peculiar differentiation of the hand. The muscle is constantly associated with the ulnar carpal fixation and functions as a motion muscle for the same, which in many cases offer a counter-support in the grasping of objects with flexed fingers. In addition to these there are other balls, especially the radial carpal, which can sustain a moving muscle. The m. palmaris brevis presents a subdivision of the most superficial bundle of the original common mass of flexor muscles of the hand and stands in genetic relationship most closely with the Mm. flexores brevis. Like the latter, its nerve supply is derived from the superficial volar branch of the ulnar nerve. The investigations of Retzius, Schlaginhaufen, Wilder, and others, show that there is in man at the basis of the hypothenar a residue of the ulnar carpal ball which corresponds to the site and insertion of the palmaris brevis. By reason of this behavior we may conclude that in man there is not only a residue of the ulnar ball, but also a movement of the muscle which serves this ball—the musculus palmaris brevis.

Excessive Proliferation of the Chorial Epithelia in a Case of Repeated Tubal Pregnancy.—Maunu af Heurlin states on the basis of the official statistics that the frequency of vesicular mole varies from one case in 5,000 to one case in 10,000 labors. On an average a population of 200,000 will produce one annual case of vesicular mole. In about 5 per cent. of cases of the latter malignant choris epithelioma should develop, so that in a community of 2,000,000 inhabitants with 60,000 annual childbirths there should be one case of this affection. The author describes a case of ovarian pregnancy in the first month in which the proliferation of chorial epithelia was so excessive that the probability diagnosis was malignant chorio-epithelioma. However, eight years after the operation the patient remains well. The pregnancy developed in a tube in which 1½ years before a tubal abortion had occurred, as shown by laparotomy. Microscopically the condition was identical with a case of vesicular mole in which clinically there was a distinct vaginal metastasis. This patient, too, remains well—after seven years.

Benign Dropsical Beriberi.—Fiessinger and Lecuyer agree with certain predecessors that the dropsy in the mild beriberi syndrome is due to chloride retention.—*La Presse Médicale.*

Determination of Sex.—Regnault suggests to experimenters that they take up experiments based on injection of lipoids and internal secretions with especial reference to femaleness of offspring.—*La Presse Médicale.*

Leprosy in the Senegalese in France.—Before the Réunion médico-chirurgicale of the VIII army last June, Joltrain cited a case of mixed leprosy in a Senegalese rifleman. The infection naturally antedated the trip to France. The victim had left a leprous sister in Senegal. Spillmann also reported a case of anesthetic leprosy in a native Senegalese rifleman.—*La Presse Médicale.*

Effects of a Potash Poor Diet.—According to Urbeanu animals fed on a potash free diet develop disturbances of the beriberi type. After 30 years' observation of Roumanian pellagra he believes that the maize factor in the etiology can be explained by its low mineral content. But the potash exists in organic combinations, so that something more is present than a mere mineral starvation.—*Office International d'Hygiene Publique.*

Book Reviews.

THE DESTINY OF THE AMERICAN SURGICAL ASSOCIATION. By J. EWING MEARS, M.D., LL.D. Reprinted from the Transactions of the Association, Vol. XXXV, 1917. Philadelphia: Wm. J. Dorman, 1917.

THE author of this interesting brochure is one of the three surviving co-founders of the Society. S. D. Gross, who is dignified as the sole Founder, receives an appreciation in connection with his official acts. The Society has now existed for thirty-seven years and has thirty-four volumes of Transactions. Characteristic of this body of men is the great attention paid to experimental surgery, and the destiny in part of the Society is foreshadowed in the hope that through its activities the problem of malignant disease will be solved and at the same time that mutilating surgery will in time give way to a strictly conservative science.

POETRY AND THE DOCTORS. A Catalogue of Poetical Works Written by Physicians with Biographical Notes and an Essay on the Poetry of Certain Ancient Practitioners of Medicine. Illustrated with Translations from the Latin and by Reproductions of Title Pages of the Rarer Works. By CHARLES L. DANA, A.M., M.D., LL.D. Price, $5.00 postpaid. Woodstock, Vt.: The Elm Tree Press, 1916.

MEDICINE is the art which endeavors to reproduce harmony in the body; poetry is the art which produces harmony of thought by means of measured word and line. Since both arts have the common aim of harmony as the reason for their existence, is it a matter of surprise or wonderment that medical men should possess both arts?

Rather is it to be expected that these men should turn to the satisfying field of verse as a channel through which can flow in measured way that which may baffle them in their endless encounter with the human unknown. Has anyone ever thought that the most commonplace physician lives a life bound up in poetry? Poetry of living by the daily endeavor to harmonize other lives.

The author of this slender volume of "Poetry and the Doctors" brings out this fact, since he has gone back to the poetical works of physicians of ancient times, of those who contributed to Latin and English verse, as well as some examples of the poetry of Italian, German, and French physicians. His researches have been made over a literary period of two thousand years. He states in an introductory essay that the authors have one thing in common: they were all supposed to be authorized and able to write the sign of Jove. The book carries the reader through the medical poets of the nineteenth century.

Under the name of each poet is given, besides his writings, a short biographical sketch of the man. Added to these are twenty-one half-tones showing early title pages, early printing, first editions, and early forms of book-making.

Truly and delightfully original in its conception, Dr. Dana acknowledges that the compilation of this beautiful work has brought to him many hours of unexpected pleasure. So, too, will it bring to the readers, not only through the knowledge offered, but through the grace of the style, the beauty of the English, and the faithful and artistic reproductions of the old title pages. The general make-up of the volume justly adds to the credit of the press which produced it.

Dr. Dana has offered a work of love, love for a profession, which certainly will bow in graceful acknowledgment for so beautiful a gift to its members.

MODES OF RESEARCH IN GENETICS. By RAYMOND PEARL, Biologist of the Maine Agricultural Experiment Station. Price. $1.35. New York: The Macmillan Company, 1915.

"ALL knowledge is potentially useful, but the fundamental reason for undertaking and encouraging research in genetics, or anything else, is not because what one gets may be immediately useful, but because it is *knowledge*." Too true a statement by the author of this little volume, in which he outlines the underlying methodological bases of modern genetic science. Some of the material here presented has already found readers through the pages of other scientific journals, where awakening an interest and enthusism, it has led to the publishing of the present work.

Since the science of genetics is just beginning to open its eyes to the light, every phase of truth regarding it must be thoroughly studied and investigated before it can be accepted as an established fact. Even though conclusions apparently can be drawn through heredity, the forces of environment and the further known action of certain parent cells in the exhibition of traits in the young, Pearl states that "one can experiment in regard to one's progeny, but not in regard to one's ancestors."

The book offers "A critical examination of current modes of research in genetics," "Biometric ideas and methods in biology: their significance and limitations," "On the nature of statistical knowledge," "Certain logical and mathematical aspects of the problem of inbreeding," and "Genetics and breeding." The author shows a depth of wisdom and exceedingly tolerant breadth of view when he hopes that, even though the reader may disagree with the subject matter and conclusions here offered, if an interest has been aroused sufficient to lead to further thought and study of this matter, the book will have served its purpose.

THE CHILD IN HEALTH AND ILLNESS. By CARL G. LEO-WOLF, M.D. Illustrated. Price, $2.00. New York: George H. Doran Company, 1917.

EVERY new book that is published for mothers on the care of infants and young children usually marks an advance in the practical knowledge offered in the most important field for women this old world holds, that of motherhood. This book, of moderate size, shows what an improvement has been made by pediatrists in the manner in which they have presented their all-important knowledge to the laity. It is really written from the standpoint of the mother and not entirely from the standpoint of the child. Hours of labor are saved the woman by timely suggestions as well as by the practical knowledge contained in every "mother and child" book.

As one reads, there comes a realization that this author is writing in a manner so sympathetic in his appreciation of the confusion and uncertainty necessarily associated with the first days of motherhood that a feeling of confidence and relief must come to the mother who will depend on this book for the unravelling of the many snarls of the first year particularly.

Sensible, clear-cut illustrations are included; also a set of weight charts, weekly for the first and second years, and also one for use from the first to the fifteenth year.

OBSTETRIC AND GYNECOLOGIC NURSING. By EDWARD P. DAVIS, A.M., M.D., F.A.C.S., Professor of Obstetrics in the Jefferson Medical College, Philadelphia; Obstetrician to the Jefferson Hospital; Obstetrician and Gynecologist to the Philadelphia Hospital; Consultant to the Preston Retreat; Member International Society Obstetricians and Gynecologists; American Gynecological Society, etc. Fifth Edition, thoroughly revised. Price, $2. Philadelphia and London: W. B. Saunders Company, 1917.

THIS well known work has been revised throughout and is in its present form a most excellent reference book with respect to all that concerns obstetric and gynecologic nursing. It may be strongly recommended to the profession as such.

OBSTETRICS, NORMAL AND OPERATIVE. By GEORGE PEASLEE SHEARS, B.S., M.D., Professor of Obstetrics and Attending Obstetrician at the New York Polyclinic Medical School and Hospital; Formerly Instructor in Obstetrics, Cornell University Medical College; Attending Obstetrician at the New York City Hospital; Senior Attending Obstetrician at the Misericordia Hospital, and E. E. SHEARS, M.D. 419 Illustrations. Second Revised Edition. Price, $6. Philadelphia and London: J. B. Lippincott Company, 1917.

THIS book represents a phenomenon which must be extremely rare in medical literature—a second edition of a posthumous work (at least the author died before the book was published) fifteen months after the appearance of the first edition. This fact speaks eloquently for the excellence of the work, which we reviewed with full appreciation at the time.

Society Reports.

FIRST DISTRICT BRANCH OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Eleventh Annual Meeting, Held in Newburgh, November 9, 1917.

(Special Report to the MEDICAL RECORD.)

THE PRESIDENT, DR. RICHARD GILES OF COLD SPRING, IN THE CHAIR.

Address by the Secretary of the Medical Society of the State of New York.—Dr. FLOYD M. CRANDALL made a brief and informal address in which he told of the thriving condition of the State Society and the interest taken in the District Branch meetings. He said he knew his hearers would be glad to learn that the President of the State Society, Dr. Alexander Lambert, was doing an excellent work in Europe. He was the medical adviser of the relief work in France and Belgium, a very responsible position, and one that involved the handling of vast sums of money. He had heard quite indirectly from a person conversant with the work that the one man who stood head and shoulders above everyone else in efficiency and executive ability was Dr. Alexander Lambert. Dr. Crandall then emphasized the importance of the district branches as parts of the Medical Society of the State of New York, and said that it was essential that their presidents be chosen with careful discrimination. This was because the office of president of a district branch imposed three important duties. A man in virtue of his position as president of a district branch was also a delegate to the House of Delegates of the State Society; a member of the Council of the State Society, which was the executive body of the State Society in the interim between meetings, and a member of the Board of Censors of the State Society. Dr. Crandall described the duties that devolved upon the president of a district branch in each of these capacities and urged that in order to make his work more effective he should make at least one visit each year to each county society in his district.

Is It Syphilis or Not?—Dr. WILLIAM S. GOTTHEIL of New York presented this contribution. He said that it was the purpose of his paper to lay down broad general principles for the guidance of the practitioner in his daily work. In his opinion no test tube and no microscopic slide could, in most cases, take the place of the older, readier, and usually more reliable methods at everyone's disposal. But it might be argued that a clinical diagnosis of the proper kind presupposed an amount of experience and skill that was not at the disposal of every practitioner; this proposition he was not ready to admit, save in exceptional cases. How much easier, it had been said, was it to send your specimen to the laboratory and have the diagnosis returned to you by mail. Perfectly true, it was easier, but it was often neither certain nor safe, and it might lead to errors that had lamentable consequences. As to the blood or Wassermann test—When the syphilitic virus had overcome the barrier of the chain of lymphatic glands nearest the site of infection, it occasioned certain alterations in the blood which might be manifest in the test tube. This process, however, took from four to six weeks on the average. During this period the patient, already infected, showed no signs of the disease. This was most unfortunate, since it was the most critical time of all for the patient, being the period during which the most effectual efforts might be made to cure his disease. On the other hand, the blood changes that gave us the Wassermann reaction, once established, might last indefinitely; in fact, in the great majority of cases they did last indefinitely. Other signs and symtoms must therefore be relied upon for making a diagnosis. A positive Wassermann reaction simply meant that the patient at some time or other in his life, before or after birth, had had a syphilitic infection. It did not mean that the condition under consideration was syphilitic. It might be an indication of value in handling the patient, but it was distinctly a subsidiary element in the diagnosis, which must be made on other evidence. Very much the same considerations held good for microscopic examinations of smears and sections. Those who had had personal experience with these procedures would, the writer felt sure, be the first to admit that, helpful as they might be in certain cases, the incidents of microscopic technic and the personal equation of the examiner played a rôle so important that the evidence thus obtained must be regarded as helpful and subsidiary rather than as determinative. This was especially true of skin sections. There was, however, a differentiation in the value of evidence which was often lost sight of, namely, that a positive finding, serological or microscopical, at the hands of a competent observer, had a definite value; a negative finding, on the other hand, was much less important, because of the possibility of faults of technique, accidental features, and the personal equation. The essayist then called attention to a few of the commoner and more important instances in which the question came up "Is It Syphilis or Not?" With reference to the *chancre* and the lesions that resembled it—chancre was usually an insignificant, painless, single tumor, with erosion and ulceration, if present, secondary and accidental; characteristic stony hardness; characteristic local adenopathy. Spirochetes were found in the scrapings, and appeared weeks after intercourse. The lesion was usually accompanied by other signs of syphilis in the organisms. *Chanroid* was a very painful and tender, single or multiple lesion, with small circular ulceration and no induration save a slight inflammatory one. It appeared a day of two after infection. The neighboring lymph glands were doughy, swollen, tender, and prone to suppurate. No spirochetes were present as a rule and there were no signs of early constitutional syphilis. It usually appeared in the young and signs of past syphilis might or might not be present. *Gumma* usually appeared as single or multiple doughy painless tumors, usually secondarily infected and ulcerated. It had no relation to intercourse. There might be painless local adenopathy, but no general adenopathy. The blood was usually Wassermann positive; spirochetes usually were not found locally. The signs and history of past syphilis were present. This lesion might occur at any age and last indefinitely. Herpes was characterized by small, circular, itchy vesicles, or erosions running their course and disappearing spontaneously in a few days without trace. There was no induration, ulceration, or characteristic local or general adenopathy. There was a history of past similar attacks. No spirochetes were present. The signs of past or present syphilis might or might not be present. It occurred at any age. *Cancer* showed a moderately painful and tender tumor, ulcerated, usually single, and in the aged. It had usually run a course of many weeks or months. It was never suppurating. No spirochetes were present.

The signs of recent or old syphilis might or might not be present. The microscopic examination was often decisive. The essayist then reviewed the differential points between the secondary syphiloderm and the eruptions that resembled it with special reference to psoriasis, and the differential points between the tertiary syphiloderm or gumma and the lesions which resembled it, cancer and lupus vulgaris.

He very strongly emphasized the point that the syphilographer must be in the first place a dermatologist, since the diagnosis "Is It Syphilis or Not?" must in nine cases out of ten be made from a non-syphilitic lesion of the skin or visible mucosa.

Dr. MIHRAN L. PAROUNAGIAN of New York, after complimenting Dr. Gottheil on the selection of his title, his good judgment in the selection of the palpable points in the differentiation of syphilitic lesions, and his very interesting photographs, said he heartily agreed with the statement that in order to make a correct diagnosis of syphilis a man must be a dermatologist, because syphilis was one of the greatest imitators of a variety of skin diseases, such as psoriasis, lichen planus, lupus, and a variety of other skin diseases. In order to be able to make a correct diagnosis of syphilis one would have to be acquainted with other forms of cutaneous disease. It was true that so far as the Wassermann reaction was concerned it was carried a little too far, as Dr. Gottheil had said, especially among the younger members of the profession. The Wassermann reaction was just like any other technical procedure; much de-

pended on the accuracy of the technique. In the speaker's opinion the Wassermann test was a very valuable procedure for the general practitioner to have recourse to since he was not familiar with all forms of cutaneous manifestations. It was true that the Wassermann might be negative in some cases of syphilis and that a negative reaction did not always mean that syphilis was absent, but on the other hand a positive reaction could generally be depended upon to indicate the presence of syphilis, so that it would seem that this was coming pretty close to enabling one to make an actual diagnosis. If one was not thoroughly familiar with the technique of the dark field, India ink, etc., he should make repeated Wassermann tests and he would find them really a great help in diagnosis. Just as in typhoid fever cases the Widal reaction would be found present for many years, so with syphilis, it was very difficult to change a positive Wassermann that had persisted for a considerable length of time. The speaker was of the opinion that if one found a strongly positive Wassermann it meant something: it meant the presence of a certain amount of dynamite in the system which some time or other might explode. It was always a danger signal. Where such a positive reaction was found every effort should be made to make it negative and to keep it so. If one did not succeed in making a positive reaction negative in a few months or a year or so, it was very difficult to make it negative and keep it so. One should not allow a four plus Wassermann to go untreated and to say that the patient would probably be all right, for 94 per cent. of old syphilitics showed aortic involvement, or involvement of the spleen, heart, or some other viscera. An early diagnosis and early treatment would save the unfortunate results so often witnessed in our neurological clinics. Another point was with reference to extragenital chancres. One might find these on the back of the washerwoman's hand, in a case of surgical injury, etc. The speaker cited a case in which a man had received an injury and was treated for two or three weeks in a hospital before it was found that he had been infected with syphilis at the time he received the injury. Another way in which the infection might be transmitted was by biting. One case coming under his observation showed a chancre at every point where a tooth had penetrated the skin. They had been taught that genital chancres, as a rule, were single lesions, but they were seeing more multiple chancres than ever before and it would be better to discontinue the teaching that they were single. As to chancroids, this form of lesion should be followed for several months, for too often the diagnosis of soft chancre and a failure to give specific treatment resulted in the subject going to the neurological clinic later with some involvement of the spinal cord or brain.

Dr. Gottheil, in closing, said he wished simply to touch on one practical point and that was whether a positive Wassermann reaction was an indication for active anti-syphilitic treatment. He thought that depended entirely upon the patient. In an institution with which he was connected they sent wayward girls with positive Wassermann reaction for treatment. If the girls were sent back without treatment they were returned to the institution. These old positive Wassermann reactions would remain positive in spite of all treatment among this class and one would have to have ten city hospitals to care for these patients. With the private patient the situation was different and one should make every effort to sterilize the blood by a proper course of treatment, and once in a while one would be successful, but in the ordinary patient among the poorer classes the attempt to render a long standing positive Wassermann negative was useless.

The Signs and Treatment of Thyroidism.—Dr. John Rogers of New York presented this communication. He said that he based his remarks upon an experience of 448 cases of thyroidism in which he had operated. The general aim of the operations was to protect and save rather than to excise or destroy thyroid tissue. The operations had been guided in this aim by a hypothesis which assumed a close relationship in the causation of all types of thyroid abnormalities. Every kind of thyroid disorder seemed to be preceded or accompanied by circumstances which manifestly or by inference involved fatigue. There followed an enlargement of the thyroid which seemed to be an hypertrophy to compensate for excessive demands upon the thyroid function. From this point the later progress of the disease was (1) toward a quiescent simple goiter with greater or less degenerative changes in the gland, (2) toward hypothyroidism and into myxedema, (3) toward hyperthyroidism, and finally (4) toward exophthalmic goiter. The presence of exophthalmos seemed to mark a more dangerous stage of the disorder than the preceding signs of simple hyperthyroidism. Any one of these conditions, especially the quiescent goiter, could at one time or another change its symptoms under favorable or unfavorable circumstances and show the signs which were supposed to indicate any opposite extreme of thyroid function. Hence, in the title of this article there was used the term thyroidism. The most characteristic, if not the only, symptoms of these apparently different disorders were referable to the involuntary nervous system. Fatigue was known to affect the terminal filaments of nerves, and it therefore might be necessary to include in this fatigue hypothesis for the thyroid, an additional fatigue of the terminals of one or another part of the involuntary nervous system. As yet, however, from a therapeutic standpoint, this introduced an unnecessary complication.

Physiology.—It should be recalled that the involuntary nervous system consisted of two parts which, broadly speaking, seemed to have opposing functions. One of these parts was called the autonomic group of nerves, and was in general stimulating or "activating," the other was the sympathetic proper or "inhibiting" group. Every organ in the body, except the brain, was apparently supplied by a branch from both the activating and inhibiting parts of this involuntary nervous system. As a whole, it seemed to act as a means of coordinating the activities of the different bodly forces and organs. The thyroid was known to be intimately associated with the general process of oxidation, and this process was also concerned in the production of heat and energy. Hence, it was no great step to assume that excessive production of energy and fatigue was the ultimate causation of all of these more or less closely allied thyroid abnormalities.

Symptoms.—Certainly the evidences of marked fatigue, when associated with an enlarged thyroid, were commonly accepted as the symptoms of hypothyroidism. There were headache, pallor, dry skin, anorexia, gassy indigestion, constipation, and low blood pressure. Wakefulness and a subnormal temperature and slow or rapid pulse were common. If the fatigue continued, the symptoms advanced to those of myxedema, or there followed a gradual disappearance of the headache, pallor, anorexia, and constipation. The skin more or less rapidly became flushed and moist, the pupils were dilated, the appetite was good, and the bowels were regular or even loose. The heart action in this early stage was usually exaggerated, pounding or thumping, instead of merely rapid. These signs were all evidences of irritation or activity of the activating rather than the inhibiting part of the involuntary nervous system. Exophthalmos, when it occurred, usually appeared at this period. As these evidences of hyperthyroidism continued, the moist, flushed skin was generally succeeded by one which was dry and pale, and the low blood pressure by one which slowly rose. The exaggerated heart action became one which was merely rapid. The excessive appetite and frequent bowel movements changed to anorexia and constipation. In other words, the picture of hyperthyroidism began with evidences of irritation of the autonomic or vagus or activating part of the involuntary nervous system, and finally passed into one which showed signs of irritation of the sympathetic or inhibitory group.

Experimental.—Dr. Rogers stated that he had for a long time been interested in physiological tests of different thyroid derivatives. None could be found which, when injected intravenously in dogs, produced any appreciable tachycardia. The only portion of a thyroid extract which was active was soluble in alcohol and non-coagulable by heat. This, when tested upon the stomach, showed vigorous stimulation of the terminal filaments not of the sympathetic but of the vagus. Other observations had caused him to believe that the thyroid activated or stimulated the whole autonomic or activating part of the involuntary system. Some

portions of this group of nerves seemed, however, less stimulated than others. An extract of the adrenal made like that of the thyroid seemed, on the other hand, to activate the terminal filaments of the sympathetic.

Treatment.—If all thyroid disorders originated in fatigue and hypothyroidism and advanced from this into the more severe disturbances of myxedema or of hyperthyroidism, then prophylaxis by rest and supporting thyroid feeding were important. As remarked before, he advocated not thyroidectomy, but rather the ligation of vessels with the enucleation, whenever possible, of all diseased thyroid tissue. He had practised in cases of hyperthyroidism the ligation of all four of the chief thyroid vessels in 148 cases. He had had as a result of this operation three deaths. It was more fair, however, to state that he had practised the ligation of one or more arteries in 287 cases of hyperthyroidism, and as the result of this interference there had been 13 deaths. Otherwise, Dr. Rogers stated, no patient had been made worse, and so many had been perfectly cured that he urged the more general adoption of this method. It should, however, be accompanied and followed for a long period by organotherapy. In summarizing, the essayist stated that in all cases of goiter with tracheal stenosis he excised the offending tissue. In all cases of goiter with one or more tumors which were localized, even in the presence of marked hypothyroidism, he enucleated the disease. In all cases of symmetrical goiter which gave more or less severe evidences of hyperthyroidism, especially exophthalmos, he ligated all four chief thyroid vessels in two stages. In all cases of goiter and hyperthyroidism, if the disease seemed confined to one lobe or a part of one lobe, especially if the disease was early or in the vagotonic stage, lobectomy should succeed. Lobectomy would probably fail in all cases in which the symptoms of sympathetic irritation preponderated. Before and for one year after any operation, rest or, rather, good hygiene and appropriate organ therapy were indicated.

Mass Volunteering.—Captain FREDERIC T. VAN BEUREN of New York, of the State Committee of National Defense, made this address. He said he would promise to be neither witty nor eloquent, but he would be brief. The object of his coming to this meeting was that, as secretary of the State Committee of National Defense, he wished to express his appreciation of the work done by the county committees. It was the county committees that really did the work. Any information that came to the State Committee was forwarded to the county committees and they reached the individuals, and it was through the support of the individuals in the county societies that they had obtained results. The work of the medical section of the Council on National Defense was to get a sufficient number of physicians as medical officers. Different men had made different estimates as to the number of men needed, but the point to be impressed on their minds was the uncertainty of the situation. As things now stood they had enough medical officers for immediate needs, but if the war continued for two or three years they would not have enough medical officers. The report had gone forth that the Adjutant's Office had ceased to issue commissions; this was because they had been swamped with applications and had not been able to handle the immense amount of correspondence. It would be necessary for them to take stock and see how many commissions had been granted and how many more officers were needed. In New York State approximately 2,000 physicians had volunteered; that was about one-seventh of the total number of physicians in the State. Eventually about one-third of the physicians in the State might be needed, but that was at present absolutely uncertain. The impression which he wished to leave was that if more men were needed they wanted men of the right kind. Many men in the Medical Reserve Corps were older men, that was, men over 35 years of age, and many had families and important community interests. It was perfectly obvious that the wisest course would be to take those men who were still unmarried and who have fewest community interests, since these could be more easily spared. Attempts had been made to obtain a qualified draft for physicians, but these had been unsuccessful, and it seemed that the only other way to accomplish a proper selection was by shaping opinion in such a way that any man who had no family responsibilities and did not go into the army should be regarded as not doing his duty, and that the man who was needed at home and tried to go into the army should be restrained. The medical profession should make the selection in this way, having it understood that the medical profession and the public considered that the younger medical men without responsibilities were not doing their duty by their country if they did not go into the service.

Dr. S. W. S. TOMS of Nyack said that he had decided to join the Medical Reserve Corps last spring and had been ordered to Allentown. Recruiting of medical men was rather slow at that time. The fact that they had recently been recruiting more rapidly was probably due to the energy, enthusiasm, and patriotism of the men who had already gone into the service. Allentown was somewhat different from the other camps in the country in that it had been officered by the Medical Reserve Corps and was practically not a part of the United States Army until recently. The object of the work there was to train men for the ambulance service, and this work had now been taken over by the United States Government. It had seemed that early in the summer medical men were not awake to the needs of the country, but now they were coming in very rapidly. The Southern States had given a much larger quota of men than the Northern States. Dr. Toms said that at the meeting at the Waldorf-Astoria the preceding night he had been much elated to hear that there were now 21,000 doctors enlisted and that over 14,000 had accepted commissions. Many men were doing things they had never done before. As an example of this, he said that he had been assigned to duty as a sanitary officer, and had had to assist in planning for the disposal of waste. This was no easy problem, for the camp was very much overcrowded early in the summer and the ground was a hard clay soil with absolutely no drainage, so that latrines had to be filled in frequently and new ones constructed. When they were required to have one seat for every ten men it might be imagined that this had been no small task. It was into such work that the civilian doctors had gone, but they had gone in with heart and soul, working untiringly, often holding meetings at which they discussed plans until midnight. Another interesting thing was that they had had practically no sickness in the camp. They had had no epidemic whatever, only a few cases of mumps. The Surgeon General had inspected the camp about a month ago and was highly pleased with the conditions. They had had fewer flies about the latrines than about the mess hall; this because they had been unable to screen the mess hall. Dr. Toms, in closing, said he thought that, all things taken into consideration, the doctors were waking up and coming to the front nobly, and one point worthy of note was that the best work was being done by the older men. It was remarkable the way in which the older men had grasped the situations and fitted themselves into the work. If a man of mature years was found to be a misfit, he was immediately sent off to some training camp to get the training and discipline he needed. It was to be hoped that all the men who came into the service would come in with the same spirit and determination to meet whatever situations arose and with a willingness to make any sacrifice, and then we should have what they had had in England, another illustration of the wonderful results that could be achieved through the cooperative efforts of the medical profession.

Lessons Taught in the Present War in the Treatment of Gunshot Wounds.—Dr. WALTON MARTIN of New York spoke on this subject. He said that from the discussions he had listened to at the Clinical Congress of Surgeons there were certain definite lessons in regard to war surgery that might well be emphasized. In the first place one had to take into consideration the kind of weapon that had caused the injury, whether by fragments of shrapnel, by bullets at close range, or by bullets at long range. A bullet at a range of 400 meters had a tendency to pass through the tissues and cause very little damage or contusion. The wounds in the Boer and Russian-Japanese wars were to a larger extent of this nature, and consequently the deductions drawn from experience in that war were not applicable in the present war when so many of the wounds were caused by shrapnel. The pieces of shrapnel did not

cause the clean-cut wounds such as the bullets caused, but on the other hand caused considerable contusion, did not pass through the tissues, but were apt to carry pieces of clothing or other foreign material with them and to lodge in the tissues. From an exploding shrapnel one got every kind of injury, and sometimes one man received a great number of wounds. The shrapnel caused great damage to the tissues so that there was a deposit of tissue detritus as well as the introduction of foreign material to contend with. Again a shell might strike a building, tearing it to pieces, and the flying debris might cause numerous wounds. Splinters from such a source had been known to cause numerous wounds and had been found lodged in the pericardium, the transverse colon, and other viscera of the victim. If a rifle bullet became deflected it might act like an artillery missile and damage a great area of tissue. Another point to bear in mind was that when particles of clothing and other foreign bodies had been carried into a wound surface sterilization was of no value. Frequently one got no idea from the size of the skin wound of the amount of contusion and damage lying deeper. Earlier in the war the treatment of wounds was much more conservative than it was today. Bacteriological studies had shown that the terrain of European battlefields was saturated with germs that caused infection—the Welch bacillus, streptococci, and staphylococci—and the uniforms of the soldiers became covered with this earth, and if a particle of clothing was carried into the wound it carried infection. Bacteriological studies also had shown that one did not find infecting bacilli in the wounds until eight or nine hours after the latter had been received. A few organisms would result twelve to twenty-four hours afterward in millions of descendants, so it became very evident that the main point in the treatment of these wounds was the early removal of foreign material and infected tissue. It was not sufficient merely to take out the foreign body, but one must remove all macerated tissues and all tissues that would be likely to become necrotic and serve as a culture medium for bacteria. Therefore the wound should be laid wide open and all necrotic tissue removed as well as all debris, particles of clothing, etc. This was what Dr. Carrel characterized as the mechanical treatment of the wound. He had advised that two millimeters of tissue be removed along the entire tract of the wound and that one should not respect nerves or blood vessels. The speaker, however, did not believe one should hold to such a hard and fast rule as that, owing to the fact that the amount of tissue damaged along the tract of a wound varied greatly in different wounds. Another point was that one must not think first, as had been the custom in civil practice, of repairing the damage, but must first think of getting rid of all infection. That meant a wide exicision and a great deal of operative work. It meant that surgeons of wide experience were required, and it meant *x*-ray and bacteriological examinations. It meant that a very complicated staff was needed for the treatment of war wounds. Another thing that made the treatment of war wounds a different matter from that of wounds in civil life was that the soldier had to be moved so often and treated by so many different surgeons. Dr. De Page had been on the Belgian front since the beginning of the war and had probably the model hospital of Europe. He had the management of both the base hospital and the advance hospital, which furnished conditions somewhat different and more advantageous than those found elsewhere, in that they were able to follow a wound from the start to the finish. This had contributed greatly to the good results they had obtained, for they were able to get the wounded men early and to carry out a definite plan of treatment. Another factor that complicated war surgery was that they had not one emergency case at a time but sometimes hundreds at once, so that it was not possible to give them adequate care. One point of interest was with reference to wounds of the knee. In Dr. De Page's hospital they had carried out the Carrel method in the treatment of these wounds, and they found that they had 40 per cent. of recoveries with function and only 15 per cent. amputations. They then tried simply washing out the knee wounds with Dakin's solution and closing them. With this method they had 80 per cent. of recoveries with function and no amputations. Dr. De Page reported that he got better results with the Carrel treatment in complicated fractures than with other methods of treatment. It seemed that the Carrel method was still under consideration In some wounds one obtained better results by keeping the wound open, but this was not the case in wounds of the knee

(*To be concluded.*)

PATRIOTIC RALLY AND RECEPTION UNDER THE AUSPICES OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA, THE PHILADELPHIA ACADEMY OF SURGERY, THE MEDICAL CLUB OF PHILADELPHIA, AND THE PHILADELPHIA COUNTY MEDICAL SOCIETY.

GUESTS OF HONOR: SIR BERKELEY MOYNIHAN, COL. T. H. GOODWIN, MAJOR GEORGE W. CRILE, MAJOR FRANKLIN H. MARTIN.

Held at the Bellevue-Stratford, Philadelphia.

Nov. 7, 1917.

MAJOR JOHN B. DEAVER, PRESIDING.

COL. T. H. GOODWIN, D.F.L. of the British Army in opening his address said that his instructions upon coming out to this country had been to tell the people of the United States of the mistakes—many and serious—which had been made in Great Britain in order that similar pitfalls might be avoided. One of the most serious of such errors had been the failure to realize the probable duration and severity of the present war. Recalling the astonishment and incredulity with which the British public received Lord Kitchener's statement that the war would last, at least, for three years, he emphasized that Lord Kitchener had said it would last for three years, not that it would be over in three years. He recognized the difficulty of appreciating at an area far removed from the war area conditions and necessities arising, such as the need of training the medical profession and providing a large reserve in this and other professions, the necessity for economy, conservation of fuel, public money, etc., avoidance of any wastage. To avoid distress these must be practised. The many trials and difficulties experienced by Great Britain he ventured to suggest that America would also experience. An enormous expansion would have to take place in our army and concurrently in the medical force.

An army of many thousands would be needed and in addition to the personnel of the initial army many reinforcements must be provided to replace men tired and ill and to provide against the general wastage of war. He earnestly urged that there be avoided the cardinal mistake of underestimating the enemy. "Do not believe any stories you hear as to the enemy being broken, as to its being at the end of its resources, as to the morale of the German soldier being a thing of the past," he warned, declaring that the German soldier is a brave, hard fighting, determined man, essentially patriotic, and splendidly disciplined. Illustrative of the confidence of the German soldier, officer and, presumably, of the German nation, Colonel Goodwin related his conversation with one of the German officers who had said, "Of course, America is coming into the war. We shall attend to that. We shall take steps to bring her in. We have got to pay our war cost with American money. You may laugh now, but, mark my words, you will see our victorious armies marching through the United States. We intend to teach them, as we have taught other countries, what war means. Wait and see." Such, Colonel Goodwin said, was this man's absolute belief. While Colonel Goodwin had waited and was still waiting, it was not with any confident expectation of seeing the German army in the United States that he had come out. In his opinion no civilized nation had ever imagined the utter depravity to which modern warfare could bring a nation. In reference to the "English speaking soldier" so closely had Colonel Goodwin been associated with the men of the United States Army that he thought of the officers and men exactly as of his own; he would not wish it to be otherwise. Having seen as he had the enormous amount

of suffering, pain, misery, loss, wastage, much of which might have been avoided by more forethought, more realization, more preparation, he begged that America would prepare now and leave no stone unturned to insure adequate preparation. Brief mention was made of the attention given a man shot at the front line trench. Incidentally, Colonel Goodwin observed that "up at the front" the atmosphere was not depressing, that while sometimes it was difficult to keep cheerful, the principle maintained was that one must keep cheery. Supposing that a high explosive shell did strike a regiment occupying a front line trench much less damage was done than would be thought. When one of the men was struck in the shoulder a few vitriolic remarks were heard regarding German shells, the man used his first aid dressing and a telephone message announced that he was being sent to the casualty station. Private Atkins received a dose of antitetanic serum, his arm was placed in a sling, he was put on a stretcher and sent farther back to the station of the motor ambulances and thence to the dressing station a couple of miles back. There he was given a hot meal, his wound more carefully attended to than was possible at the first aid treatment. If the wound proved more serious than at first thought the man was sent to the hospital at the base, treated there for a few weeks, and then sent to England or kept at the base hospital, perhaps being placed in the ambulance corps and later returned to the firing line. One of the cheeriest men was one who had received his ninth wound and was going back to receive his tenth. In a tribute to the British soldier Colonel Goodwin observed that he was an extremely cheerful individual; that he had known him for the best part of twenty-five years, at every sort of work and of play; in peace time and in war; in sickness and in health; under every possible condition, but had never seen him depressed. He had never seen him realize that he was beaten. The British soldier had no idea except of winning—he was either then winning, or going to tomorrow. He was the cheeriest man in the world! The same would be found true of the men of the American Army. In conversation recently with a lady Colonel Goodwin had been asked whether he hated the Germans, the hope being expressed that he did not. He replied that "hate" to him was rather a childish word; that his feeling rather was one of utter detestation and horror of German methods and system generally which were utterly opposed to all our ideas and principles. To the hope that after the war was over he was going to "forgive and forget," he had replied, "No, I am not; it would be impossible." An incident showing the spirit of the British soldier was that of two men in the hospital, each with a broken thigh. They were of different regiments and had never seen each other before, but had struck up a tremendous friendship. Both were Englishmen, both married men with families. One morning when a convoy was being sent across the Channel word came at the last moment that one more patient could be taken. On saying to these men, "I can send one of you this morning," both looked across the Channel, where there was a clear sea; both had been looking forward to this moment. Then one said, "Well, I am not feeling quite so well this morning; I don't think I will go." The other fellow said, "If you don't mind, I would rather go another time." After waiting three or four days for another boat the two men were sent off together, on cots alongside of each other. Schoolboys returning from their sports had never shown greater spirits than these two men. That boat, with sixty-three patients whom Colonel Goodwin had been looking after for weeks, was sunk by a submarine. "Personally," Colonel Goodwin said, "I don't feel at the present time like forgiving." One thing further, he would say, "I don't want to be pessimistic. I don't think of but one end, absolutely one end only, and that is a victorious end for us. But I honestly believe that a lot of water will run under the bridge, and that much hard and unremitting work has to be done before we shall attain that end. I would beg you to expect, and to prepare for a long and strenuous war. The more finished, the more unremitting your preparation, the greater and steadier your purpose, the more quickly will the war come to a satisfactory termination."

Major Franklin H. Martin, who was introduced as the representative of medicine in the Council of National Defense, expressed his sense of responsibility in his position. He characterized the war as not a little war, but rather one of a thousand years, the privilege of having part in which should fill a man's soul full. The problems involved were almost overwhelming. "Do you realize," he asked, "that the medical department of a modern army is really the backbone of that army; that our forces could not remain in Europe for one month were they not efficiently looked after by the medical department; that the problem is different from that of a hundred years ago?" Because of these things the responsibility was regarded as large. Until all of the medical profession within military age and physically fit were enrolled in one department of the service would all be accomplished which should be accomplished by the medical profession. He inquired whether there could be any one present so detached from the problem of the war that they could feel no responsibility; and if so, what explanation could they make five or ten years hence of their position. He asked whether it was realized that our enemy today is far stronger than at the beginning of the war; that she has practically doubled her territory; that the Imperial Bank of Germany holds double the amount of gold that it did the day the war began; that Germany has rolled up one country after another, organized it and then sold the products back to the country for gold, buying what she had to buy with paper; that the work of Germany was being done by her prisoners for a pittance a day; that Germany is now accumulating the indemnity she would later have to pay to these very countries she has conquered? While that was a wise provision, the speaker gave ardent thanks that England would be in at the end when the bargain was made and, with the Allies, would see that the gold is returned and that Germany paid back, not only the money taken, but she made a real recompense so far as that was possible. Speaking more especially to his subject, the Medical Department of the Council of National Defense, Major Martin said that the United States on April 6 had a standing army of medical officers to the number of 550 with 400 in the navy, that today there were enrolled in the Medical Officers' Reserve Corps 21,000 civilian doctors for work in the national army of America. With the original corps of the army there had been enrolled and accepted enough medical officers to supply an army of 2,500,000. This number, however, would not be sufficiently large, believing as he did that toward the close of the war there must be from five to six million men in the field, necessitating that there be five or six times as many medical men as at present enrolled. The medical department of the army, he said, had expanded 100 per cent. every two weeks since the war began. Attention was called to the "providential" condition existing in the surgeon general's office at the beginning of the war. At the head was General Gorgas who for thirty years had been working on a problem much larger even than the present one. With him were the men who assisted him in putting yellow fever and malaria "out of business"; there was Grayson who had made his reputation working in the navy; Braisted who had endeavored to eliminate alcohol from the navy; Blue who had eradicated the plague from San Francisco and did that great work in New Orleans. With these men at the head of the three great medical departments of the army Dr. Martin thought there was little cause for worrying concerning the outcome of the war so far as medicine is concerned. The English, he said, were taking care of their soldiers with only two and a half to three medical men to the thousand instead of the seven provided by the United States. They have been working sixteen hours a day, while we have been sitting here wondering whether we might do something. So many medical men could be sent to England, France and Italy—and the people at home would be so much better off! "Therefore, gentlemen," Major Martin exclaimed, "let us get into uniform and not have to explain in five years or twenty why we did not have a part in this great war!"

Major George W. Crile, introduced by Major Deaver as the one who had made the way to the operating table one of the rosiest paths of life, said he felt very much as though he were occupying a hole in No Man's Land, between the eloquent, patriotic speakers and the gentleman who had introduced him. Speaking, as he had

been asked to do, of the daily routine of the Americans who had gone over to do their bit, Dr. Crile described his visit to one of the casualty clearing stations, and said he had found the hospital in a tremendous turmoil of activity, men were operating with great rapidity, and by the aid of artificial light. At one end of the operating theater where things were most active, having a curiosity to know who was doing this stirring work at midnight, he had found "Dick" Harte at work. He thougnt that Philadelphia might justly be proud of the work her surgeons were doing in France. The medical man going to France, he said, would be splendidly received, located in an advantageous position, and given the preference on all sides by his colleagues. While there would be opportunity to study problems of military surgery from great masters, there had been a wonderful development in the younger men of about thirty years of age who had been operating in twelve hour shifts for two and three years, and this work they continued untiringly. Nor could he too deeply express his admiration for that greatest of all of the English medical men, Sir Alfred Keogh, who thought and talked and planned in terms of empires. Anything which he did or said would be of the greatest value. At the casualty station in France the real work of surgery is done, and incredible as it might seem the farther toward the front one went the greater "peace and harmony" were felt. With everyone thinking and working in the most single-minded way toward the achievement of one end, almost a "heavenly peace" was found at the front. Among the features of interest at the front was the bombing of hospitals. The hospital which Dr. Crile had had the honor to serve had been in existence for three years and its location was known to the Germans as proven by the map of a pilot shot down. In two nights over 200 people had been killed and wounded. Of the living conditions at the front, the British rations were excellent; though the weather was always chilly, damp, and cold the men always thrive. Apparently there is something in the atmosphere which invigorates. It was explained that in the front area very little surgery is done, good surgery not being possible until one got behind the eight mile limit of the German guns; not infrequently one wore a steel helmet when operating. It was said that at the time of the bombing of the hospitals the German prisoners were the only ones who were alarmed, and when they were told their own airplanes were bombing the hospital they cursed their own people as only Germans can curse and hate. The British soldier, Major Crile said, he had come to know better and for the Tommy had to say that he really did not know the meaning of defeat. One might leave him in Flanders and go away for a week; on coming back he would be there—living or dead—he would be there. The Tommy he designated as a good, clean fighter, in a sportsman-like way reflecting the great sense of fairness found everywhere among the British people. He had never seen among the British soldiers boasting, nor expression of hate or fear. He had seen officers only of the high type English gentleman attacking this very bad business of war with all its grimness as would a good clean sport, and the men reflected the soul of their officers. While not able to tell what would happen in this war, believing, however, that the end would be victory for the Allies, this he knew: That the British might die in Flanders, but that they never would go back to England, only and excepting after victory. So far as he was concerned Major Crile confessed to more fear in regard to the organized intelligence of Germany than in regard to her soldiers. He expressed the earnest hope that the United States in this crisis would see to it that all the intelligence she possessed was linked closely with the national defense now and for all time. He believed that her universities ought to be, in peace time and in war, a part of her national defense; in all medical schools there should be an organization of physicians, clinicians, surgeons, laboratory men, feeling a national responsibility ready to cope with the hard materialistic philosophy of the Germans. He believed that following the war all Americans would think along national lines and not settle back content with merely local interests. Such organization, he said, was now being formulated by the Council of National Defense, which he hoped would be carried to a successful issue. His observation led him to the belief that we would not realize that we are in the war until our Arlington is transferred to the foe.

Sir BERKELEY MOYNIHAN of Leeds, England, prefaced his remarks by his expression of pleasure in speaking in Philadelphia. Many years ago in the days of his "tender and callow surgical infancy" a visitor from Philadelphia had come by chance to see him operate in Leeds. This visitor had returned to Philadelphia and so arranged matters that in the following year Sir Berkeley had been invited to speak before the American Surgical Association. From this experience had come a vivifying impulse, a refreshing stimulus, which had carried him on his way ever since. He desired, therefore, to say that ever since those rather far off days he had remembered in deepest affection the memory of his well beloved friend, Dr. William L. Rodman.

The question presented and to which he desired to submit an answer was, "Why are we at war?" He observed that in the history of all wars the real underlying moral principles of war were not in the earliest days of the conflict recognized. Only the men who stood a little aloof—civilians, officials, men of letters—were the ones who revealed to the nation the real, secret underlying the tragedy being enacted. The present war, in many respects, if not in all, Sir Berkeley characterized as different from any war waged in the history of the world. An important difference was that for the first time in history there is a league of free peoples willingly fighting war together, a league of peoples who could not be coerced by any government or compelled by any autocracy to take up arms. "You, we, and we together are the only ones fighting in this war who have nothing to gain, except an addition to our already heavy responsibilities. We are fighting a war of rescue. We are fighting a war for peace."

Inquiring deeply for the cause of the war there would be found two conflicting moral systems. Prussia, the instigator of the present war, had at first a poor and infertile country. A life of self-discipline was necessary to existence. It was not long before her people recognized that in order to increase their resources they had only to exercise their powers against their nearest neighbor. Since that time Prussia had recognized one gospel only—the gospel of plunder. War is, he said, the natural industry of Prussia. It is by war that she has added to her own infertile territory; by war she has gained power and possession, and endeavored to make her people wealthy and contented. From the time when in 1864 Prussia waged her first large war she revealed to us and to the world at large a most magnificent cohesion among her own people that they might be used as a weapon in conquest of other rich and neighboring territories. Prussia made a religion of valor. While this Sir Berkeley observed might lead to the belief that the underlying cause of the war is Germany's ambition for further conquest, such answer Germany did not herself give. Germany tells you she is fighting a war of defense, that she feared there had been raised up around her frontier an impenetrable barrier of armed forces comprised of people who were jealous of her vast commercial increase and her supremacy in the business activities of the world. Not for a moment is Germany to be believed when she tells us that this is a war of defense. Were that the true answer, the truth underlying the war would be German fear. Fear is the black godmother of cruelty. Both these views, in the view of the speaker, are wrong, his opinion being that this is a war, not waged on one side or the other for merely military ends. It is a moral war. It is a holy war if there ever has been one in the world. If it is a war of moral basic principles it must be recognized that there can never be any compromise. "You cannot compromise with a principle of evil. You cannot make peace with the devil." The principle which has inspired and animated Germany in all this ghastly business through which the world is now going, and in all her ancient history, Sir Berkeley ventured to describe as the principle of tyranny. Asked to give a definition of tyranny, he would say that it is the surrender by an individual of what is best in himself to a power lying outside himself owning no allegiance from him, but directing all his purposes in conformity with its own will and purpose. It is autocracy. It is the supremacy of the State carried to its ultimate defi-

nition. That might is right is the law by which it lives.

Over against this definition of tyranny the one word which in truth could be used was "Liberty"—the indestructible right of every individual to be himself, to develop himself, to express himself, to grow from within. The difference intellectually and morally between the gospel of tyranny and the gospel of liberty in Sir Berkeley's view is that tyranny desires to stamp the intelligence of every citizen with a certain mark that he may be put into the intellectual currency of the State. Tyranny desires to so train and use an individual that he shall be of use primarily to the State. Liberty, on the other hand, desires to allow to each individual self expression and freedom of development of his own character. Freedom, he declared, can be exercised by many people together when each individual is willing and able to make some surrender of a part of himself to the State. We recognize a democracy which thrives on a liberty as a government made by ourselves. Sir Berkeley thought we do not care whether the laws are good laws; we do require that they shall be made by ourselves. In this war, therefore, were evident the conflicting systems—tyranny and liberty, autocracy and democracy; control and repression from without, growth from within. Sir Berkeley expressed his deep persuasion that for the people and for the world of science there exists an issue as critical and as grave as any that the world has before known. Tyranny uncontrolled, he showed, must mean restriction of the intellectual output, atrophy from long disuse, the negation of scientific processes, intellectual sterility and death. How impossible for a nation held in the fear of tyranny to give its citizens intellectual freedom! Progress in science must first and last depend upon unrestricted exercise of all the faculties of the mind, and of these imagination was declared to be the chief. Beneath a system of tyranny intellectual freedom could not exist; the two are absolutely incompatible. The best illustration of this Sir Berkeley believed was given by the history of Germany herself in the last forty years, for while Germany has been the intellectual clearing house of the world, her original scientific contributions in every branch of science are almost negligible. Therefore, for the fuller development of science, conquest of this spirit of German tyranny was necessary. This the speaker believed to be the philosophical explanation of the war.

Speaking of those living in England at the time of the outbreak of the war Sir Berkeley said that the National conscience had been stirred to the depths as never before. The ideals for which England had lived and fought seemed to Germany of no account. A nation's pledged word Germany had thought but "a mere scrap of paper" which conspicuous phrase would be handed down to her posterity. England stood and still stood, he said, for the rights of small nations which had been absolutely denied when Germany entered Belgium. Before the war there had been some uncertainty felt in England regarding what the colonies would do were the mother country drawn into the war. The answer he said had been amply given. Nothing, he said, could have exceeded the haste, the gallantry each had shown standing side by side to help. Instantly, upon the outbreak of the war the troubled waters of their national life were stilled, all corrupting influences sank to the bottom and it was realized that self-surrender was the best of all social antiseptics. The whole of the nation had sprung at once to arms and royalty was seen enlisting in the ranks. There had been seen as a private in the war one who was the thirteenth holder in direct succession of a Scottish earldom, and the story went, for which, however, the speaker would not vouch—that ten days from the time of being put into khaki this man was called upon to salute one who four years before had been his butler. The "salutary influence" of such an occurrence was evident. England had stood ready to do just whatever the war office required of it. Rather more than one-third of the total number of England's doctors had been given to the Army. With few exceptions, every medical man in the country under the age of forty-two, it was said, is an officer in the Royal Army Medical Corps. In Sir Berkeley's own city of Leeds, where after considerable thought they had thought they might add to their daily routine 520 military beds, they had later arranged for 6,300 beds and upon his return to England this number was to be increased to 7,200.

Of the rewards that could come to an Englishman whether or not he were wearing the uniform, as was well known, the greatest is the awarding of the Victoria Cross. Any man wearing such decoration is a marked man wherever he goes. Upon leaving England 103 such awards had been made and of that number a proportion three times as great as would be the proportion to the entire Army had been awarded in the Royal Army Medical Corps. Early in the war the first Victoria Cross was awarded to Captain Rankin of the Medical Corps who had sustained a compound fracture of the thigh, then perhaps the most serious of all possible injuries. He had been carried to a little dugout away from the front line, refusing to be taken farther away and for twenty-two hours he insisted upon dressing the wounds of the men brought to him. In that time his wound, of course, had passed from the stage of contamination to that of infection and death had occurred seven or eight days later of an acutely infected condition which had not been checked by amputation. The winning of a Victoria Cross more than twice recommended a man for a bar. Two bars had been awarded in this war, and both to doctors. Of their achievements as doctors, the greatest was considered that in connection with typhoid vaccination. If the military heroes of the war were doctors, the scientific hero was Sir Almroth Wright. In the South African war there had been 57,184 typhoid cases with 8,000 deaths. In the present war with an army ten times as large, on a soil much more likely to carry contamination with every kind of unhygienic and unsanitary difficulty, in 6,032 typhoid cases there had been but 292 deaths. If, however, science has had its victories, it has also had its disasters, it being no exaggeration to say that but for this system of typhoid inoculation the war would have been over long ago since typhoid would have destroyed both armies, the Boche and their own. In other directions also efforts had been made to solve the carrier problem and in surgery considerable advance had been made. In the beginning of the war the surgical problems presented were of a kind not before seen; by degrees, however, and by the placing of the right man in the right place —not always an easy thing to do—considerable progress had been made in the treatment of surgical conditions. In the surgery of the lung operations had been done, very different from anything that had ever been done before. One felt, Sir Berkeley said, almost as if they had had a misspent youth and a wasted career and that they should have started and remained above the diaphragm.

The story of what was for the British Army the most critical moment in the whole of the campaign in France, and in the opinion of those who knew, the most glorious achievement of the British Army, the second battle of Ypres, November 11, 1914, Sir Berkeley said had been told before, but he felt that those who had heard it would forgive his telling it again. The British Army at that time had not quite been defeated—it had suffered considerable disorganization. On November 7, the line consisted of men stretching from a tiny remnant of the Belgian Army to the French Army on the right. No man was able to touch his neighbor. In that line had been put every man at their disposal. From the Red Cross, the Y. M. C. A., any one who could hold a gun, men in the highest official positions had been placed in the line. Behind that line there was nothing of any kind whatever in reserve—not one man, not one gun, not one round of ammunition. To the men who occupied that line every available cartridge in France had been served—150 rounds apiece. There were a few machine guns, probably three or four to a battalion; they were rather poorly supplied with ammunition. From November 7 until the morning of November 11 the enemy had tried to wear out the spirits of the men by preventing them from sleeping. Those who walked along the line on November 10 reported that the men were excessively weary and dirty beyond recognition, with mud over their faces, hands and clothes. They were sodden over the ankles, the knees, the waist by the mud and water of the trenches. As the inspector passed along the line the men stiffened

for a moment, then would fall off to sleep. On the morning of November 11 the attack was made by troops that were fresh and in overwhelming numbers, never less than five to one, and at times seventeen to one. The second line of attack was made by the Prussian guard. Sir Berkeley had had under his care some of the Prussian guard after the attack. They told him that the Kaiser himself had placed men before the British line and told them on the morning to cover themselves with glory by marching through to the coast. In the early morning of November 11 the attack had come—wave after wave against weary, sleepy-eyed, uncomfortable, but cheerful Tommies who could hardly open their eyes to see what was happening in front of them, with the result that they did not hit anything until it came within about 30 or 40 yards. Over that 30 or 40 yards distance there walked next day, an officer counting the dead in heaps of eight, nine, ten and eleven! The attack had failed!! That weary, thin line was all that had stood at that moment between civilization and barbarism. And, if the Germans had known, on November 12 they might have laid down their arms and walked to the coast without anybody to stop them.

As Colonel Goodwin had already said, the conspicuous, outstanding merit of Thomas Atkins is that he is the most cheery, indomitable fellow on the face of the earth. When Sir Berkeley had made his report to Sir Douglas Haig he had ventured to say that he commanded an Army that smiled, and this smile, he said further, never wears off. With the man in the hospital, whatever his wound, he is still uncomplaining. Two kinds of courage are seen in the British soldiers—and which would be seen also in the American—physical and moral, and of the two it was hard to decide which he admired the more. The physical, perhaps anyone could understand, for in the glitter and glamor and the glory of a concerted attack, it is not difficult to be brave. In the visit, however, to the soldier at night, one could not but be touched of his awful loneliness and solitude and the aching misery of the early hours of the day. But never was there a whimper or a whisper of regret or surrender. Never would he forget one boy who had had a bad compound fracture of the knee joint which every effort had been made to save. In spite of the efforts gangrene had come on and amputation was necessary. By blood transfusion, the use of which in surgery was due to Major Crile, the boy had been put into something like fair condition. Though still a grave surgical risk the boy had had to have his chance. Sir Berkeley had seen him several times during the evening and again at half past eleven, when he had said, "Well, how are you?" Never would he forget how the boy turned his white, weary face to him and said, as loudly as he could, "I am tip-top, sir"; and at midnight he was dead.

When America joined the war it was felt in England that the conflict had taken on a different complexion altogether. America would learn, as England had learned, some of the jealousies of blood and iron. It was useless to deny that Germany is a great enemy. If, however, she had only fought clean, respect could have been felt for her. But, she is an intractable enemy, ruthless, bitter, and, as Tommy says, a "dirty fighter." It was interesting, it was stated, to hear the men talk who had fought on the different fronts. Never would the Tommy be heard to express any personal admiration for the individual Boche. As man to man Tommy held him in contempt. Never, however, would you hear a Tommy who had fought out in the East say anything derogatory to the Turk. He would tell you, rather, that the Turk is a gentleman, that he fights clean, and that it is a joy to be in arms against him. There, Sir Berkeley, expressed the hope that any who had not already done so would read John Masefield's "Gallipoli." It would be one of the imperishable memories to have read this book. Many of the boys fighting at Gallipoli had said that when a machine gun had been placed next to a hospital a polite message would be received from the Turk requesting its removal. Against the Boche, America would find that she must make long, arduous, and intense preparation; that she must expect immense losses. In America there would be many broken hearts; in the end, however, she would realize that it was worth while.

A statesman had said that only those are fit to enjoy liberty who have fought and struggled for it. Many of his friends in America, the speaker said, had asked him when the war would end, how soon Germany would be beaten. Might he say most seriously, that for Americans and for all, the answer would be given when every man of military age was ready to offer his services and to surrender his life on the high altar of patriotism where his country had laid herself, her soul, her honor; when she had borne her illustrious dead in thousands and knew that they had not died in vain, but to win the victory for the most righteous cause for which the sword had ever been drawn.

Asked what was to come out of this war for America and for England? Many friendships and great inspiration; the most splendid of all—that at last, America and England stand side by side. Could he have one prayer certainly answered it should be that nothing should ever tear them apart. Together they were civilization's largest hope. Seeing America's splendid boys at work in the hospitals abroad, and remembering that youth is the time for surrender to ideals, Sir Berkeley knew that when this war is over, there would be in England a large number of ambassadors of affection; American and Englishmen would stand side by side forever, working with unanimous effort to attain a common purpose.

In closing Sir Berkeley said, "I should like our watchword to be 'Together.' The greatest of our statesmen of the nineteenth century, in the opinion of many Englishmen, has said, 'All wars are detestable, except one war—the war for liberty.' America is fighting her third great war. The first war you think was against us. We don't think so at all. We think, and we now know more clearly than ever, that it was a war against that same German tyranny that we are fighting against today. As a result of that war America gained her separation from us. In her second war she had a fight within her own household. 'A house divided against itself,' our Lord said, 'cannot stand.' You had to settle who was to govern your own country. In the third war you are fighting with us. In your first war you won freedom for America. In your second war you won freedom in America. In this war *we* will win freedom for the world."

Books Received.

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THE THYROID GLAND IN HEALTH AND DISEASE. By ROBERT MCCARRISON. 286 Pages. Illustrated. Price, $4.00. Published by William Wood & Company, New York.

BLOOD PICTURES. An Introduction to Clinical Hæmatology. By CECIL PRICE-JONES, M.B. 91 Pages. Illustrated. Price, $2.00. Published by Wm. Wood & Company, New York.

ELEMENTS OF FIELD HYGIENE AND SANITATION. By JOSEPH H. FORD, B.S., A.M., M.D. 248 Pages. Illustrated. Price, $1.25. Published by P. Blakiston's Son & Co., Philadelphia.

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Miscellany.

Passage of Alcohol into Breast Milk.—Observation and experiment alike show that alcohol is in part eliminated by breast milk, not only in women but in the goat. Aside from this general truth cases occasionally occur in which the nurslings of hard drinking women suffer from convulsions.—*Il Policlinico.*

Health of Food Handlers.—Dublin and Harris report on an intensive examination of 1748 food handlers made at the Occupational Clinic of the New York Department of Health during 1915 and 1916. This intensive study was made possible by the co-operation of the American Museum of Safety and is considered typical of the entire number of food-handlers, 44,042 examined at the clinic and 35,000 by private physicians during the same period. This group includes waiters and waitresses, male and female cooks, other kitchen employes, and bakers. Among the 1748 individuals there were 10 cases of active tuberculosis, 12 of suspected, and three of arrested, tuberculosis. Among 645 waiters, 37 gave evidence of active or suspected syphilis. This group furnished 46 individuals with flat feet and a similar number with varicose veins. Of the 211 waitresses 65.8 per cent showed anemia and 62 had varicose veins; 17.1 per cent were reported as suffering from some form of menstrual disturbance. The predominating defect among cooks was organic heart disease, there being 32 who showed evidence of cardiac disease. Of these cooks 161 had very marked disturbance of the digestive functions. Among bakers there was no tuberculosis or active syphilis but there were 33 cases of chronic bronchial conditions.

The Need of Saving Wood Ashes.—Many years ago wood ashes were the chief source of potash lye in France, as in other countries. The German potash industry obtained a world market while at about the same period coal began to replace wood as fuel. Fifty years ago wood ashes were already quite expensive and ultimately sodium carbonate came to be substituted extensively for potash lye in the arts. Now coal has become scarce and more wood must be used, the ash of which must be carefully husbanded because of its content not only of potassium carbonate but of earthy phosphates which are needed as fertilizer. Thus writes Dr. Carles in the *Gazette hebdomadaire des sciences medicales de Bordeaux* for October 14. Other useful chemical substances can be obtained from wood ashes. Much plant refuse not used as fuel can be incinerated for its ash and dead leaves are notably rich in potash. Wine growers quite ignore the fact that the prunings of the vineyards represent a veritable by-product because of their potash content. In the domestic use of potash lye the latter is habitually wasted because of the foul odor developed, although its logical destiny is the soil in which it serves as food for vegetation. Especially do growing vines require it for the potassium tartrate of the grapes. Potatoes and cereals both require plenty of potash. Sodium cannot in the least replace it. This problem especially concerns the drug market and the pharmacists should lead a movement to "save the ashes."

Therapeutic Hints.

Hemorrhoids.—Hare offers the following to be used as a suppository in this condition, if there is a tendency to slight hemorrhage:

℞ Acidi gallici.....gr. xx (1.3)
Extract. opii.....gr. j (0.06)
Extract. belladonnæ foliorum.gr. ij (0.12)
Olei theobromatis.....q.s.
Fiant suppositoriæ No. x.
Sig.—Use one every night.

In place of this, distilled witch-hazel extract may be injected into the rectum in doses of one to two ounces (30.0-60.0).

If the hemorrhoid is prolapsed and inflamed and difficult of reduction, the following ointment of Mathews may be ordered:

℞ Cocainæ .....gr. xij (0.8)
Iodoformi.....ʒ j (4.0)
Extract. opii.....gr. xxx (2.0)
Petrolati.....ʒ j (30.0).
M. Sig.—Use as a salve.

It is to be noticed that this prescription calls for cocaine, not cocaine hydrochloride. The salt of cocaine does not act well when mixed in an ointment.

If the pile still refuses to be reduced, the patient should be placed in bed and a hot compress wet with adrenalin chloride solution (1:2000) applied. If this fails, operation is indicated.

The treatment of external piles themselves calls for the utmost cleanliness. Immediately after each movement the parts should be thoroughly washed with a sponge dipped in cold water, or, by the use of a bidet or a nozzle attached to a fountain syringe or to the general water supply. Then the distilled extract of witch-hazel should be applied. Often it is wise to precede the daily evacuation of the bowels by a rectal injection of cold water to soften the feces and to decrease congestion. If there is much inflammation the patient should be placed in bed and cold injections frequently repeated or hot compresses applied to the anus. After this a lotion of lead water and laudanum—laudanum fʒss (15.0) to dilute lead water fʒij (60.0) may be used.

If in association with the hemorrhoids there is much itching the following salve may be applied:

℞ Mentholis .....gr. xx.
Hydrargyri chloridi mitis.....gr. xxx.
Petrolati.....ʒ j (30)
M. Sig.—Apply locally.—*Practical Therapeutics.*

Alopecia Areata.—Sutton advises the use of hexamethylenamine 5 to 10 grains after each meal in plenty of water. This may be taken for several days, then discontinued, and resumed. He also employs one of Bulkley's formulæ for external application on the scalp, phenol, 95 per cent., to be applied weekly, but not more than 50 c.c. area to be covered at a time. When applied to the face, the phenol is diluted one-half with glycerin.

The following formula is also used:

℞ Hydrargyri chloridi corrosivi.....
gr. 1/6 (0.01)
Chlorali hydrati .....ʒ ij (8.0)
Spiritus acidi formici. N. F...ʒiv (15.0)
Olei ricini.....mɱ v (0.3)
Alcoholis.....q.s. ad fʒ vi (180.0)
M. et Sig.—Shake and apply at night.

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Original Articles.

THE PSYCHICAL CHANGES OBSERVED IN PULMONARY TUBERCULOSIS AND ITS RELATION TO INSANITY.

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To the student of psychology it is, of course, quite evident that the sudden realization by an individual that he is suffering from a possibly fatal disease, as tuberculosis* is reputed to be, acting as a sudden, unpleasant stimulus, will necessarily produce a corresponding reaction in the individual as a whole, profoundly affecting his future behavior, compelling him to make many new adjustments and adaptations to his environment, which in time will be reflected through certain changes in the psyche—the highest level of human behavior.

The medical profession, however, until quite lately entirely neglected the psychological side of the patient. In treating a patient for any complaint, the physician was merely concerned with changes in the structure or function of individual organs, and if, after a careful examination, none could be established, the patient was told that he was not suffering from any demonstrable disease, and hence not a case for medical treatment—leaving him the choice of applying for relief to the Christian Scientist, or any other medical pretender.

With the advent of psychology as a definite science, and with the more accurate methods of clinical study of disease, the psychology of the various changes in the psyche of the patient, their influence on the progress of the disease, is vaguely becoming realized by the medical profession at large. Very little attention, however, is still being paid to the psychological side of the patient by the general practitioner.

One of the most important diseases that forced, so to speak, the medical profession to the realization of the importance of psychological phenomena in connection with disease is pulmonary tuberculosis. This has been specially so since improved methods in diagnosis and modern sanatorium treatment allowed the physician an opportunity to observe such cases during a much longer period of time than formerly, when they were recognized mostly in the advanced stages and were seen by the physician only at irregular and infrequent intervals.

It was observed that patients suffering from pulmonary tuberculosis manifest certain changes in character and mental traits, that the disease often shows marked improvement under certain changes, such as change of climate, change of physician, or even the administration of some innocuous remedy, which by itself could not have influenced the physical condition of the patient. Again the frequency or rather the apparent frequency of pulmonary tuberculosis among the so-called insane seemed to point to some relationship of pulmonary tuberculosis to the psychical functions of the individual.

The rôle of pulmonary tuberculosis in producing the above-mentioned changes, its relation to mental disease, and the influence of the various psychical changes on the progress of the disease have not as yet been satisfactorily discussed. It is the hope of the writer, who has had the opportunity of studying pulmonary tuberculosis in one of the largest sanatoria in the United States and also in one of the most modern hospitals for mental diseases—to throw some additional light on this very interesting subject.

For the sake of convenience I shall treat the subject of this paper under the two headings as it usually appears in the medical literature: (I) The Psychology of Pulmonary Tuberculosis; referring to the psychical changes observed in those suffering from pulmonary tuberculosis, but which do not lead to any definite psychoses. (II) The Relationship of Pulmonary Tuberculosis to Insanity, or Actual Psychoses.

I. The thought that the individual afflicted with pulmonary tuberculosis shows profound changes in his character and mental traits as a direct result of the disease has been frequently reflected in the general literature. The writer of fiction vividly describes various changes in the mental traits and character of his hero such as selfishness, jealousy, suspicion, lack of fixity of purpose, emotional instability, etc., and because the hero suffers or actually dies from pulmonary tuberculosis, that disease is accepted as the only cause for the above-mentioned changes, without mentioning at all any other causes such as hereditary, nervous, or neurotic disposition, without taking into consideration the environment —educational, moral and otherwise—during childhood of the hero, when the corner stone is laid for the structure known in later life as character, and disregarding other factors in the life of the hero which were responsible either partly or entirely

*Whenever tuberculosis is spoken of in this paper pulmonary tuberculosis is understood.

for the behavior of the hero as portrayed. As examples may be taken "Camille," by Dumas, and "L'Aiglon," by Rostand. Strange to say, some of the medical writers on the subject frequently use such characters as portrayed in fiction as proof that pulmonary tuberculosis is responsible for various psychical changes. Considering the great prevalence of tuberculosis, comparatively little has been written by modern phthisiologists with reference to the psychological side of the problem.

On reviewing the medical literature on the subject, one is amazed at the contradictory statements and ideas expressed by equally well-known authorities, as to the forms and causes of the psychical changes observed in sufferers from pulmonary tuberculosis. According to some writers, the changes are very few, but decided, while others mention almost every mental trait known to psychology. Some writers consider these changes to be directly due to the disease itself, while others consider them due to influences altogether outside of the disease. Some writers think that the toxemia or toxins of tuberculosis are specifically responsible for the above-mentioned changes, while others give them only a secondary place of importance as a causative agent, and still others absolutely deny their significance as an etiological factor in the production of the psychical changes observed.

De Santos Saxe,[1] who is quoted by many others, states that pulmonary tuberculosis produces such profound changes in the mental traits that it often leads to crime and insanity. Mental disturbances range from slight irritability of the nervous system to mania and melancholia. Early stages are manifested by neurasthenia, psychosthenia, hypochrondriacal and hysterical symptoms. With the progress of the disease more distinct changes take place, the main characteristics of which are, "loss of willpower and self-control, and ascendency to brute selfishness." There is also present abnormal increased susceptibility to external mental influence, variability of temper, tendency to rapid psychical fatigue, change in sexual instinct, which, according to Gerhardt, is seen in the more frequent prevalence of venereal diseases in tuberculous individuals, due to increased sexual indulgence, and last but not least, tendency to crime. The above changes are all due to the tuberculous infection.

Fishberg[2] quotes Saxe, but his list is somewhat shorter; he states that "Beginning phthisis finds expression (often before physical signs are demonstrable) in changes in character and exaggerated tendency to emotional disorders. They are absorbed in themselves, note the minutest changes in their symptoms, hardly speak of anything else, are optimistic." He specially emphasizes great selfishness, disregard for others, and sexual eroticism.

Kiernan[3] and Alexander,[4] in different papers, speak of the poet Keats' life, and emphasize such mental traits as irascibility, irritability, and great suspicion as all due to pulmonary tuberculosis.

Maudsley (quoted by Clouston[15]) states that persons of a strongly tuberculous diathesis and with a consumptive heredity exhibit a phthisical psychology—irregular mental brilliancy without balance, incapacity for continued mental exertion, a causeless change from hope to despair, a causeless suspicion at times. Tuberculous individuals show whimsical notions, mental unrest, vivid fancies almost amounting to delusions.

Brock[5] thinks the chief mental trait is neurasthenia; the nervous system is out of gear, due less to the physical condition than to the general moral environment—that they are being shunned by everybody.

Milton[6] thinks that the only characteristic mental symptom in pulmonary tuberculosis is the black despair common to the first stages.

Letule[7] thinks that in the early stages the intellectual aptitudes are sharpened in a singular way. Memory, judgment, finesse in reasoning, critical sense, all these mental reactions are placed in evidence in contrast to the physical forces which remain stationary and shortly decrease. As the disease advances mental peculiarities undergo changes. Brain work is performed by fits and starts, there is overexcitability. Moral defects of the consumptive, whether hereditary or acquired, are exaggerated, never alienated. Sadness is imprinted. The predominant feature is egoism. He does not think that the mental traits *per se* change, but the patient simply shows himself in his true color. The "toxemia" robs him of the sense of proportion. In his instinctive desire to live he cuts loose from all ethical and conventional precepts.

According to Gubb,[8] tuberculosis produces intensification of cerebral functions according to temperament. Under its influence the artistic and imaginative faculties are often stimulated. He quotes Mauclair, "who instances Watteau and a number of other great men, as Schubert, Chopin, Verlaine, Heine, Mozart, and others who died of pulmonary tuberculosis, in whom the tuberculous infection seemed to have developed their faculties to a previously unattained brilliancy." He concludes by saying that the physiological influence of phthisis merely accentuates the natural predisposition to idealism.

Carncross,[9] who attempted to study this question in a scientific and statistical way in the dispensary and hospital of the Henry Phipps Institute, believes that the psychological changes are due to chronic illness rather than to tuberculosis specifically. Definite morbid psychological states usually occur in the later stages; the patients are morose, very irritable, quick to suspect, ready to find fault, perverse, antagonistic, almost abusive, skeptical, open to suggestion temporarily. Only the above, however, are observed in individuals who are self-willed rather than cheerful, good natured, and of yielding temper.

Guy A. Fitzgerald[10] states there are no changes in the mental or emotional characteristics in patients during the pretuberculous or initial stages. He states that tuberculosis is more apt to attack the weak, nervous and degenerate types, who often have an hereditary predisposition to insanity or nervous disease, and these will often show changes in the emotional and intellectual fields, but these changes are certainly not due to tuberculosis or its toxins. The ranks of the tuberculous among the better classes are recruited mostly from the hard-working, ambitious, nervous element, among whom are found the keenest minds and brightest intellects, in whom no sign of emotional or mental aberration can be dem-

onstrated. According to him it is a fallacy to regard the tuberculous as selfish and unmindful of the comforts of others (this may be observed at times in the last stages), but various peculiarities may have existed before the disease and passed unnoticed.

He states that the loss of will-power and self-control emphasized by some writers is noted late in the disease—the true character comes to the surface, but it is not due to the disease or its toxins acting on the nervous system, rather to the throwing down of barriers and to the failure of the person to restrain himself as he has no longer any special goal and is indifferent to social opinion. He disagrees with the other writers that the tuberculous patient is optimistic or shows impulsiveness, deficient energy for work, vacillation or obstinacy, or that he is more irritable, emotional, or excitable. According to him the sufferer from tuberculosis is as brave, unselfish, and devoted to high ideals as the average man. He quotes Dr. Knopf and his report of the action of the patients at North Brothers Island during the Slocum disaster. Sick patients rushing into the water and working side by side with attendants to save lives. Depression and melancholia are due to the attitude of the healthy friends who shun and avoid him, and the timidity and desire to avoid society are due to consideration for others and the dislike of pity and not to pathological causes.

Burr[11] thinks that the hyperexcitability in early stages persists in latent cases during life and may be accountable for a heightened mentality. He mentions the life of Robert Louis Stevenson, who was free from any pathological tendencies and whose cheerfulness and unselfishness persisted to the last minute. He does not think that the tuberculous patient is especially selfish or egotistical. Selfishness, egoism, and vicious tendencies are common to a large portion of humanity. He relates the following interesting story of a soldier, pointing the unselfishness of the tuberculous individual:

"A soldier upon discovering that he had tuberculosis shut himself up in his tent, paralyzed by the dread realization of his condition. He then asked his captain to release him because of disability, but the latter roughly told him a bullet would be the best remedy for him. A few days later he saved a woman's life by carrying her out from a burning building at the risk of his own life. Shortly after he risked his life to save those of his comrades by carrying away a burning bomb thrown by the enemy within their entrenchments. From this time on his promotion was rapid and he became the trusted commander of a division. He was not of heroic proportions—a Death's head surmounting a bag of bones."

Burr states that though the sexual instinct is commonly accentuated in the tuberculous patient, a stronger effort is made by the subject for its regulation and suppression.

Jacobson,[12] in his article on "Tuberculosis and Genius," maintains that tuberculosis, though not creating genius and not even giving impetus to the natural spark creating genius, nevertheless acts as a quickener of the already germinating or flowering faculties of extraordinary potentiality. He quotes John Bessner Huber who, discussing the influence of tuberculosis upon literature and the arts, with special reference to the lives of Robert Louis Stevenson, Chopin, Keats and Marie Bashkirtsef, comes to the same conclusion, namely, that the quality of genius may in some cases at least be influenced by tuberculosis. Dr. Jacobson contrasts the relation of tuberculosis to genius with that of insanity to genius. He maintains that the latter is "antithetic" to the faculties that actuate the creative mind, as insanity hampers genius and the individual of an insane temperament shows in his writings the better part—the saner part—of himself. Tuberculosis, on the other hand, is "synergetic"; it helps a genius by sharpening his faculties. Trudeau (quoted by Alexander[4]), on the other hand, in writing about Robert Louis Stevenson while the latter was a patient in the Adirondack Sanatorium, shows a marring, but not a creative influence of tuberculosis on genius.

So, judging from the medical literature, the psychology of tuberculosis is by no means a settled question. Some writers deny that there is such a "species" altogether, but still more diverse are the opinions as to the forms and manners in which the psychology of the tuberculous individual expresses itself, and the causes for the same. How can we account for the fact that such an eminent authority on tuberculosis as Dr. Fishberg strongly emphasizes "egoism" as one of the chief mental traits in tuberculosis, while the equally eminent clinician and authority, Dr. Knopf, vigorously opposes the same? How can we reconcile such diametrically opposite views as ascendency to brute selfishness, throwing off barriers of civilization, and that tuberculosis tends to bring out the artistic and stimulates the predisposition to idealism? The explanation, however, is quite evident: It is due to the different viewpoints of the various authors as to what constitutes the "psychology" of an individual, and also because of difference in type and surroundings of patients observed by the various authors. It is assumed by some writers that such traits as selfishness and suspicion are something distinct from the individual as a whole—that they suddenly appear or disappear without leaving any trace. The recent studies in psychology, especially the psychoanalytic methods, have shown us that the only right way to understand the wherefore and why of the psychology of the individual and his mental traits is the "genetic approach"—which considers man at any given moment in relation not only to what has taken place since his first day of coming into the world, his "ontogenesis," but also what has gone long before him, racial and other characteristics—his "phylogenesis." Every mental trait observed in an individual has a past,[13] and is intimately connected with the individual as a whole. Viewed from this standpoint, there cannot be any question as to a special "tubercular psychology" as the thousands of individuals suffering from tuberculosis, having different phylogeneses and ontogeneses, cannot have the same psychology. The question may, however, arise whether tuberculosis or its toxins do not modify in any way the psychology of the individual, whatever it may have been before the onset of the disease, and whether certain mental traits are not exaggerated or diminished.

Before entering into a discussion of the above we must bear in mind that even "healthy" people pre-

sent great variations in mental traits, that the healthy individual may be the possessor of various traits which are either pathological or on the border line and which remain latent for a long time and only come to the surface now and then under certain conditions. The considerate and idealistic often act in the most selfish ways and the egoist shows himself to be generous and capable of self-sacrifice—the personality of the individual is quite polyvalent, many traits and characteristics are latent, others are repressed and still others come to the surface only now and then. We must also remember that the so-called neurasthenic, neurotic, psychopathic, and constitutionally inferior individuals form quite a percentage of the "healthy" community. It would, of course, be unreasonable to expect them to be immune from tuberculosis, and so when we observe certain mental traits, or individuals of certain types of personality, among the tuberculous, we must not always blame tuberculosis, unless we are convinced that these pathological traits are in far greater percentage among the tuberculous than among the average healthy individuals.

My own observations of tuberculous individuals in all stages during several years do not agree that there are definite changes in the character or mental traits of those individuals, which would be considered either separately or in groups as characteristic of this disease or existing in the majority of individuals so affected. Various changes and modifications of mental traits are observed, but these changes are in no way characteristic of tuberculosis nor can their presence give the slightest justification for suspecting an individual showing such changes to be suffering from pulmonary tuberculosis.

The realization by a person that he has pulmonary tuberculosis brings him face to face with one of the most serious difficulties he may be called upon to meet during his life. He must meet such a difficulty by many new adjustments, and must adapt himself to many new conditions and environments, and just as healthy individuals react differently though under the same difficulty, the tuberculous individual is no exception, and shows just as many reactions and different forms of adaptation to his new conditions and environment.

The loss of both legs by an individual would constitute a serious difficulty in his life, but not all individuals would be affected similarly by the same and not all would adjust or adapt themselves to the new condition in exactly the same way. The man of means, who does not have to exert himself to make a livelihood, may secure a good set of artificial limbs or have some one wheel him around in a chair, and if he is of a quiet disposition or inclined to a sedentary life may devote himself to some special study, perfect himself in a certain branch of knowledge and so become a very useful member of the community, thus securing the contentment that a life of usefulness brings, while if the same thing should happen to a young man to whom life is one round of pleasure, and who either because he lacks the right potential qualities or because of poor heredity or poor rearing, is unable to divert his energy and sublimate himself, may become despondent and attempt suicide, for to him life would not be worth living. Still another individual, of a lower cultural level, might take advantage of the pity his physical condition would create in others, and, deciding that the "world owed him a living," might try to live on the charity of the community without even attempting to make himself useful in any way whatsoever. And so we could continue showing that each individual meets the same difficulty in a different way, depending upon individual peculiarities and the force of circumstances. The tuberculous individual is no exception. The diverse views and opinions expressed by various writers regarding such a one are due to the fact that each observed different classes of people and under entirely different surroundings.

The Russian Jew, as seen on the East Side of New York, for instance, and of whom Dr. Fishberg usually speaks, who has for centuries been constantly persecuted and who has met his difficulties by shedding tears or praying to his God—who survived, not through retaliation and aggression, but rather by the power of endurance, cannot be expected to meet such a serious difficulty as tuberculosis in the same way as the average American, seen in private or state institutions, in whom the fighting spirit and the spirit of "seeing a thing through" in spite of all obstacles, is highly developed, would meet it, and this is why Guy F. Fitzgerald, who speaks of the tuberculous of the better classes, declares that among them the keenest minds and brightest intellects are found and in them no sign of mental or emotional aberration can be found.

My own observations of various classes lead me to believe that the great majority of patients show a distinct depression following the diagnosis of the disease, but not any more than would be natural under such a serious situation; however, as time goes on and the disease runs a chronic course causing little discomfort, they soon make certain adjustments, become partially reconciled, modifying their lives and making plans for the future compatible with the disease. That they are too optimistic is absolutely untrue. The great majority of patients of ordinary intelligence fully realize their condition but they hope that under certain conditions they may live for many years, and this is not unreasonable in view of the hope held out by physicians.

It is about time we free ourselves from the "optimism myth" in tuberculosis, which I think has persisted, at least, in part because of the name "spes phthisica," and of which some writers seem to be so fond. In the very late stages of the tuberculous, due to beginning of dissolution, his judgment may be greatly impaired and he may fail to appreciate his condition, speaking about plans for the future when he is on his death bed, but to speak of such impaired judgment as "spes phthisica," characteristic of a tuberculous individual who may live for five, ten or many more years is erroneous, to say the least.

There is, however, a certain percentage of people who, because of poor physical development or of hereditary predisposition, have for many years unconsciously realized that they have or are predisposed to tuberculosis; the thought of the death from tuberculosis of a parent, brother, sister or other

near relative frequently has entered into their consciousness, but because of the unpleasantness such thoughts occasion they have been repressed; this repression, however, is not easily accomplished. There is always a great deal of energy lost by such an individual in trying not to allow these thoughts into his consciousness. Thus he will constantly avoid this subject. If ill, specially if suffering from a cold or cough, he will not consult a physician, though frequently thinking himself suffering from tuberculosis. When relatives or friends suggest to such an individual that he consult a physician he frequently resents it and declares most emphatically that he is in perfect health, that he merely suffers from a slight cold. As such individuals are frequently undernourished and below weight, they anticipate any possible suggestion from their friends by declaring this to be a "family trait," that nobody of their family was ever fleshy, which by itself is true, but which is really a veiled admission, a "slip of the togue," so to speak, that many of the family were subject to tuberculosis. Such individuals are under a tremendous nervous strain, the unconscious thoughts of tuberculosis and the fear of death connected with it, especially among the Russian immigrants, who regard tuberculosis as fatal within a few years, dominate their behavior; they are unable to concentrate their energy on one steady goal, they frequently change occupations, climates, etc., and often develop various obsessions or neuroses or become hypochrondriacal or neurasthenic. A most interesting case of a severe compulsion—neurosis where through a skillful psychoanalytic process the underlying cause was found to be a repressed thought of pulmonary tuberculosis is reported by Dr. Frink, in the *Psychoanalytic Review*." It certainly throws a new light and offers a different explanation for neurasthenia and the neuroses in general and as observed among the tuberculous in particular. This is very important to bear in mind as many individuals who, though having a hereditary predisposition, but in whom the disease is either absent or only present in a latent form, actually develop or hasten the development of this disease through the constant drain upon their energy which such a fear or unsuccessful effort at repression must produce, for this naturally lowers the vitality of the individual and renders him more susceptable to the disease. In such individuals the diagnosis of pulmonary tuberculosis often results in a certain degree of optimism, they feel relieved, as the criminal feels relieved after confession. The energy which they used in order to secure repression is released and they can turn it to other and more useful directions; these may be the cases of heightened mentality, the increased mental productivity reported by some writers as characteristic of tuberculosis.

There are quite a few patients who, though poorly developed and possessing a distinct tuberculous heredity, show various mental traits such as emotional instability or depression, alternating with periods of feverish activity and increased ambition, lack of fixity of purpose, etc. The worry over tuberculosis is often given as cause for the above by the patients themselves. Upon further study, however, one may find that those mental traits are due to certain difficulties, the causes of which are more deeply rooted. These difficulties usually consist of certain wishes and desires relative to sex matters which the patient developed during childhood and which, because they are tabooed by society, he tries to repress. The repression, however, is not complete, and various neurotic symptoms develop which the patient ascribes to the worry over tuberculosis. This situation becomes further complicated as the efforts at repression, acting as a constant drain upon the energy of the individual, serve to lower his vitality, often lighting up a tuberculous focus which was previously arrested or "cured," and the appearance of tuberculosis acting as an additional difficulty in the life of such an individual accentuates those mental traits which were present before. The tuberculous process in such cases is apt to be of a more progressive nature unless the patient in the meantime is helped in some way out of his original difficulties. A case somewhat illustrating the above came under my observation recently:

Case I.—J. F. S., a soldier 32 years of age, was admitted to the Government Hospital for the Insane suffering from depression and giving a history of having attempted suicide by inhaling "gas." This patient served in the army for 8 years continuously. Was out of the army about 2½ years and reenlisted for the fourth time about three months prior to his admission to this hospital. Upon admission he was depressed, worried, hypochondriacal, and nervous, was constantly biting his finger nails, and could not sit still for any length of time. He was oriented in all spheres, conversed rationally, and was free from delusions and hallucinations. He stated that he enlisted the last time while in an intoxicated condition, that he knows he has tuberculosis and has worried a great deal about it. Shortly after enlistment he went to town, began to drink, and instead of returning to his camp went home to his mother. Later on when he sobered up he tried to commit suicide because of worry over his tuberculous condition and because of his breach against military regulations. He gave a strong history of periodical indulgence in alcohol; he was court-martialed eighteen times while in the army because of alcoholic indulgence. The reason for his alcoholic indulgence he gave as "worry over tuberculosis." Patient stated he had always suspected himself of being tuberculous, because his mother's entire family, three brothers and five sisters, died of tuberculosis. His mother is in poor health and one brother is subject to tuberculosis. That whenever he would begin to worry over his physical condition he would take to drink. Upon examination of patient's chest the right upper lobe was found to be markedly infiltrated, there was beginning cavity formation at the apex, and other areas of infiltration were found over middle right lobe and left apex, the disease being moderately active. Here we have a case of neurasthenia, hypochondriasis, and alcoholism, all apparently due to the worry over tuberculosis and, some would think, to actual tuberculosis though the man began to worry and drink at 17, while he is 32 now and, leading the life he did, it is hardly probable that he would have lived 15 years had he been suffering from tuberculosis all the time. Upon further examination, however, we find a history of autoerotic sexual indulgence since 6 years of age; this was continued while in the army; he was usually drunk during such acts. Here then the patient drinks so as to be able to overcome the social and cultural taboos placed on the practice which he desires to perform. Undoubtedly these practices worried him a great deal, but instead of admitting to himself that he is worried because he is the possessor of such wishes and inclinations, he transfers that to the "worry over tuberculosis." I shall not go into further details as to other possible causes, psychological and otherwise, which influenced his behavior.

Suffice to say that this patient is neurotic from causes altogether different. His difficulties which caused the neurosis undoubtedly helped to activate

a dormant tuberculous process, if not actually start it through lowering his vitality. So that tuberculosis in such a case is not the cause of neurasthenia or other neurosis, but rather the result of it, although when tuberculosis really appears it aggravates and brings to the surface more clearly any prexisting neurosis.

In a similar way can we explain other mental traits and changes in character as observed in tuberculous individuals.

Various writers discuss the life of the poet Keats as a proof of the influence of pulmonary tuberculosis in causing changes in character and various mental traits of the individual. Keats' irascibility, lack of fixity of purpose, emotional instability, suspicion, etc., are all attributed directly to the effect of tuberculosis or the tuberculous toxemia. While these writers do not give us any details as to the poet's childhood and his surroundings during that period, they mention certain facts about his life which would indicate sufficient causes for the genesis of his various mental traits later on in life. To begin with, Keats' mother was of a neurotic disposition and almost an invalid on account of tuberculosis, from which indeed she died. We are also told that when three years of age Keats was already wilful; he locked up his mother in a room and threatened to kill her if she left it. Here we have a neurotic heredity and wilfulness which, at three years of age, could hardly have been due to tuberculosis or its toxins. The psychologists know pretty well the causes for similar wilfulness in children where there is no trace of tuberculosis. Leaving as unsolved any possible faulty development during childhood, as in his manner of bringing up or his surroundings, which may have been the source of various difficulties of a sexual nature later on in life, the knowledge that his mother died of tuberculosis, that he remembered his mother, that he studied medicine later on in life, and if we also remember the views held at that time regarding tuberculosis we will see that the fear of tuberculosis was the great "complex" in his life which probably produced the above-mentioned mental traits and which undoubtedly favored the appearance of tuberculosis, the latter, in turn, aggravating the preexisting traits. Suspicion—mentioned as the characteristic mental trait in Keats' life and also by various other writers as the characteristic symptom of tuberculosis—is due to the fact that the individual constantly labors to suppress the thoughts that he is suffering from tuberculosis and is always suspicious lest the other person will guess his secret. Such individuals are constantly on the defensive, and the most innocent remarks as to their health or appearance make them suspicious. The young man is always apprehensive of his lady love lest she discover his secret and her least inattention or coldness makes him at once suspicious. This is the result of the unjust attitude on the part of the healthy community toward its members known to be tuberculous. They are shunned by their friends and made to feel that they are undesirable members of society. The mad fear of the disease often turns away from them their nearest and dearest. Under such circumstances their "suspicion" is nothing more than one of their weapons of self-preservation.

From what was said above, it is quite evident that the writer of these pages does not adhere to the toxemia theory as responsible for changes in the character or mental traits observed in tuberculous individuals.

The "tuberculous toxemia" theory is neither logical nor scientific. The various mental traits and changes in character supposed to be due to tuberculosis are often shown by the authors upholding the "toxemia" theory to have been manifested since childhood and to have existed a great number of years, and, while we admit that the tuberculous process often begins in childhood, and is only reactivated in later years, we certainly do not admit that there was a toxemia during all those years.

Saxe,[1] in proof of the "toxemia theory," quotes Dufour and Dide, who found that in three out of ten patients receiving tuberculin treatment, they were able to evoke headache, delirium, and other cerebral symptoms by injecting what is now considered excessive doses of tuberculin. The line of symptoms produced in these patients indicated conclusively (!) that the mental symptoms of tuberculin were toxic in origin.

If we should assume that there is a special toxemia in tuberculosis it must, of course, manifest itself by certain symptoms, such as headache, slight fever, increased pulse, etc. We know, however, that tuberculosis, which often lasts many years, shows such symptoms for only a very short time, which would indicate that in the interval there was no toxemia; then the mental traits, if caused by the toxemia, should disappear just as the fever, rapid pulse, etc., disappeared. The researches of Vaughan[16] have shown that certain body reactions known as "toxic" do not depend on any specific agent; that they are reactions on the part of the body against a foreign protein of any kind, and Crile[16] has shown that the same reactions occur when the body reacts against any injury, whether real or psychic representations of one, such as fear. This, of course, is noted clinically; the patients coming up for an examination when they are afraid that their disease is progressing frequently show a rise of temperature, rapid pulse, headache, etc., though they were free from them previously and these promptly disappear when the physician assures them that their disease is becoming arrested or cured. The toxic symptoms following injections of tuberculin—or "reactions," as they are called—are in no way different from those caused by injection of any other vaccine, and injections of water are often followed by similar reactions.

That the changes in the mental traits are not due to the disease itself, but to the new adjustments the individual is forced to make, is illustrated by cases which are discovered in the far advanced stage where the disease has progressed so slowly that the patient never suspected it, in which cases no change of mental traits were ever observed. It is known, however, that the mere fear of tuberculosis where there is no actual disease produces marked changes in the mental make-up of the individual. I venture to say that if 100 healthy individuals could be made believe that they are suffering from pulmonary tuberculosis they would show similar changes, and there would be as many variations in the mental traits as there were actual sufferers from the disease.

Carncross[9] questioned 237 patients at the Henry Phipps Institute, the majority being those coming to the dispensary for treatment, with a view of determining disposition and changes in the mental traits of those suffering from tuberculosis.

The following interesting data were obtained: 135 were of a cheerful disposition; of this number 42 became less cheerful with the advent of the disease; 22 were unhappy; 29 were intermediate; 31 not recorded; those originally pessimistic became more so.

Among the 237, 30 were non-tuberculous, 148 showed some change in disposition—18 were non-tuberculous; 58 showed no change—5 were non-tuberculous; 31 not recorded—7 non-tuberculous. The most common change was the birth and growth of irritability: 109 confessed to irritability, among them were 11 non-tuberculous.

Mental Attitude.—166 were hopeful, among them 16 were non-tuberculous; 32 not hopeful, among them 4 non-tuberculous; 1 was indifferent; 38 not recorded, 10 non-tuberculous.

Depression.—66 were depressed most of the time—among them were 6 non-tuberculous; 49 at times, among them 10 non-tuberculous; 14 seldom, 1 non-tuberculous; 71 not depressed, among them 6 non-tuberculous; 43 no record, among them 7 non-tuberculous.

Suspicion.—10 were suspicious, among them 2 non-tuberculous; 184 were not suspicious, among them 20 non-tuberculous; 43 not recorded, among them 8 non-tuberculous.

From the above we see that among non-selected tuberculous cases showing various changes in mental traits, the same were found almost in the same percentage among those who "believed themselves" suffering from the disease, where there was no actual disease, and hence no "tuberculous" toxemia were present.

Two distinct cases somewhat illustrating the above came under my personal observation:

Case II.—A woman 35 years of age who, being in somewhat poor physical health following a confinement, consulted a physician because of a slight cough. The physician, either because of poor skill in physical diagnosis or because the patient had a tuberculous history, diagnosed her case as one of pulmonary tuberculosis in the "early stage" and advised certain hygienic measures. The patient immediately became depressed, greatly worried, and almost melancholic. As often happens, another physician who examined this patient could not find any tuberculosis, following which the patient brightened up considerably, but as she had no reason to accept the negative diagnosis any more than the positive, she consulted a specialist—who, however, was unable to make a definite diagnosis at that time in view of her general physical health, and ordered her to go to a hospital for observation. Because the patient had a tuberculous history her relatives and friends decided that she was suffering from tuberculosis and she was advised to go to California, the only place where she could be cured. This entailed great financial sacrifice as they were rather poor people. The result was marked depression and suspicion; she was suspicious that the real truth about her condition was being hidden from her; she later on developed suicidical tendencies, and to save her from the same she had to be placed in a sanatorium for mental diseases. In the meantime repeated examinations by various physicians assured her that she was free from tuberculosis. She then gradually became more cheerful, gave up her suicidical ideas, resumed the care of her family, and for the last eight years has been in her normal mental state.

Case III.—A woman about 28 years of age, somewhat poorly developed and of a neurotic disposition, consulted a physician for a slight bronchitis; he pronounced her case one of incipient tuberculosis, following which she became depressed, morose, neglected her husband and her home, and continued to spend all the earnings of her husband, who was an ordinary working man, consulting one specialist after another in the city of Philadelphia. As specialists often disagree in their diagnosis it was quite a while until she became convinced that she was free from tuberculosis, when all mental changes disappeared and she resumed her former mode of life.

The above two cases show mental changes not dissimilar to those observed in tuberculous patients, and they certainly were not due to any "tuberculous toxemia."

The one mental trait which I wish to emphasize and which is present to a greater or lesser degree in all individuals predisposed to or actually suffering from pulmonary tuberculosis is fear of the disease and its result—death. Anything that produces nervous exhaustion lowers the vitality of the individual and renders him susceptible to tuberculosis. Fear is a potent factor is producing both. Sherrington[10] states that each individual at any given moment has a limited amount of dischargeable nervous energy. This energy is at the disposal of any stimulus which occupies the nerve paths, resulting in the performance of an act. Each discharge of energy is subtracted from the sum total stored energy, whether the subtractions are made by the excitation of nociceptors, by trauma, by tickling, by fighting, by "fear," by flight, by excitation of sexual receptors, or by any of these singly or in various combinations; if the sum total of the spent energy is large enough, exhaustion is the result. Apparently there is no distinction between that which is due to discharge of nervous energy in response to trauma and that due to other causes.

Crile, in his paper on the origin of emotions,[11] tells us that fear is the psychic representation of injury, and as fear was created by trauma, it, through phylogenetic association, is manifested by reactions similar to those present in response to injury, causing discharge of energy, often leading to complete exhaustion. During fear all functions of the body requiring expenditure of energy and which are of no direct assistance in an effort toward self-preservation, are suspended. Fear or trauma may drain to the last drop the dischargeable nervous energy and therefore the greatest possible exhaustion may be produced by either.

For centuries tuberculosis has been considered and still is considered by some an incurable and fatal disease. The fear experienced by the individual whether when he imagines he is suffering or is actually suffering from the disease, produces a constant drain upon the dischargeable energy, diverting it from other paths as the gastrointestinal, causing various gastrointestinal disorders, and through the law of summation of stimuli produces nervous exhaustion, rendering the individual not affected with the disease more susceptible to it and leading in those actually suffering from it to a more rapid and fatal termination.

II.—The study of the *relationship of pulmonary tuberculosis to insanity* presents many difficulties of a practical nature. The literature on the subject is very meagre; it is comparatively only recently

that more or less complete records of patients are being kept in hospitals for the insane. With the great advances in psychiatry during the last few years it is, of course, natural that the greatest attention is being paid to the mental condition of the patient; the physical examinations are usually relegated to the younger members of the staffs, who, because of lack of experience, often overlook various physical signs, especially those pertaining to tuberculosis. Again, the mental condition of the patient upon admission and later on is often such that no cooperation on his part can be obtained, without which pulmonary signs specially in the early stages are impossible of detection.

The majority of hospitals for the insane still lack special provisions for the treatment of tuberculous patients and there seems quite a reluctance on the part of the medical staffs to pronounce their patients tuberculous, which is possibly due to the unjust opinion among the laity that tuberculosis occurring in insane asylums is due to unsanitary conditions of the hospital or improper care of the patients. In many hospitals no case is considered tuberculous unless a positive sputum has been obtained. Such practices when combined with the infrequent physical examinations of the patients and the impossibility of doing so in many cases because of the patients' negativistic and indifferent attitudes, leave many tuberculous cases undiagnosed. These are in part the reasons why statistics regarding the mortality of pulmonary tuberculosis in equally well conducted hospitals for the insane vary so greatly. Many cases of pulmonary tuberculosis are diagnosed two or three months before death, under which condition the data as to the influence of pulmonary tuberculosis upon the course of the psychosis and *vice versa* are meagre, contradictory, and somewhat unreliable.

Psychiatry has made rapid strides during the last few decades, discarding many theories previously held as to the etiology of various psychoses, and for that reason some of the theories regarding the relationship of tuberculosis and insanity have become automatically defunct.

There was a time when almost every form of neurosis and many psychoses were explained on the basis of toxemia, and it was then quite natural to give the toxemia of tuberculosis a prominent place as a causative agent for various psychoses. The relationhip of neurasthenia and various neuroses to pulmonary tuberculosis has been discussed in an earlier part of this paper, and here I will restrict my remarks to the actual psychoses only. Because of certain similarities in physical signs and other phenomena observed in various psychoses and pulmonary tuberculosis, such as rapid pulse, progressive loss of bodily weight, depression, the hereditary transmission, etc., various writers have been led to see a strong causative interrelationship between insanity and tuberculosis. According to McKinnon,* "the scrofulous and insane constitutions are nearly all alike." Van Der Kolk* states: "Lung phthisis especially, appears to me to stand very frequently in close connection with insanity." Guislain* states that pulmonary tuberculosis appears to be in direct relationship with insanity. It is frequently seen in the progenitors and predecessors of the insane.

*Quoted by Clouston.[15]

Thomson sees a great similarity in the hereditary transmission of these two diseases. Clouston[15] described a definite form of insanity, the etiology, clinical character, duration, and transmission of which were all connected with the accompanying phthisis, and which he called "phthisical insanity." He described in detail various stages of this special form of insanity, giving various symptoms, and so distinct a form did it represent, according to him, that he was able to diagnose it through the mental symptoms alone at a time when no physical signs were demonstrable. According to him, this form of insanity was recognized by such writers as Spitzka, Ball, Kraft-Ebing, Maudsley, Blanford, Buckhill, Tuke and Savage.

Savage (quoted by Clouston[15]) states: "Phthisis in the insane is associated with certain groups of symptoms characterized by suspicion and refusal of food on the one hand and with masking of the phthisical symptoms on the other.

If one reads the description of the mental symptoms of "phthisical insanity" as given by Clouston it becomes quite evident that they represent the mental symptoms of the psychosis now known as "dementia precox." In looking over the statistics of various hospitals for the insane regarding tuberculosis I find that over 50 per cent. of those who died with this disease also suffered from dementia precox. When we bear in mind this point we can understand why Clouston could diagnose "phthisical insanity" from mental symptoms alone. If we should call every case of dementia precox, when no physical signs are demonstrable, "phthisical insanity," we would be right in over 50 per cent. of cases, not at all a bad showing from a diagnostic standpoint.

Some writers, though not accepting Clouston's "phthisical insanity," accept certain of the symptoms described by him as peculiar to the tuberculous insane, and they emphasize melancholia and morbid suspicion as the chief characteristic symptoms appearing in any psychosis upon the development of pulmonary tuberculosis.

Thus Gubb[3] quotes Mott, who states that melancholia is nearly always met with in insane patients suffering from tuberculosis, and the onset of the mental symptoms appears coincidently with the development of the tubercle; and in proof of his contention he calls special attention to the fact that paretics are free from tuberculosis and, of course, melancholia is rather infrequent among them.

Alexander[4] states that the influence of phthisis on any form of insanity is to produce a "suspicional" element not hitherto present.

Milton,[6] on the other hand, quotes Alfred Miller, who gives statistics of the death rate from pulmonary tuberculosis at the Warwickshire Asylum, and he comes to the conclusion that the appearance of pulmonary tuberculosis does not influence the psychosis, and especially emphasizes the fact that none of the patients who died of tuberculosis were melancholic; and this has been his experience for many years.

Other writers express just as divergent views upon the question of the relationship of pulmonary tuberculosis and insanity. Hazen (quoted by Saxe[1]) thinks that tuberculosis is five times as frequent among persons in insane asylums than among sane

persons, and that insanity among tuberculous individuals observed in London hospitals is more frequent than among other classes of patients in the same hospitals, and he explains it on the basis of the toxic theory of tuberculosis. Van Der Kolk (quoted by Kiernan[3]) and Alexander[4] state that insanity alternates with phthisis, mental symptoms being most marked when the tuberculous condition is latent; the disappearance of the mental symptoms is followed by reappearance of pulmonary symptoms.

Kiernan[3] holds that insanity modifies existing phthisis—cough, rise of temperature, and other marked symptoms being as frequently absent as present in insanity.

Saxe[1] quotes Chartier and Caulex, who have observed increased sexual irritability in the tuberculous insane, even satyriasis and nymphomania. He does not think that there is an especial form of insanity peculiar to tuberculosis.

The above diverse views as expressed by the various writers is due to their different conceptions regarding tuberculosis and the etiology of the psychoses. Some writers would consider every case manifesting certain physical signs of the chest as tuberculous, and such writers in examining patients suffering from any psychosis presenting certain physical signs of the chest, but who are free from such symptoms as cough, fever, loss of weight, etc., attribute this "peculiar" course of tuberculosis to the influence of the psychosis.

Again, those writers who uphold the theory of toxemia as the cause for most of the psychoses will, of course, see in tuberculosis a strong etiological factor in the production of many psychoses. Modern views of tuberculosis and phychiatry show the above to be fallacious.

It is held by most authorities on tuberculosis that the tuberculous infection occurs principally during childhood; that probably few individuals escape it, and that in later years there is an activation of that infection. During the interval, however, such individuals cannot be considered tuberculous. Again, during adult life some individuals suffer from definite active lesions of tuberculosis which become healed or arrested with or without treatment. Such individuals may live for many years and die of some disease other than tuberculosis; however, during those many years physical signs of tuberculosis were always absent, and they, of course, could not be called tuberculous; the appearance of a psychosis during such an interval could not, therefore, be due to any tuberculous toxemia, as the individual was no more suffering from tuberculosis at the time than an individual having a second attack of pneumonia, after a more or less long interval, could be considered as having suffered from pneumonia all the time. Depending upon the variety of the psychosis, whether it lowers the vitality of the individual or not, the old lesion may or may not become activated. In some cases where the psychosis does not sap the individual's energy too much, the tuberculous infection has a much better chance of becoming arrested or healed, due to inability of the patient to dwell on his symptoms and worry about his condition.

It has long been recognized by those experienced in tuberculosis that many symptoms observed during the course of pulmonary tuberculosis, such as the constant hacking cough, occasional rises of temperature, and even losses of weight are not due to the disease, but to the patient's constant thought and worry about the disease. I have often seen several hundred patients watching an entertainment or listening to an address "forget" to cough for hours, but who otherwise coughed all the time, and in a similar way other symptoms disappeared when their attention could be diverted toward different channels, and this is just what happens during a psychosis, but not because the psychosis has any direct beneficial influence on the disease.

That insanity is more frequent among the tuberculous is disputed by many writers. During my several years' experience in a sanatorium of 1,100 patients I have not observed one case developing a definite psychosis, though I have observed various degrees of confusion, vague delusions, and impaired judgment during the last stages of the disease. Tuberculosis involving the nervous system is, of course, excluded from this discussion.

McCarthy (quoted by Carncross[2]) reports that out of 885 tuberculous cases 20 showed mental disturbances; they all occurred in the far advanced cases. Confusion was present in most of them; loss of memory and depressed physical tone were responsible for the confusion.

Tuberculosis may be considered as an etiological factor in the production of a psychosis in so far as it acts as an additional difficulty in the life of an individual who was at the breaking-point, whose successful adjustment to his environment depended upon a fine balance, and the knowledge that he was suffering from tuberculosis was sufficient to turn the scales resulting in complete inability of adjustment and hence a psychosis. In no sense must we consider tuberculosis as an etiological factor in the production of psychosis because of the "tuberculous toxemia."

As to the greater prevalence of pulmonary tuberculosis among the insane, statistics as presented by various hospitals are contradictory and unreliable. My impression is that it is greatly exaggerated. If insanity were as strong a factor in producing tuberculosis as is held by some, this should be evident through a more rapid course of the disease, and as I will show later through statistics gathered at the Government Hospital for the Insane rather the opposite appears to be the fact.

Bondurant (quoted by Alexander[4]) states that his autopsy results show that while one-half of the insane negroes contract tuberculosis, one-third make a very good stand against the disease, either entirely recovering or living for years, and, according to Alexander,[4] the prognosis in the white insane is much more favorable.

The tuberculous figures studied at the Government Hospital for the Insane, while not absolutely conclusive, are quite interesting as indicative in a general way of the frequency of tuberculosis among the insane and also as to prognosis under favorable conditions.

The Government hospital has five cottages for the treatment of tuberculous cases. Each cottage has twenty beds and represents a modified and much improved Loomis shack. They are located away from the larger buildings, surrounded by fine

lawns, and so placed that they have at all times a maximum amount of air and sunshine available.

At the present writing there are in the institution 3,274 patients, divided as follows: Males, 1,986 white, 417 colored; females, 548 white, 323 colored. Of that number 84 are cases of pulmonary tuberculosis.

In the majority of cases tubercle bacilli are present in the sputum, in others the disease was diagnosed clinically from the symptoms and physical signs. In 16 cases the disease was diagnosed either upon admission or within the first year after admission, and among them 3 were incipient, 9 moderately advanced, 4 far advanced. In the rest of the cases the disease was diagnosed at periods, following admission, ranging from 3 to 27 years—in the majority of cases 8 to 10 years following admission.

For the purpose of studying the progress of the disease, I divide them into three groups:

1. Inactive: Cases in which the disease is either arrested, or apparently arrested, as indicated by absence of râles upon physical examination, and by absence of cough, expectoration, or fever. The majority of this group show a decided gain in weight, while in some the weight is stationary.

2. Moderately active: Patients who have slight or no fever at all, but who either cough, expectorate, or through slight loss of weight or presence of râles in their chest indicate some degree of activity of the tuberculous process. Almost all of this group are up and about.

3. Progressive: Cases in which the disease is progressing more or less rapidly to a fatal termination, presenting the usual symptoms of active cases. Of this group all are bed patients.

The 84 cases are divided as follows: 7 incipient, all inactive; 55 moderately advanced; 46 inactive, 9 moderately active; 22 far advanced, 7 inactive, 9 moderately active, 6 progressive.

The duration of the disease in the cases since the time of diagnosis varies from several months to 16 years; in the majority of cases the duration is from 5 to 8 years.

Most of the cases show a gain in weight averaging 10 pounds within a short time after admission to the tuberculosis cottages, after which the weight remains stationary or fluctuating within 3 to 5 pounds. Quite a phenomenal gain in weight occurred in a colored woman 27 years of age, suffering from dementia precox. Upon admission she was found to be suffering from pulmonary tuberculosis in a moderately advanced stage, the disease being fairly active. During her 3½ months' stay here she gained steadily in weight, altogether 28 pounds, and is still gaining. I am not presenting this isolated case in proof of anything special, but simply to indicate the possibilities of the tuberculous insane when placed under favorable conditions. The results of treatment as given above would compare favorably with the results of the average sanatorium for the treatment of tuberculous individuals not insane.

The mortality among the tuberculous insane, at least as observed at the Government Hospital, does not seem to show any unusual increase as compared with the tuberculosis death rate among the sane population. The 1900 census of the United States gives 109.9 deaths from pulmonary tuberculosis in every 1,000 deaths from all causes, or 11 per cent.

At the Government Hospital for the Insane between the years of 1910 and 1916 inclusive, there were 1,852 deaths from all causes; of this number 213 died from pulmonary tuberculosis, or 11½ per cent. During the last ten years the death rate per population was 10 deaths from pulmonary tuberculosis per each 1,000 patients.

Osler,[19] in speaking of the decrease of the death rate from pulmonary tuberculosis, states that in five New England cities the death rate was decreased from 30.7 to 21.4 per 1,000 population, and in several cities of the Middle States from 31.4 to 23.4 per 1,000. So that 10 cases per 1,000 certainly does not indicate that tuberculosis is specially rampant among the insane.

While I will admit that some deaths at this hospital from pulmonary tuberculosis are overlooked, I do not think the death rate is quite as great as in the average city among the not insane patients.

We must also bear in mind that our hospital has quite a large percentage of colored patients, which would, of course, tend to increase the death rate from tuberculosis. The mortality for the last few years since the tuberculosis cottages have been opened shows a still smaller death rate than given above.

The most interesting feature, to me at least, in the study of the tuberculous insane, is the variety of psychosis most prevalent among them, or, in other words, the psychosis which is more vulnerable to pulmonary tuberculosis.

The following are the various psychoses among the tuberculous patients:

Paresis	1
Psychosis associated with epilepsy	6
Psychosis associated with imbecility	6
Psychosis associated with alcoholism	1
Psychosis associated with organic brain disease	1
Psychosis associated with cerebral lues	1
Undifferentiated dementia	2
Undifferentiated depression	1
Manic-depressive psychosis	2
Paranoid state	1
Arteriosclerotic dementia	2
Dementia precox	60
Total	84

Here we see that out of 84 cases 60 belonged to the dementia precox group, or 71 per cent. of all cases. The female patients gave a somewhat higher percentage of precox cases than the males. In the white and colored patients, the percentage was about the same. All forms of precox were represented in this group, the catatonic giving a slightly higher percentage than the other forms.

In studying the above cases, I failed to observe any influence pulmonary tuberculosis has upon the psychosis. I absolutely failed to observe any "alternation" between the two conditions as reported by Alexander and Van Der Kolk, above mentioned.

The frequent absence of cough, expectoration, and fever is rather due to a negative influence of the psychosis upon the disease, as the above symptoms, so frequently observed among the not-insane tuberculous patients, are often due, especially in the first and second stages, not to the disease itself, but, as pointed out above, to constant worry and dwelling on the symptoms of their malady. The individual suffering from a psychosis is too busy with his delusions and hallucinations, and hence he "forgets to

cough," and the state of lowered vitality in which these patients usually are accounts for the absence of fever; the body has no great amount of energy to react against the foreign protein—the tubercle bacillus.

Since dementia precox cases form the largest group among the tuberculous insane, it is quite natural to find such symptoms as depression, suspicion, seclusiveness, and refusal of food among them, but the same symptoms are found just as frequently among the dementia precox cases free from any tuberculous infection, hence we cannot attribute the presence of those symptoms to the influence of pulmonary tuberculosis upon the psychosis as some writers would have us do. A clear conception of dementia precox would certainly help to explain many apparently contradictory statements regarding pulmonary tuberculosis and various psychical phenomena mentioned in the first part of this paper.

The scope of this paper will not allow me to discuss dementia precox in detail nor is this the subject of discussion, but I wish to emphasize certain points in relation with this condition in so far as they throw some light upon the subject at hand.

White[20] states the following about dementia precox: "Every individual born into the world has, if it could be determined, a definite potentiality for development. The force of the impetus which starts it on its path is sufficient to carry it a certain definite distance. The predetermined goal in each case will be reached if no accident intervenes to prevent. In the subjects of this disease the 'original' impetus has been weak, only sufficient to carry them a short way, and when its force is spent development stops and the retrograde process is hastened or perhaps immediately initiated by some special physical or mental stress occurring at the critical point of puberty and adolescent evolution."

It is possible in many cases, from the behavior of such individuals during early life, to foretell many years before that they will develop a dementia precox psychosis, and there has come to be recognized a certain type of personality known as the precox personality. Such individuals belong to the so-called "shut-in" type; they do not meet difficulties openly and frankly; they are seclusive, given to dreaming, indulge in phantasies, and have great difficulty in accepting reality. By reason of faulty environment and bringing-up they have developed certain desires, wishes, and attachments, which later in life they cannot achieve and hold, as they do not meet with the approval of civilized society. Such individuals have no especial goal to aim for, but live in a world of dreams, away from reality, satisfying their wishes and desires—they are "introverted," and under stress of any serious difficulty in real life are completely thrown out of gear, developing a psychosis, withdrawing themselves completely from reality and living in a world where their aims and strivings are all or in part accomplished through psychical representation of the same. Not all individuals belonging to the "precox" personality, however, develop dementia precox in a recognizable form. Many under certain favorable circumstances are able to adjust themselves in an imperfect manner, constantly struggling with their difficulties, being frequently at the "precipice" of an actual psychosis. Such individuals are usually in a state of lowered vitality and specially prone to pulmonary tuberculosis, which accounts for the description of many mental traits observed by many writers in the so-called "susceptible to tuberculosis" individuals. Whereas in reality the various mental traits, as lack of fixity of purpose, periods of apathy alternating with feverish activity, suspicion, emotional instability, are traits genetically predetermined through heredity and environment, and the tuberculous condition is rather the effect than the cause of the same.

Cause and effect are frequently confused by various writers on the subject of tuberculosis and mental traits. Some writers see in tuberculosis a certain factor in the production of criminal tendencies. Fanoni[21] reports cases where tuberculous individuals expectorated promiscuously with intention to infect others, and Gilbert (quoted by Fanoni[21]) reports a case of a man who made his wife drink champagne into which he expectorated tubercle bacilli. It is through such isolated cases that some writers seem to emphasize the rôle of tuberculosis in leading toward criminal acts. Isolated cases of such character have been observed among syphilitics and the subjects of other pathological conditions. Such individuals were undoubtedly decidedly psychopathic if not suffering from an actual psychosis, and tuberculosis is certainly not a causative factor in such cases.

Because tuberculosis is frequently observed among criminals some writers conclude that tuberculosis tends to produce criminal tendencies, but they, of course, confuse cause and effect.

To understand properly any mental traits or phenomena in the life of an individual, we must consider them as end results to be understood only by understanding the past out of which they grew and of which they are an expression.

Conclusions.—1. There is no special psychology peculiar to pulmonary tuberculosis.

2. Neurasthenia and other neuroses are not caused by pulmonary tuberculosis, nor are they present in the majority of tuberculous individuals. By lowering the vitality of the individual, neurasthenia and the other neuroses often act as an indirect cause in the production of pulmonary tuberculosis.

3. Pulmonary tuberculosis acting as a serious difficulty in the life of the individual will produce certain reactions, which will be reflected through the psyche, depending upon the previous characteristics of the individual and his environment at the time of the disease.

4. I have failed to observe that, as claimed by various writers, selfishness and disregard for others is especially frequent among the tuberculous. When observed they are not due to tuberculosis, but to other genetic factors, which shaped the personality of the individual.

5. The one mental phenomenon common to a great majority of tuberculous victims, or present in those who have a hereditary or physical predisposition to the disease, is fear of the disease and its result—death. Some are quite unconscious of it; others deny it though quite aware of it.

6. Though pulmonary tuberculosis is not responsible for the many psychical phenomena observed in

sufferers of the disease, the psychological side of the patient should not be neglected. The patient's difficulties must be studied carefully and a way of removing them as far as possible must be found, as their presence, and especially that of fear, under which the patient may labor, saps his vitality, so necessary to the system in order to defeat the disease.

7. The spread of the modern and true ideas regarding the hereditary transmission and the infectiousness of pulmonary tuberculosis among its victims and also among the healthy members of the community will help to remove the exaggerated and almost morbid fear of the disease, and to establish a more humane attitude on the part of the healthy individuals toward the sufferers from the same, thus acting as a potent prophylactic factor in diminishing the mortality from pulmonary tuberculosis.

8. Pulmonary tuberculosis is not a direct cause of insanity, though in some cases it may act as the proverbial last straw on the camel's back.

9. There is no special form of insanity peculiar to tuberculosis.

10. The appearance of tuberculosis during the course of a psychosis does not modify the latter to any extent.

11. Dementia precox, by lowering the vitality of the individual, is the most frequent indirect cause of pulmonary tuberculosis among the insane.

12. Every hospital for the insane should have special provisions for the care of tuberculous patients. The modified Loomis shack, as adopted by the Government Hospital for the Insane, is most admirably suited for this.

13. In the modern hospitals for the insane, where special provision is made for the treatment of pulmonary tuberculosis, as good results may be obtained in arresting or curing the disease as in special sanatoria for tuberculosis.

14. By more careful attention to the physical condition of the patients in hospitals for the insane, through repeated chest examinations and frequent weighing of suspicious cases, especially precox cases, the tuberculosis mortality may become greatly reduced and many cases may be indirectly helped out of their psychoses.

REFERENCES.

1. DeSantos Saxe, G. A.: The Psychical Relations of Tuberculosis in Fact and Fiction, *N. Y. M. J.*, 1903, Vol. LXXVIII, 211, 263.
2. Fishberg, M.: The Psychology of the Consumptive, MEDICAL RECORD, 1910, LXXVII, 654.
3. Kiernan, J. G.: The Mental Symptoms of Phthisis as Illustrated by Keats and Emily Bronte, *Alienist and Neurologist*, 1890, XI, 93-96.
4. Alexander, Harriet C. B.: Mental Phases of Tuberculosis, *Woman's M. J.*, Toledo, 1898, VII, 159.
5. Brock, A. J.: The Psychology of the Consumptive, *Brit. M. J.*, 1910, 1, 1519.
6. Milton, A. J.: The Psychology of the Consumptive. *Brit. M. J.*, 1910, 1, 1915.
7. Letulle, M.: Sur la Psychologie du Tuberculeux (translated), *Colo. M. J.*, Denver, 1901, 111, 112, 120.
8. Gubb, A. S.: The Psychology of the Tuberculous. *Lancet*, 1906, 1, 504.
9. Carncross, H.: The Mental Attitude in Tuberculosis, Henry Phipps Inst. Annual Report, 1906, II, 137.
10. Fitzgerald, G. H.: The Mental Side of the Consumptive, *Cleveland M. J.*, 1905, IV, 221.
11. Burr, W. H.: The Psychology of the Consumptive, *Amer. Med.*, 1901, II, 244.
12. Jacobson, A. C.: Tuberculosis and Genius, *Interstate M. J.*, Vol. XII, 341.
13. White, William A.: Mechanisms of Character Formation. Macmillan, 1916.
14. Frink, H. W.: *The Psychoanalytic Review*, IV, 12.
15. Vaughan, Victor C.: Poisonous Proteins. Mosby Co., St. Louis.
16. Crile, George W.: The Origin and Nature of the Emotions. Saunders Co.
17. Sherrington: The Integrative Action of the Nervous System.
18. Clouston, T. S.: Dictionary of Psychological Medicine, Vol. II.
19. Osler, William: Modern Practice of Medicine, Vol. III.
20. White, William A.: Outlines of Psychiatry, 1915, 141.
21. Fanoni, Antonio: What Shall We Do with the Consumptive? *N. Y. M. J.*, LXXV, 237.

OBSTETRIC FADS AND HERESIES.

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AFTER a protracted rest from my accustomed pursuits, I am once more at the helm, and I find the obstetric art cumbered with much that is new and helpful, but also with many rank weeds—fads and heresies which must cause my masters in obstetrics to stir uneasily in their graves. For forty years I have been a student of this art, and my teachers were giants in their days: Reynolds and Buckingham of Boston, Tarnier of Paris, Robert Barnes of London, Karl Braun of Vienna, Schauta of Prague, Welponer of Trieste, Isaac E. Taylor and Fordyce Barker of New York. These were my teachers, and the grateful pupil lays to-day, after the lapse of forty-five years, a sprig of evergreen on their graves. These men lacked but one thing which we possess to-day—asepsis in obstetrics. Another teacher of mine, Oliver Wendel Holmes, the predecessor of Semmelweis, had indeed written his thesis on puerperal fever, but his views had fallen on uncultivated ground. These teachers of mine were masters of the forceps and of version. They laid down with accuracy the limitations for the induction of premature labor. They believed, while conserving the vital energy of both mother and child, in giving Dame Nature a chance; and, barring the mortality rate due to lack of knowledge of asepsis, their results have not been surpassed. One of them, Tarnier, at the Paris Maternité, taught me how to use the axis-traction forceps, an instrument of incalculable value when properly applied within its limitations. I have labored for years vainly to persuade the profession to use this instrument, for without it, I maintain, obstetrics cannot, within the sphere of the instrument, be practised properly. And yet only the other day a professor of repute told me that he did not find scope for it, and that his colleagues agreed with him!

The introduction of asepsis into obstetrics has enabled us to improve upon the work of these masters of the olden days. At the time when it was my privilege to work at the New York Maternity Hospital, now the maternity department of the City Hospital, the mortality rate from puerperal septicemia ranged around 10 per cent. In a rural cemetery of a town in North Carolina lie interred the remains of my old colleague, Henry J. Garrigues, and on his tomb there are inscribed the words, "He introduced antiseptic midwifery into America."

This man "builded unto himself a monument more lasting than brass," and enabled us at the Maternity Hospital to lower the mortality rate from septicemia to one-eighth of one per cent. Again I lay a sprig of evergreen on the tomb of a master obstetric mind.

These prefatory remarks are offered, not in an egotistical spirit, but purely that force may be added to my words as I start to point out to those who know me not, and to those who perchance have forgotten me, my reasons for rejecting the fads and the heresies which are attempting to thrive to the detriment of my specialty. Like Rip Van Winkle of olden time, I stand aghast.

The first fad I note is the so-called "Twilight Sleep." Emanating from that land of myth and fiction along the shores of the vine-clad Rhine, it was introduced into America properly labeled, like other German patent medicines and tinware and matches. The American indorsers chose a popular magazine for advertising purposes, and women cried for it and professors boosted it! Like the moth, the Lord be praised, it has died the death to which, for the nonce, all things Hun are doomed, and to-day I cannot find a single practitioner of repute who uses the method. Why it ever gained foothold passes my comprehension, unless the profession, sated with old-time methods of repute for allaying the anguish of childbearing, is, like the Greek, hunting for a new God. Buckingham and Reynolds and their pupil Richardson taught me better, and, withal, a method which does not carry a mortality rate, nor an infantile death rate, such as, on investigation, will be found associated with twilight sleep. In the fourth edition of my "Practical Obstetrics" I analyzed the statistical data culled from German sources, and I showed that these data damned the method. Avoid, my medical brethren, the folly of extremes, and hold fast to that which is good. Use chloral freely, and be not afraid; resort to morphine and atropine with judgment; administer quinine judiciously after the contractions are well under way; be not afraid of chloroform; do not delay the application of the low forceps after a timely fashion. Thus you render labor as nearly painless as our present knowledge permits, without subjecting woman or child to the dangers inevitably associated with the use of morphine, hyoscine and scopolamine.

The next fad I note is the cesarean-section craze. It was my fortune to perform the early cesarean sections from an *electice* standpoint; that is to say, under the relative indication, at the New York Infant Asylum and at the New York Maternity Hospital in 1889-1890. My thesis for membership in the American Gynecological Society bore the title, "A Plea for the Cesarean Section from an *Elective* Standpoint." After the lapse of twenty years, with the experience thus gained, I can preach the same sermon to-day. *Festina lente*, my obstetric friends! To show the extremes to which certain rabid cesarean sectionists will go: A number of years since an assistant of mine called on me, greatly perturbed because a professor had advised the section on his wife for the reason that in the previous labor she had suffered from uterine inertia! The pelvis was normal, the presentation L. O. A. I quieted my young friend, ordered strychnine, gr. 1/40 t.i.d. for six weeks precedent to labor; when the contractions became active, chloral in 15-grain doses every three-quarters of an hour until 60 grains had been administered; quinine, 15 grains at one dose. In fourteen hours the woman delivered herself of a splendid boy weighing 13 pounds. The woman has no scar on her belly; she did not run the modest 4 per cent. risk associated with the cesarean section; the professor was unable to notch his cesarean-section rod. I have carefully analyzed the series of sections recorded by a number of operators, and it's "dollars to doughnuts" that Tarnier or Isaac E. Taylor, if alive, could cut the series at least 30 per cent. I wonder if some of these operators are trained in the technique of version, if they own the axis-traction forceps, if they have relegated the induction of premature labor to the ash heap!

Another fad is this question of birth control. This question need never have arisen. In my professional career I have never hesitated, after due consultation, to induce abortion where otherwise the life of the woman was imperiled. This course I shall continue to follow. So far, I have escaped Sing Sing, although possibly, according to a certain religious belief, I may spend a few years in purgatory. If so, I shall certainly find very congenial company. The daily press—sometimes to the exclusion of war news—has exploited this advance guard of woman suffrage. To the medical press I would say that neither man nor woman should be entitled to procreate more children than they can rear. The doctrine I preach is not that of birth control, but that of *sex repression*. Neither men nor women should be allowed to make animals of themselves, and I apologize to the animals in remembrance of the fact that they are continent except during the rutting season. Followed to its logical limit, "birth control" allows men and women to copulate without sanction of law or of clergy. The women will "sin" all the more frequently because of lack of fear of the consequences. The man will remain the same rascal he has been, sexually, since in the garden of Eden Adam laid the blame on Eve.

The last fad I note has been of gradual development. My dear "young" friend Father Abraham Jacobi must smile in derision as he witnesses the evolution of the scheme which will gradually eliminate woman as a nursing animal and place the infant at the mercy of modified milks and patented foods. The glory of woman's crown is motherhood. The crown is incomplete unless lactation forms the central jewel. I will not go so far as to state that every woman can be made to nurse her babe, but I will maintain that every woman should who can; that she is unworthy of being a mother if, able so to do, she does not; and I would emphasize the fact that, structural mammary development or inherited or acquired disease being absent, I can make 95 per cent. of my patients nurse their infants. A phase of this fad is to make the newborn child lengthen the nursing interval from two to three hours; fitting, as it were, the gastric capacity of the infant to the desire of the mother to, let us say, play bridge or go to the "movies." Read and mark and digest, ye iconoclasts and reformers! Read Father Abraham Jacobi's work on infant

feeding, a classic always, and consult, incidentally, the chapter on the care of the newborn infant, in Grandin's "Practical Obstetrics."

Do the least harm, my medical friends, to woman and babe; *study the methods of the past, hunt less eagerly for the new goods of foreign make;* then, with asepsis as its keynote, you may reasonably hope to match the record of the master minds which has been my beacon.

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By EDWARD PREBLE, M.D.

NEW YORK.

While making experiments with accidental grouping of words the author became impressed with the suggestive and stimulating influence of this exercise upon the mental processes. In a search for some kind of a method for the rapid selection of word groups he was led to extemporize the words from sets of letters assembled by chance. It was learned that a set of 15 or 16 letters represented an optimum, for a smaller number can hardly guarantee a proper balance of vowels and consonants, while with a larger number the possibilities would increase so rapidly as to be confusing. The letters, readily selected by the aid of some mechanical device, were assembled in rows, three of five or, better, four of four words each, and but few seconds of time were required. Thus:

n h u i
d e n g
m p k f
b r e l

It would be manifestly crude to give every letter of the alphabet the same value; hence, x, q, z, etc., were given secondary values as vowels; u, v and w were made interchangeable, as were also i, j and y and k and c. Similar license was suggested from time to time.

To obtain the words for a group we seek for the nucleus or stem of a word in some line and build it up with letters from the other lines. In this manner we readily obtain a word "breeding." From the remaining eight letters "punch" is readily selected (if we value k as c). The two words as they stand have no obvious significance. But words have many meanings—literal, metaphoric, technical, etymologic, symbolic. If we use breeding in the sense of manners or behavior and punch (Mr. Punch) in the sense of buffoon, the significance is obvious but possesses no element of novelty. We make a second attempt and understand breeding in the sense of increase or multiply. In seeking for a meaning of punch which will make sense we recall that punch, the beverage, a Hindu word, literally means five, the number of its ingredients. The group "increase (or multiply), five," commonplace in itself, suggests the subject of a five child system as a necessity for the repopulation of the warring countries, which are becoming unpeopled from high mortality and low natality. This is not a mere abstraction for, according to Professor Jayle, a large percentage of French women are willing to bear from four to six children if the State will aid in raising them. This example is given merely to show how a casual association of words can conjure up one of the most momentous questions of the age and rudely dissolve the mental association, in the provident, of marriage with one or two children. This association has not yet become a fixed habit of thought, although moral parental obligation has generally been limited to making good the normal losses from death. One feels certain that the Teutons, whatever the outcome of the war, will spare no measure which can aid in repopulation of the Central Empires, and thus the problem will be passed on to their enemies.

The jumble of words, "twist, lamb, car," led by steps not necessary to detail to the idea of sheep as beasts of burden or draught. As far as can be ascertained it is only in Thibet that they have always been used to carry light loads in localities where roads are wanting. Other wool and hair bearing animals seem to have been employed freely for burden purposes, and the goat readily pulls a load. Such use of sheep would naturally be very limited. Reasons for the absence of such usage would doubtless be founded almost wholly on *a priori* considerations. According to grooved thinking, a sheep is an animal which supplies wool and mutton and is not intended by Providence for milch and draught purposes. While in some countries ewe's milk is largely utilized for making cheese, the present milk shortage seems to have awakened no thought of such a possibility. The ready answer that these two employments of the sheep would not pay doubtless holds good in the main, but not for exceptional conditions. It should not be difficult to train a lamb to carry a pannier.

The association "third hinge" led to the surprising discovery that the average man firmly believes that a door must necessarily have but two hinges. If you tell him he passes daily through entrance doors with three hinges he will refuse to believe you. A specially well informed man will perhaps make the statement that a heavy door sometimes has an extra hinge, but in reality the number of hinges seems to be only the whim of the builder who may put three on a flimsy door while an exceptionally strong one often has but two. Once a man notices the middle hinge, overlooked all his life, it looms up very large.

While words groups may be formed with no particular problem in the mind, they are far more suggestive as a rule if the person is at work upon some fixed objective. So startling and uncanny are they at times that one might be pardoned for thinking that he had stumbled upon a rival of the ouija board or gazing crystal as a revealer of unconscious mind. But owing to the method used there is little opportunity for the exercise of such a faculty. The aim has been rapid mechanical selection of words, and no time is wasted in mulling over them. If they suggest nothing a new set of letters is assembled.

In imagination we have placed ourself in the mental attitude of all sorts of individuals confronted with their own personal problems. Some of these are of wide or universal interest, others concern only the individual. In the present connection we limit our activities to some of the problems of the

physician. A small matter, but one which often worries him greatly, is a subject for a medical paper. He may skim through an index of a book or bound journal or look over programs of meetings a decade old or run through the titles in the Surgeon General's catalogue, yet find no hint of what he wants. Old Use-and-Wont has done his deadly work, and most of the possibilities mean old grooved associations. He obtains a series of groups: "Waif, go, land" at once suggests "orphan goes to the country." This means nothing at first, but if he look into the matter he will find a forward movement on foot for taking orphans out of the costly institutions and placing them in rural homes. The group "heart, dip, bulls" suggests "ludicrous mistakes about the dip or inclination of the heart." This in turn suggests dextrocardia and failure to recognize it, and in a wider sense errors made in regard to the apex beat under all conditions. Many a bad condition is overlooked because the apex seems to be in its normal position. The writer believes that a suggestion which comes in this way will be more likely to be acted on than one which comes through another's mind, for men who are self-reliant do not welcome suggestion even when they solicit it. Another group, "mind, lure, feud," at once suggests the lure or fascination of the psychic motivation of bodily infirmities and the schism which results between adherents of this concept and those who uphold physical causal factors of disease, as to the relative importance of each element in pathology as a whole.

The great majority of these word groups have some suggestive power. Even such an unpromising one as "true, sieve, furl" is not an exception. "Furl," to roll up and fasten, suggests a bandage; "true" correct apposition, and "sieve," fenestration. The search should be continued along this line until a satisfactory subject or title is reached. The author, in connection with research for others, has repeatedly made use of this process with prompt results. If the medical man wishes to take up some subject for original research or should he have a desire to produce a book on some novel subject, he can look forward to the same kind of assistance. He may wish a subject for the lecture platform, or, chosen as toastmaster at a feast, he may wish to give out some novel toasts. Called upon to address school children, he may long for some precepts which are not hackneyed. On the other hand, he may be puzzled to invent a name for his summer villa, motor boat, breeding animals, pets, etc. The prodigality of results obtained by these chance groups seems far greater than the spontaneous product, even of a number of minds. Let us suppose that a medical man will be called upon to address school boys or young men. He gets a word group "dare, bunt" and realizes that with his entire audience deeply versed in baseball vernacular he can successfully apply the idea to the daily problems of life.

Suppose he has to deliver an oration or write an article for the lay press. He obtains a group "is both pith sewage" which calls up in the mind many of the geniuses of the world and the Jekyll-Hyde conception of human nature. If he will consult the most recent views of psychiatrists he will find that most of the remarkable men who have been loosely styled psychopaths, degenerates, dipsomaniacs and psychic epileptics may now be better termed manio-depressives. The view is a practical one which tends to harmonize the most divergent opinions of the past. During the profound and prolonged periods of depression men of this stamp should be interned and treated. While in their exalted moods their genius should be fostered and wild extravagances of conduct nipped in the bud by prompt intervention. Very many changes can be rung on this theme alone. The doctor's hobby of the day is history and biography, and in the latter connection especially personality is all important.

But word groups can do much more than give ideas. By forming an entire series of them there is sometimes seen a sort of concordance or synergism. They seem to point to a common goal or to have a common burden. They furnish at times an argument, at other times a vivid description. That the suggestion must vary greatly with the individual is not a drawback but is highly desirable. It must be borne in mind that substance and not form is desired. There is no limit to individual initiative either in obtaining or in deciphering groups, and the only fixed precept is that no letter in a set should be used more than once.

Since this small effort is intended only for suggestion nothing can be gained by increasing its length. The possibilities of word group suggestion are unbounded and the method itself is inexhaustible. No claim is made of originality, for word groups have been used extensively in association tests, although perhaps not when selected by chance. The method has little in common with anagram making, for in the latter a word or group of words is transmuted to a complete word or group, all the letters being employed. In our method complete anagrams are not sought, but only a word or group which can be quickly isolated from the "pi" of sixteen letters.

At its worst this line of effort should be more praiseworthy than the doping out of ancient prophecies or discovery of Elizabethan ciphers. It is recommended to solitaire devotees and would-be "new thoughters" who by its aid may be led to form really new mental associations.

519 West One Hundred and Forty-third Street.

THE COMPLICATIONS OF MASTOIDITIS.

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The study of the complications occurring in the course of an infection of the mastoid process of the temporal bone is one of the most interesting subjects in otology.

With a purulent otitis media and mastoiditis present, it is possible to have the infection extend or to be carried by the blood to almost any part of the body, but as a rule the resulting complication is usually one or more of the following conditions—meningitis, erysipelas, pneumonia, thrombosis of the lateral sinus, and an adenitis, especially of the glands in neck of children, and less frequently brain ab-

scess and labyrinthitis—the two last named conditions occurring, in the majority of cases, in the presence of a chronic infection.

Nature's warning of an extension of the infection is practically always a chill, accompanied by a sudden rise in temperature, and it is just at this point that it is most difficult to determine the point of election of the invading organism, since we may have a beginning erysipelas and at the time of the initial chill and rise in temperature the wound shows none of the characteristic symptoms of redness, burning, swelling, etc., or a beginning pneumonia, with the physical signs still masked, an incipient meningitis with a negative Kernig sign, no stiffness of the neck, etc.

At this stage the best key to the situation is a white blood count, for the following reasons: Given a total white count of thirty thousand or more cells to the cubic millimeter, we immediately suspect a pneumonia; a total count of around twenty thousand, a meningitis or erysipelas, the count being a little higher in meningitis than erysipelas; a count between ten and twelve thousand a thrombosis of the lateral sinus; a true leucopenia possibly malaria, typhoid, or tuberculosis.

At this point I want to state that I do not think that enough importance is attached to the diagnostic value of a total white cell count in cases of infection of the lateral sinus. I have made it a point to follow quite a number of such cases at the New York Eye and Ear Infirmary, and almost without fail the count has been around twelve thousand where there was no other complication present. The value of this procedure is inclined to be underestimated by many, because a ten thousand cell count is so close to normal (from six to eight thousand) that is true in cases when the temperature is normal, but a different proposition entirely when we have a temperature reaching 106°.

The one condition which simulates the temperature curve of thrombosis of the lateral sinus the most is that of a malarial infection, and in that case we get a leucopenia, and it is undoubtedly true that there are too many general practitioners, as well as otologists, treating cases of infection of the lateral sinus for malaria and typhoid fever.

To summarize, given a sudden rise in temperature and a total white count indicating a true leucopenia, then we may suspect malaria, typhoid, or tuberculosis; a count around ten thousand a thrombosis of the lateral sinus; a count around twenty thousand erysipelas or meningitis, and thirty thousand or more a pneumonia.

Next we carefully study the temperature curve. If we have a sinus thrombosis present then the temperature will suddenly jump from about normal to one hundred and five or six, returning close to the starting point within twenty-four hours, with a repetition of this in the following twenty-four hours. If a pneumonia, meningitis, or erysipelas is present the temperature usually ranges between 103.5° to 105°. Of course in the terminal stages of a severe case of any one of these it may be higher.

Now, suspecting a thrombosis of the lateral sinus, we immediately order a blood culture, remembering that we may get a negative culture, due to the fact that the sinus is completely blocked by the clot. This usually occurs in cases of long standing. Another rather important point is the fact that the patient's mind remains clear in spite of the high temperature, in contradistinction to what occurs in meningitis, where the patient usually becomes delirious in from twenty-four to forty-eight hours. Also, there is usually an absence of pain or headache.

Suspecting an erysipelas, an examination of the wound shows, in a very few hours, the tense, fiery-red swelling which, together with the burning pain and progressive line of demarcation, leaves us in no doubt as to the diagnosis.

If we suspect a pneumonia, in a very short time the increased respiration, cough, bloody sputum, pain in the chest, together with the physical signs, make the condition certain.

A meningitis being suspected, a lumbar puncture should immediately be done, taking care that no blood is obtained in the specimen, so that an accurate cell count may be had, and with a cell count of five or six cells per cubic millimeter, a reduction of Fehling's solution, together with a negative globulin reaction, we can be pretty sure there is no involvement of the meninges at this time, especially in the absence of stiffness of the neck, a negative Kernig sign, and no delirium.

In case we have a meningitis we can be sure when it becomes diffuse that the afternoon of the second or third day will show stiffness of the neck, marked headache, and delirium, quickly followed by death. It is important that the Kernig sign be tried, because it will be present, to some extent, before the above symptoms are so marked.

I think it is true in a certain number of cases that we get a marked headache, due to a localized involvement of the meninges, such as may be present in an epidural abscess, but in this case the symptoms of a diffuse meningitis are not present and a lumbar puncture is negative if cultured but may show an increased cell count.

It is well knewn when we have a true abscess of the brain it may be present for several years, and so well walled off by nature the patient has practically no symptoms. The pulse and temperature staying around normal or subnormal, and when the temperature and pulse go up to any marked degree, then we can be pretty sure that the abscess is beginning to involve the meninges either by rupturing into the ventricles or by breaking through nature's protecting wall at some other point.

A lumbar puncture in a true brain abscess will usually be negative, and when it does show positive results means brain abscess plus meningitis.

The question of labyrinthitis, while rather a rare complication, is a very important one. This is especially true in acute cases of long standing, where the infection has involved the perilabyrinthian tissues, causing nausea, vomiting, vertigo, nystagmus, headache, in fact practically all the symptoms of a purulent labyrinthitis, but an examination shows an active labyrinth, while with a purulent labyrinthitis the labyrinth will be dead.

In the perilabyrinthitis the prognosis is very good and a complete exenteration of the mastoid cells results in an early recovery, while a purulent labyrinthitis would require a labyrinth operation and would necessarily offer a more grave prognosis.

Again, we must not lose sight of the fact that a

sudden rise in the temperature may be due to an involvement in the other ear, especially in very young children, or later, and we must always eliminate this possibility.

There is one other complication which deserves special mention, and that is diabetes, it being prevalent especially in those cases of mastoiditis where the *Streptococcus mucosus capsulatus* is found, and an analysis of the urine for sugar should be made in all cases where this type of infection is present.

A perisinuous abscess gives practically no symptoms by which we can diagnose its presence before operation, but in some cases a severe and continued headache may lead us to suspect an epidural abscess. Such abscesses are, however, a part of rather than a complication of a mastoid infection, and in either case if the operation is performed before the infection has extended through the sinus or dura the recovery is uneventful.

As I have stated above, we may have an arthritis, pyelitis, tuberculosis, or almost any other infection with a case of mastoiditis, but the ones above enumerated are the real complications and those found in a very large percentage of cases.

167 West Seventy-first Street.

A DIFFERENTIAL HISTORY FORM FOR ENLARGEMENTS OF THE THYROID GLAND.

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THE importance of a careful and complete history in making a correct diagnosis of enlargements of the thyroid has frequently been emphasized. The following is a questionaire intended to serve as a guide in taking histories of cases with thyroid enlargements and in it an effort is made to suggest such inquiries as will help to differentiate the various possible etiological factors.

My former chief, Dr. Eugene H. Pool, has said: "It is of vital importance that we should know what symptoms are due to hyperthyroidism, hypothyroidism, and dysthyroidism, and how and to what extent other glands modify these symptoms" (*Johnson's Operative Therapeutics*). Study of cases of thyroid enlargements will throw but little light on these points unless complete histories in which negative as well as positive findings were noted have been made. Again the history may be of prime importance in helping to decide the question of operation or non-operation, as in incipient Graves' disease *vs.* parenchymatous goiter in anemic girls. It may bring out contraindications to operation not revealed by the physical examination.

The following history form is intended as a guide particularly for clinical clerks and internes in large hospitals, and it is hoped that printed forms similar to this one and with appropriate spaces for the answers to the questions might be incorporated into patients' bedside charts.

It may be objected that in using a form of this kind the diagnosis of "enlargement of the thyroid" must be made before the history is taken. This objection is very likely to be overruled when it is considered that swellings in the neck which rise and fall during deglutition are enlargements of the thyroid with but very few exceptions, as (*a*) A swelling not thyroid in origin, but lying in front of it, such as a subhyoid bursa or sebaceous cyst, and (*b*) a syphilitic perichondritis of the thyroid cartilage. A thyroid swelling, however, if fixed by inflammation or malignant growth, may not present this sign.

In order to construct a differential history form, we have considered the points in the history to which attention should be directed in (*a*) the different forms of thyroid enlargement, (*b*) dysfunction of other glands of internal secretion, and (*c*) diseases and conditions contraindicatory to strumectomy. We have then endeavored to assemble all these points into one composite chart.

I. *Exophthalmic Goiter.*

A. Present Illness—

(*a*) Onset—when, with what symptoms, location, and size of swelling.

(*b*) Course—rate of growth, change of position if any in growth.

(*c*) Subjective Symptoms—

1. Pain in lump—when, duration, character, etc. (Sometimes in Graves' disease superimposed on old goiter.)

2. Palpitation, tachycardia, and arrhythmia-relation to exertion, excitement, when first noticed, etc.

3. Nervousness, irritability over trifling causes, excitability, restlessness, depression, apprehension, worry, exaltation, psychoses, globus, vertigo, insomnia, faintness, hysteria. Tell specific instances, give dates, causes of worry and of irritability, domestic relations, ability to do painstaking work (sewing, etc.).

4. Muscular weakness (when and how noticed) "giving away of legs," difficulty in ascending stairs.

5. Alterations in organs of sense—touch, temperature, feelings of increased warmth, hearing, smell, eyesight (transitory veil sensations before the eyes), taste.

6. Alimentary symptoms—appetite, now and before operation, quantities of food consumed, thirst, vomiting, diarrhea (occurrence in paroxysms?), abdominal pain, constipation.

7. Dyspnea: (*a*) related to mechanical pressure of enlarged thyroid; (*b*) dependent on diminished expansion due to muscular weakness.

8. Cough, hoarseness, aphonia.

9. Sexual changes: (*a*) impotence; (*b*) alterations in menstruation since outset of disease—amount of blood, pain; duration and frequency of menses, new subjective sensations during menstruation, especially as related to thyroid.

(*d*) Objective Symptoms—

1. Protrusion of eyes, when first noticed, rate of increase, variations, etc.

2. Hemorrhages from nose, lungs, stomach, or skin.

3. Tremor of hands—when first noticed, character, causal relations if any.

4. Changes in the skin—Elevated temperature, increased readiness to diaphoresis, dryness (suggestive of hypothyroidism), color (pallor, flushes, pigmentation, anomalies, pruritus, edema, (circumscribed and of extremities), alopecia.

5. Other glandular enlargements in neck.

6. Swelling in region of sternum suggesting persistent and enlarged thymus.

7. Loss of weight—details.

8. Fever as measured by thermometer.

9. Ptosis or unilateral miosis.

B. Past History—

1. Localities lived in and how long in each place.

2. Shock, fright, or worry previous to outset of disease—name incidents.
3. Colds, tonsilitis, sinusitis, pyorrhea, alveolar abscess; other acute infections—lues, rheumatic fever, measles, whooping cough, mumps, malaria, tuberculosis.
4. Iodism.
5. Neurasthenia.
6. History of respiratory system, including night sweats.
7. History of circulatory and digestive systems.
8. History of genito-urinary system, including venereal infections, number and character of pregnancies.
9. Habits of life—drink, character of work, etc.

C. Menstrual History—
Outset of menses, regularity, intervals between periods, duration of each period, blood lost (number of changes per diem), pain (when, where, severity, etc.), mental condition at menses. Increase or decrease in flow since onset of goitre symptoms.

D. Family History—
Incidence of Graves' disease in relatives; health of relatives.

II. *Hypothyroidism.*
Age of onset, rate of growth, objective changes in size of thyroid, changes in skin (swelling of eyelids, dryness, yellowness, flush in malar region, thickening (where, face?), scales, hair coarse, dry, and falling out).
Mental changes (loss of memory, indecision, listlessness, suspiciousness, hallucination), alterations of voice (slow, muffled), changes in gait, difficulty in walking, stiffness, headaches, neuralgias, lacrimation, deafness, tinnitus, anomalies of taste, diminution in sense of touch, bradycardia, anorexia, indigestion, absence of thirst, constipation, diarrhea, irregularity of menses, leucorrhea.
Localities lived in, previous operations on neck, alcoholism, tuberculosis, acute infections, as typhoid, influenza, pneumonia, cholera, syphilis, malnutrition, malaria, gout. Lues in parents, other instances of this disease, of goitre, or of exophthalmic goiter in the family.

III. *Thyroiditis.*
Duration of swelling, rate of growth of swelling, pain (radiating to ears, occipital region, teeth?), tenderness, fever, chill, malaise, dyspnea, hoarseness, dysphagia.
History of trauma, or of typhoid, smallpox, scarlet fever, measles, diphtheria, cholera, influenza, acute rheumatic fever, various infections of nose, pharynx, and tonsils, erysipelas, puerperal fever, malaria, pneumonia, alcoholism, phosphorus and iodine poisoning.

IV. *Lues.*
Time of onset in known case of lues (generally in secondary incubation stage, or in period of secondary rash), history of syphilis, absence of pain, or hardness in swelling.

V. *Tuberculosis.*
Situation and character of swelling—mode and rate of growth (rapid nodular growth—may be external or internal), exact inquiry into history of patient's respiratory system and family history, environment, character of work, etc.

VI. *Echinococcus.*
History of exposure, lesions elsewhere, urticaria, dyspnea, suppuration, and necrosis.

VII. *Malignant tumors (carcinoma, sarcoma).*
Onset (early symptoms resemble those of goitre or strumitis), time at which skin becomes fixed to tumor, dyspnea, dysphagia, hoarseness, exophthalmos, miosis, loss of pupil reaction, tachycardia, paralysis of arm, hemorrhages from larynx and trachea.

VIII. *Goiter (cystic and adenomatous).*
Onset, rate of growth, variations in rate of growth, symptoms of pressure on (*a*) trachea, (*b*) laryngeal nerves, dysphagia, palpitation ("goiter heart"), menstrual history in relation to goiter.
Localities lived in and how long in each place, history of congestion, either emotional or mechanical, trauma, infection.

IX. *General Hypertrophy.*
Similar to goiter, except for symmetrical growth.

X. *Dysfunction of other glands of internal secretion.*
A. Pituitary Body—
Headache, irritable temper, moroseness, pains in joints, disturbances of vision, loss of memory, slowness of mental processes numbness, and tingling of extremities, increased appetite and thirst, constipation, polyuria, dyspepsia, amenorrhea, impotence, increased growth, particularly of extrmities, gain in weight, changes in voice (deeper), speech slower, strength or weakness of all or of individual muscles, bursts of anger, insanity.

B. Adrenals—
Gradual falling off of general health, asthenia, anorexia, loss of weight, pain and tenderness in region of stomach, vomiting, and digestive disturbances, bronzed color of skin, tendency to fatigue from mental exertion, apathy, depression, insomnia, loss of memory.

C. Pancreas—
While pancreatic insufficiency supposedly directly affects the thyroid (and the adrenals as well) it would seem impossible to get a history of subjective symptoms in a case of pancreatic insufficiency.

D. Gonads—
(*a*) Male—impotence, disturbances of secondary sex characteristics, excessive skeletal growth.
(*b*) Female—disturbances of secondary sex characteristics and of menstruation.

E. Thymus—
No definite history of symptoms attributable to a persistent thymus or to a status thymicolymphaticus may be obtained. There may, however, be a history of increased prominence over the upper part of the sternum of "thymic asthma" or of goiter.

XI. *Symptoms which might show disease or conditions contraindicatory to operation.*
(*a*) Evidences of heart disease—dyspnea on exertion (see goiter), palpitation, edema, etc.
(*b*) Evidences of kidney disease—edema, etc.
(*c*) Evidences of (*α*) gastric crises, (*β*) acute delirium, (*γ*) diarrhea, (*δ*) ascites.
(*d*) Myxedema (see above).
(*e*) Status thymicolymphaticus — no definite symptoms available.

In the following form an effort has been made to bring these groupings together. Where mere mention of the symptom is made, it is taken for granted that the interrogator will ask first if there is a history of such symptom and, if there is, when the symptom first was noticed, its intensity, remissions, exact description, etc.

DIFFERENTIAL HISTORY FORM FOR ENLARGEMENTS OF THE THYROID GLAND.

A. *Chief Complaint* (in patient's own words).
B. *Present Illness* (including all events since first appearance of symptoms attributable to the thyroid).
(*a*) *Onset*—Symptom first noticed and when. Location and size of swelling when first noticed.
(*b*) *General Course*—Rate of growth, changes in position of lump, remissions, formation of nodes, fixation of skin to swelling, etc.
(*a*) *Subjective Symptoms*—
1. General: Gradual failing of general health, feeling of weakness, malaise, chill, fever, headaches.
2. Local pain (radiations) and tenderness in swelling, suppuration, necrosis.

3. Circulatory system; palpitation, tachycardia, arrhythymia, with relation to physical exertion and emotion, bradycardia, ascites.
4. Respiratory system; dyspnea on exertion, cough, hoarseness, aphonia, asthma.
5. Digestive system; variations in appetite, in thirst, dysphagia, indigestion, vomiting, constipation, diarrhea (in paroxysms?), abdominal pain or tenderness.
6. Nervous system and mental conditions: Irritability over trifling causes, excitability, restlessness, depression, apathy, apprehension, worry, exaltation, psychoses, globus, vertigo, insomnia, faintness, hysteria, loss of memory, indecision, hallucinations, moroseness, bursts of anger, readiness of fatigue after mental exertion.
6. Organs of special sense: Alterations of temperature, touch, or taste perception, disturbances of hearing (tinnitus, etc.), variation in sense of smell, of sight (transitory veil sensations before the eyes, etc.)
7. Muscular-locomotory system: Muscular weakness (general or individual muscles), pains in joints, numbness of extremities, paralyses, changes in gait, stiffness.
8. Genito-urinary system: polyuria, impotence, alterations in secondary sex characteristics, changes in menstruation since onset of disease, especially changes in the swelling during menstruation, leucorrhea.

(β) *Objective Symptoms*—
1. Changes in skin: Variations in surface temperature, in diaphoresis, dryness, presence of scales, color (pale, flushes, yellow pigmentation, bronzing local changes), edema, or swelling (circumscribed or general), thickening, allopecia, coarseness and brittleness of the hair, pruritis, urticaria.
2. Changes in appearance of eyes (protrusion, miosis, loss of pupillary reaction).
3. Changes in speech (rate and pitch).
4. Hemorrhages from nose, larynx, lungs, stomach, skin.
5. Tremor (interference with work).
6. Swellings elsewhere (neck or over sternum), liver.
7. Variations in weight and skeletal growth.
8. Fever as measured by thermometer.
9. Insanity.

C. *Past History.* (Events previous to onset of first symptom.)
1. Localities lived in and how long in each place.
2. History of shock, fright, worry, neurasthenia.
3. History of local trauma or congestion.
4. Previous operation on neck.
5. History of typhoid, smallpox, scarlet fever, measles, diphtheria, cholera, influenza, acute rheumatic fever, various infections of nose, sinuses, pharynx, teeth, and tonsils, erysipelas, puerperal fever, malaria, pneumonia, whooping-cough, mumps, tuberculosis, syphilis (at what stage of disease did enlargement appear?), malnutrition, gout.
6. History of alcoholism, iodism, or phosphorus poisoning.
7. Exact inquiry into respiratory history, including night sweats.
8. History of circulatory, digestive, and genito-urinary systems, including venereal infection, and number and character of pregnancies.
9. Habits of life and character of work.

D. *Menstrual History.*
Onset, regularity, intervals between, duration of each period, blood lost (number of changes), pain (when and where), mental condition at menses.

E. *Family History.*
Age of parents; if dead, age and cause of death. Incidence of enlargements of thyroid, tuberculosis, syphilis, chronic heart or kidney disease in the family, health of brothers and sisters.

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ACUTE DIABETES MELLITUS.

By EDWARD O. ELMER, M.D.,
HARTFORD, CONN.

THE following is a report of a case of acute diabetes mellitus, which to me is most unusual, and seems worthy of record:

S. K., aged 10 years; only child. The father, at 37, is physically well, but of unstable mental makeup, being thought by some to be demented. His father was demented and committed suicide a few years ago. The mother comes from a decidedly nervous family; is melancholic and always looking for trouble. A great aunt has had diabetes for years. The child has always been healthy with the exception of chickenpox and whooping-cough. She has always been very fat. She first complained on October 24, 1917, of being tired and of her legs aching; her appetite was poor and she was somewhat constipated. The following morning she said that she was still tired and did not go to school. I saw her that morning at 11 o'clock and found her dressed and about the house. Temp. 98°, pulse 120, respirations 30. No headache or cough; was chilly. She was given calomel, followed by a seidlitz powder; was also put on a light diet and advised to keep quiet. She had a sleepy night, only awakening to urinate, which was often. I saw her again at 8 o'clock the next morning, the 26th, and found her dyspneic and very somnolent; temp. 97°, pulse 135, and resp. 40. Tongue dry, sweetish odor to the breath. She said she was tired, but had no pain. Had voided seven pints of pale acid urine during the last 18 hours; sp. gr. 1020, containing about 16 grains of sugar to the ounce. She was put upon sodium bicarbonate, 1 dram in water every 4 hours, by the mouth, and a tablespoonful in 6 ounces warm water by the rectum, following a soap enema every 12 hours. Barley water, a thin oatmeal gruel, and buttermilk were fed her in small amounts. She continued getting sleepier during the day and evening and at midnight went into coma, dying the next morning (October 27) at 6 o'clock.

In searching about for a possible cause for this condition, I obtained this following bit of information: While this girl was returning from school on October 23, the day before she was taken ill, she, in company with several other children, was chased by an older boy, whose face was covered with a mask. This badly frightened her, so much so that she was some time in quieting down; and being very fat and the distance long, was thoroughly fagged upon her arrival home. Nothing else in the way of a contributing cause can be found.

805 Park Street.

Endocrine Organs of Dementia Precox.—Kojima finds that there is a tendency to thyroid hypofunction in the male as opposed to one of thyroid hyperfunction in the female precox case. In the parathyroid differences are also in evidence. In both sexes there are parallel differences in sexual glands—slight spermatogenesis and early involutions of the ovaries.—*Proceedings Royal Society of Medicine.*

Tympanismus Vagotonicus.—Ortner, appropos of a recently published case of this newly isolated syndrome recalls that 20 years ago he drew attention to a case of intermittent meteorism with bradycardia. It was found that the left vagus had been compressed in the mediastinum by a tuberculous gland. Patient was in advanced phthisis.—*Nederlandseh Tijdschrift voor Geneeskunde.*

Diagnosis of Smallpox.—According to Schreiber varioloid is but slightly typical and can easily be confounded with varicella. He would therefore practise inoculation of the rabbit's cornea in doubtful cases. But while a positive result speaks for itself a negative one does not exclude varioloid. In some cases we can do no better than isolate the varicella case.—*Correspondenz-Blatt für Schweizer Aerzte.*

Military Medicine.

THE STANDARD FOR EXEMPTION OF TUBERCULOUS RECRUITS FROM THE NATIONAL ARMY.*

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THE need of standardizing the diagnosis of tuberculosis for use in the examination of recruits for the National Army is evident; there is, however, tremendous difference of opinion among physicians and those possessing special knowledge on the subject, as to what constitutes clinical tuberculosis; it is, therefore, no easy task to devise a definite standard.

A man who is unwilling to serve his country would be glad and earnestly strive to exaggerate his symptoms, while, on the other hand, the man anxious to serve would endeavor to conceal evidence of his disease. The statement of the recruit should not carry too much weight, but instead I think it would be a good policy to require that the local Board of Health supply the history of reported cases to the recruiting officers. Even now our tuberculosis department is rendering aid to eradicate tuberculosis from the National Army by following up cases of the disease as soon as they are announced by the press as having been accepted for the army. Up to the present we have been instrumental in having 30 cases of tuberculosis recognized, and about one-half of these have been sent home as unfit for service in the army, even though at the time they were not afflicted with any manifest symptoms of the disease.

Dr. Barber, Medical Inspector U. S. Navy, advocates the rejecting of all men who have only a tendency toward tuberculosis, and he proves statistically that almost all the men in the Navy suffering from tuberculosis who are in the Government Sanatorium are cases of less than one year in the service, and that the recruiting officers could have kept these men out of the Navy.

Neither is a negative sputum reliable. By accepting men, who, although suspicious of tuberculosis, have a negative sputum, we are increasing the number of active cases in the Army and lessening the chances of recovery for the man. We could prevent all this by excluding any suspicious case, or if not entirely rejecting him keep him under observation for at least one month during which time an absolutely correct diagnosis could be made.

A valuable aid in the prompt detection of tuberculosis cases would be the search for physical signs, sputum examination, and *x*-ray diagnosis. To accept a man with any positive sign or tendency to tuberculosis for service in the Army is *not* a patriotic act and when this is done knowingly it could almost be considered traitorous, as it endangers the health of the Army as a whole. Such men are useless for furthering the common cause, and only add to its burdens.

*Read before the Joint Tuberculosis Conference, Jersey City, November 9, 1917.

When we consider the protracted nature of the disease, the expense of treatment, the claim for government pensions for such men, we can easily realize what a heavy liability the government assumes in accepting men who have a tuberculous tendency which the hardships incident and inseparable from Army life will inevitably develop into active cases of the disease. In normal civil life such individuals might attain an advanced age and even be in a position to serve their country in some of the less arduous pursuits.

The assertion so frequently made that "roughing it in the Army," living in the open air, *et cetera*, has benefited and cured tuberculosis does not hold true as far as Army life is concerned, and is not borne out by the facts collected during the present war, when we consider the enormous number of cases of tuberculosis that developed on the various battle fronts, notably in France. Tuberculosis, in the final analysis, with regard to the Army, only helps to swell the pension lists and shows nothing in the line of service performed to counterbalance the liability it imposes upon the government. If further arguments are needed one has but to note the character of the life on the battle fronts. The soldier has to live under rather unhygienic conditions, subject to overexertion, loss of sleep, inadequate food, besides the emotional stress and shock which are his daily experience. In fact, he must do all things that a tuberculous patient should not. Under such circumstances the incipient case or the one with healed lesions rapidly progress to an aggravated and active case.

Schroeder points out that nearly all cases of tuberculosis in the German army had at one time suffered from the disease, but that it had healed and the men were sound when accepted for the army. Life at the front, however, lighted up these cases anew, by means of the altered and unusual living conditions.

Maragliano advocates rejection from the Italian army of all cases whether active or latent. He points out particularly that foci of tubercle bacilli may, and do remain, circumscribed as long as the resistive forces of the organism are able to oppose to them an adequate defense, but remarks that no man can guarantee that a tuberculous recruit with latent infection will have sufficient resistive power to bear the depressing incidents of life in the army under actual fighting conditions.

The final conclusions to be drawn from this article and which I wish to strongly advocate may be summed up as follows:

1. The examination of the chests of all recruits should be made by competent men who are doing special work in that line, and are able to diagnose tuberculosis in the incipient stage.

2. Active cases should be *ipso facto* and unconditionally rejected for army service.

3. Certain cases might be accepted as "good risks," but that these should be under observation for a period of one month at least, during which time all diagnostic resources should be repeatedly applied.

4. When latent tuberculosis is positively demonstrated a rejection should also be made.

5. In a suspicious case, if after a thorough ex-

amination a positive diagnosis of tuberculosis cannot be demonstrated, the recruit should be employed in the lighter tasks of army work and never subjected to the conditions which prevail on the active battle fronts.

It would appear at this time that the Army can very well dispense with the service of the healed tuberculous soldier, or of the soldier in the incipient stage of the disease, for the reason that we have not yet exhausted our available supply of healthy material. We can, however, imagine a time in the period of the war where a call will have to be made upon every man below the age of fifty, good, bad, or indifferent. Should this unforeseen time ever come, then the necessity of using the tuberculous soldier will become evident. Even then it would be very advisable to use such obviously dangerous material in special tasks or units confined to specific and separate divisions.

362 Clinton Avenue.

Treatment of a Series of Recently Inflicted War Wounds with Flavine.—Hamilton Drummond and J. W. McNee offered a report to the Medical Research Committee on this series of treatments, and Anthony Bowlby prefaced it with the following facts: In the first place it appears that flavine does not sterilize recent wounds, and that various bacteria grow freely in wounds treated with it. Secondly, it appears to cause a very superficial necrosis, and the formation of a fibrous membrane, if applied in the strength of 1 in 1000. In spite of the bacteria there is a notable absence of inflammation and of septic infections, and in the cases observed no bad examples of gas gangrene were produced, although anaerobic organisms were present in many wounds in large numbers. Also, healing by granulation is very slow, and the growth of granulations is evidently checked by the presence of flavine. As far as the present series of operations goes, it does not bear out some of the claims made for flavine as a bactericidal agent or as to its harmlessness to the tissue cells. But it appears to be a useful application in the form of gauze soaked in the solution when used as a first dressing to large open wounds, and it seems to limit the power for harm of the pathogenic organisms and to prevent the inflammation of the tissues which is usually caused by bacterial invasion.

Drummond and McNee employed a strength of 1 in 1000 of flavine for the first dressing and a solution of 1 in 5000 for all subsequent applications. In some cases also, where the Carrel method of irrigation was being used, the strength of the solution was reduced to 1 in 10,000. In this test a series of 70 cases were under treatment, but as many of the men had simple injuries, the series comprises over 120 wounds. The vast majority of the wounds were caused by the fragments of shells or bombs, only about eight injuries from rifle or machine gun bullets being encountered while the test was in progress.

They divided the wounds into three classes: (1) Flesh wounds, including all injuries to soft parts without damage to bone; (2) compound fractures; (3) miscellaneous wounds of special parts—abdomen, chest, head, and joints. In the surgical measures adopted consideration was given to the type of injury met with. They consider that long incisions, with free excision of damaged muscle and fascia, must be regarded as a cardinal part of all operative treatment in recent wounds, no matter what subsequent methods are employed.

After this preliminary surgical treatment the wounds treated with flavine were dealt with in the following ways: Primary suture—this method was employed in 30 cases, all being wounds of the soft parts alone. In the majority of these, the damaged muscle removed at operation was examined bacteriologically and shown to be infected. Fragments of cloth, and dirt, were also commonly removed from the track of the wound. (2) Drainage by tube or gauze strip, followed by secondary suture—this was carried out in 10 cases. (3) The Carrel method of intermittent irrigation—The perforated tubes were irrigated with the flavine solution every four or six hours. This method was chiefly employed for compound fractures and deep or extensive muscle injuries. (4) Gauze packing in open wounds—This was found very useful in the treatment of many extensive wounds where the Carrel method was not readily applicable; for instance, in certain types of compound fracture and in amputation stumps where complete closure was impossible.

The gauze packing, soaked in flavine, could be left *in situ* for several days without changing the dressing.

From these tests with flavine Drummond and McNee draw the following conclusions: (1) Flavine appears to have many advantages as a *primary* treatment of recent war wounds. Among the advantages are: (*a*) The absence of all toxicity, even in large wounds. (*b*) The prevention of suppuration and of spreading sepsis, as brought out in our series of test cases. (*c*) The primary dressing need not be changed for two or three days, and is then easily and painlessly removed. This may be of great advantage during severe fighting where rapid evacuation of wounded from front to base is required without unnecessary dressing of the wounds. (*d*) The wounds are not inflamed or painful, and the surrounding skin is never irritated. (2) Emphasis must be laid on the fact that excision of damaged tissue and mechanical cleaning of the wound are necessary preliminaries to the use of flavine. (3) Flavine cannot be classed as a success in the treatment of the *later stages* of war wounds. The wounds tend to assume a stagnant condition, during which the processes of repair are almost in abeyance. After a few days, when the danger of gas gangrene and of spreading sepsis have to a great extent passed off, flavine should be stopped and another treatment adopted. (4) In the majority of cases war wounds are not rendered bacteriologically sterile even by the prolonged use of flavine. (5) Test-tube experiments carried out with organisms isolated from actual wounds bear out the strong antiseptic properties of flavine, and their enhancement in the presence of serum. Coliform bacilli, which are a common infection in the later stages of wounds, are much more resistant to the action

of the antiseptic in test-tube experiments than any of the other types of organism examined in this way.—*The Lancet*, October 20, 1917.

Report on Wound Treatment by Brilliant Green Paste.—Rendle Short, J. S. Arkle, and C. King comment on the difficulties presented in the treatment of wounds, both by the Carrel method and the "Bipp" treatment of Rutherford Morison. The Carrel technique, according to them, needs much attention, and when the patient is traveling this may not always be secured. The soaked dressings need daily changing. The tubes are liable to come out and it may need an anesthetic to replace them. While bipp is much less trouble they consider that it presents drawbacks of another sort. It is occasionally poisonous, either from the bismuth or the iodoform, or both. It may delay healing; when the stitches are taken out after secondary suture the wound may fly open. It leaves a residue in the tissues, opaque to the *x*-rays, which may give rise to trouble later.

They have therefore been employing for some months the paste introduced by Captain Hey, consisting of brilliant green, boric acid, French chalk, and liquid paraffin. They claim for it the following advantages: (1) It is non-poisonous. The symptoms of boric acid poisoning—persistent vomiting and a peculiar rash—should be watched for, but although in many cases they have used very large quantities of the paste they have seen no ill effect result from its use. (2) It is painless. (3) In the great majority of cases it almost completely sterilizes the wound in three days, so that secondary suture can be performed even in large wounds complicated by bony injury. Small, completely excised wounds can be primarily sutured. (4) The wound need only be dressed about once in four days. (5) No permanent residue is left to interfere with immediate healing.

Before applying the paste the wound must be thoroughly opened up and excised, and any foreign bodies removed. If this is not possible—for example, in a shocked patient with multiple wounds or with a long deep track exposing important structures—they prefer to use Carrel's method. The paste is only to be applied if it can be applied completely. The wound ought to be dry and not bleeding, but a certain amount of oozing can be checked by a gauze plug (preferably paraffin gauze, which is easier to remove). The paste should be rubbed in thoroughly. It soon washes off the skin or gloves.

By this method they have been able with fair consistency to obtain healing within a fortnight of cases of compound fracture even when complicated by joint injury, big buttock wounds and deep muscle wounds. They have excised an elbow-joint full of pus, and obtained primary healing in a fortnight.

The usual procedure is to stain the track of the missile, excise and paste it, and either leave it open or insert a few central sutures. On the third or fourth day a smear of the deepest part of the wound is taken. If *B. perfringens* is absent, as is almost invariably the case, and the organisms are not more than six to the field, they completely close the wound by secondary suture. Often the wound shows no organisms at all. They consider that it is easier to count the organisms with this method than when bipp has been used. A little redness and swelling on the fourth day can usually be remedied completely by hot fomentations. They found that Hey's method of staining the wound by injecting through a Carrel tube with a 1 in 200 watery solution of brilliant green was a very valuable aid to complete excision.

In ten cases the method failed of complete success. Of these, four were hopeless from the beginning. One of them was an attempt to save a leg in which it was afterward found that both tibial arteries were divided in addition to the presence of a big muscular wound and a smashed tibia and fibula. The excision was inadequate, owing to shock and consequent hurry, and it became necessary to amputate for gas gangrene. In another, in which death followed within forty-eight hours from gas gangrene, the bad condition of the patient did not permit of a prolonged search for the foreign body, while the appearance of the wound at the time of operation suggested early gas gangrene, which had already spread too far for complete excision. Fifty-four other cases in which brilliant green was used were successful, while there were ten in which for various reasons the results were either relatively or wholly unsuccessful.—*British Medical Journal*, October 20, 1917.

Large Military Hospital for Staten Island.—Surgeon General Gorgas has announced the selection of Fox Hills, Staten Island, N. Y., as the site for a military receiving hospital from which wounded American soldiers will be distributed to the reconstruction and rehabilitation hospitals which it is planned to establish in various parts of the United States. The Staten Island hospital will have a capacity of from 1500 to 2500 beds, and will be situated near enough to Quarantine Station to make possible the transfer of the wounded with the minimum of delay. At this institution the wounded soldiers will be given a thorough mental and physical examination by medical officers, and they will then be transferred to a general or special treatment hospital. So far as possible soldiers will be sent to general or special hospitals near their own homes. As the additional sites for rehabilitation hospitals are decided upon they will be announced by the Surgeon General.

Camp Funston Men Forbidden to Mingle with Civilians.—Owing to the existence of spinal meningitis and other infectious diseases among the troops at Camp Funston, orders have been issued forbidding the men and officers of the 89th Division to visit theaters, church sociables, or other public gatherings, in Junction City, Army City, Ogden, or Manhattan.

Pneumonia and Measles in Army Camps.—The report of the Surgeon General of the Army for the week ending November 23, shows that there were 157 deaths in the National Guard and National Army camps where are quartered 801,072 men. This is an increase of 61 deaths over the previous week. There were 116 deaths from pneumonia and 9 from cerebrospinal meningitis. In the National Guard camps there were 4080 new

cases of measles reported as against 901 in the National Army camps. At Camp Upton, Yaphank, L. I., there are no cases of measles, while at Camp Jackson, Columbia, S. C., there were 523 cases reported during the week of November 23. The greatest increase in measles was reported from Camp Bowie, Fort Worth, Texas, where there were 1038 new cases. At Camp Sevier, Greenville, S. C., 802 new cases were reported. No measles was reported from Camp Wadsworth, Spartansburg, S. C. In the National Guard of New York there has been no measles, but there are 350 cases of sickness. At Camp McClellan, Anniston, Ala., there are 19 cases of measles and 371 cases of sickness. At Camp Dix, Wrightstown, N. Y., measles do not exist, but there are 516 cases of sickness. At Camp Wheeler, Macon, Ga., 1402 cases of sickness were reported, of which 150 were pneumonia and 49 measles. Surgeon General Gorgas has recently made an investigation of this camp and his suggestion that only five men be permitted to occupy a tent instead of nine as at present will be carried out; this, it is believed, will improve health conditions. It has been rumored that a considerable number of cases of pneumonia from the camps in the vicinity of New York are being cared for in New York hospitals, Mount Sinai Hospital, the New York Polyclinic, St. Francis, St. Luke's, the Presbyterian, Metropolitan, and City hospitals, have expressed a willingness to care for a certain number of cases from the camps.

The War Service Committee of the American Hospital Association held a meeting in New York City on November 21. This is a national committee which has been instructed by the American Hospital Association to inform itself of all military facts and requirements in which hospitals may be concerned, to be ready to consult with military authorities thereto, and to assist wherever and whenever hospital service may be of value to the country. The committee has established headquarters in Washington. The chairman of this committee, Dr. S. S. Goldwater, has issued a statement which the committee has authorized him to present to the military authorities through the General Medical Board of the Council of National Defense. This statement regrets the apparent policy of the army to ignore existing hospital facilities in its preparation for the care of invalided men and expresses the opinion that it would be wiser to formulate a program based upon the principle that existing institutions, including hospitals and sanatoria, should be utilized wherever and whenever they are capable of rendering the required service. It considers the unnecessary duplication of hospital plant and organization at a time when the nation should husband its resources deplorable. The ideas of the War Service Committee are practically those of the British Ministry of Pensions, which states that it has no intention of setting up in various parts of the country institutions which would compete with established voluntary hospitals. Quite generally additional accommodations when required were provided by enlarging existing institutions. In order to facilitate cooperation between the army and civilian hospitals, the committee suggests the organization of an Auxiliary Medical Corps for Home Service. This corps should be composed of physicians and surgeons who are ineligible for active military duty, and should be made up in the first instance of men holding hospital appointments. The committee maintains that the efficiency of hospitals and the adequate preparation of recent graduates in medicine for clinical practice, not only among the civilian population but in the army, depends in large part upon the maintenance by civilian hospitals of an adequate system of clinical training. In the opinion of the committee it is inadvisable for hospitals having a graduated interne service of 18, 21, or 24 months' duration to abandon such service, in order to substitute an ungraded or improperly graded service of only 12 months' duration.

Base Hospital No. 30 Mobilized.—Base Hospital No. 30, organized in the University of California Medical Department, has been ordered to mobilize for training of enlisted personnel at Fort Mason, San Francisco, Cal. For this purpose it has been placed under command of Col. Elmer A. Dean. Most of the officers of the organization have already had military training and at the present time are in active service in various parts of the country. Those ordered for immediate mobilization with the unit are: Major Eugene S. Kilgore, Director and Chief of Medicine; Captains Jule B. Frankenheimer, Louis P. Howe, and Arthur L. Fisher, and Lieutenants Malcolm Goddard, Hiram E. Miller, and John M. Rehfisch. The remainder of the official personnel are to be assembled when the organization is ready for foreign service. These include: Drs. Elbridge J. Best, Ernest H. Falconer, Arthur C. Gibson, C. R. Giles, Charles M. Richards, Howard E. Ruggles, Hudson Smythe, Charles L. Tranter, Herbert S. Thomson, William W. Washburn, Alanson Weeks, Nathan P. Wood, J. Homer Woolsey, Harold W. Wright.

Army Surgeons for Roumania.—The Surgeon-General of the army, with the authority of the Secretary of War, has organized a body of 100 army surgeons for service in the hospitals of Roumania. This is the first detachment to be sent for service abroad other than with the French, British, or American forces. Col. Walter D. McCaw of the regular army will have charge of the unit, which will report to the American minister at Jassy, Roumania.

Red Cross Ships Christmas Gifts.—The American Red Cross has assembled 200,000 Christmas presents, making 200 tons of goods, for shipment to American troops abroad. The Red Cross announces that the full overseas allotment has been provided and that no soldier or sailor abroad will be left without a Red Cross remembrance. The Red Cross intends to erect a Christmas tree at each of the cantonments in this country and to provide other forms of Christmas entertainment at the camps.

Ambulance Section for Italy.—The American Red Cross has started a section of twenty-five cars loaded with medical supplies, clothing, and food for Italy. Additional ambulance drivers are to depart soon.

Supplies Reach Roumania.—The American Red Cross relief train arrived at Jassy, Roumania, on November 18; it included fifty-five carloads of hospital supplies and foodstuffs from America.

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THE NATURE AND CONTROL OF HEMORRHAGE.

ASIDE from infection, hemorrhage is probably the most common and most feared eventuality which the surgeon must anticipate and with which he must deal. The hemorrhage that is the result of wounded or unligated blood-vessels is easily disposed of along purely surgical lines. But the hemorrhage that is the result of oozing from very small and unligatible vessels in inaccessible parts of the body, as, for example, in nasal operations, is dependent for its stoppage upon the clotting qualities of the blood. This ability for a shortened clotting time is lost in such constitutional diseases as hemophilia, in jaundiced conditions, in adrenal disease, in unaccounted low coagulability of the blood, and in arteriosclerosis and high blood pressure. These conditions are nonsurgical, but unless they are taken into consideration by the surgeon even very slight operations may have a fatal outcome. When any of these constitutional conditions are diagnosed only the most urgent operations must be performed until, at least, the coagulation time of the blood can be definitely shortened. Moreover, even in the absence of these conditions some people have a tendency to bleed more profusely than others. In the same way some tissues bleed more than others. A clearer understanding of the clotting mechanism of the blood would undoubtedly place this subject on a more definite basis. According to Morawitz all tissues of the body, especially the blood platelets, contain a substance called thrombokinase, while normal blood contains as constant elements such substances as prothrombin, antithrombin, calcium salts, and fibrinogen. When any of the tissues or the formed elements of the blood are injured the thrombokinase combines with the calcium salts and with prothrombin to produce a new substance called thrombin which, together with fibrinogen forms the fibrin or clot, necessary in the prevention of continued hemorrhage. On the other hand, Bordet and LeLange maintain that thrombin is formed as a result of the reaction between cytozyme and serozyme in the presence of calcium salts. Cytozyme is found in the blood platelets, leucocytes, and tissue juices while serozyme is found in blood serum. Antithrombin is necessary to prevent the formation of clot in the blood stream, but acts also to prevent it on the outside except for the presence of the thrombin elements. At any rate the balance between the clotting and the anticlotting elements of the blood is very delicately maintained and any injury to the tissue releases a substance called thromboplastin which binds the antithrombin and permits the formation of fibrin by the elements so purposed. Other workers have advanced modified theories on this subject, but they all savor of the principle of antagonistic elements in the blood tending to keep a balance between clotting and nonclotting until the continuity of the tissues is broken.

It is maintained that antithrombin is elaborated in the liver, yet venous blood taken from the liver does not contain any more of it than venous blood taken from other places. When, however, there is stasis in other vessels the liver blood is the only blood that shows an increase in the antithrombin. The increase in the sugar content of the blood increases its coagulability. The injection of adrenalin into the blood circulation acts likewise, but in this case the action is indirect, due, in all likelihood, to the vasoconstriction induced and the discharge of internal secretion and other tissue juices into the blood (Weinstein, *The Laryngoscope*, March, 1917). More specifically, it is believed that adrenalin stimulates the liver to discharge some substance into the blood which acts to increase coagulability. In any event, the coagulation factors or elements may be localized to the abdominal contents, and their exclusion increases the clotting time. Hemorrhage after exclusion no longer acts to decrease the clotting time.

Nervous conditions play an important part in the coagulability of the blood. Stimulation of the afferent nerves, emotional excitement or pain, by their effect on the adrenals increase the coagulability of the blood. All these nervous conditions, especially pain, seem to act in the interest of the body in helping to reduce hemorrhage. Yet the use of anesthetics, such as ether and chloroform, hastens coagulation also by their effect on the adrenals. In the case of chloroform there is an additional action on the liver and the intestines in the release of thrombin elements into the blood. Antithrombin is inactivated by ether and chloroform, allowing free thrombin to clot fibrinogen in the presence of an oxidated plasma.

The theories and experiments in relation to the clotting time of the blood and the elements that tend to influence it have stimulated a desire to synthesize certain substances for the enhancement of the coagulability of the blood for use generally, but particularly in those cases having a disposition to uncontrollable bleeding after operation. Among the substances and drugs

recommended and devised are adrenalin, emetine, pituitrin, coagulin, thromboplastin, coagulose, normal horse serum, etc. Coagulin is an extract of blood platelets with the contained cytozyme. When combined with the serozyme of the animal blood it forms thrombin or fibrin element. Thromboplastin is prepared from the livers and brains of cattle which contain it. Coagulose is obtained by precipitating normal blood containing the necessary fibrin element. Normal horse serum has long been used to prevent and inhibit hemorrhage. In some individuals, however, there is an anaphylatic sensitiveness toward it. Most workers have obtained good results from one or other of these products and they should be used in every case where there are reasons to fear a low coagulability from constitutional or other causes, or where even a more rapid coagulability is required than the normal.

RADIUM AND CANCER.

THE value of radium in the treatment of cancer is probably increasing in the estimation of those who have had opportunities for testing it on a large scale and under the most favorable conditions. In order to derive the most satisfactory results from radium it is obvious that all the necessary details concerned in its application must be strictly adhered to. Of course, these details had first to be learned, and a good deal of the prejudice which has existed against the employment of radium has been due to faulty methods of application.

However, experience has taught to some extent the lesson, and in the future it is not so likely to be the technique which is at fault. With regard to the beneficial effects of radium therapy in cancer, information of a valuable character is given in a report written by Dr. Henry H. Janeway of the results of radium therapy at the Memorial Hospital, New York.* During the past two years 424 cases of malignant tumors have been treated with radium at the Memorial Hospital, so that the experience has been wide. It is interesting to note that it is only for a relatively short time that the hospital has had in its possession large quantities of radium, and therefore familiarity with the effects of large quantities, especially of large quantities heavily filtered, at varying distances from the surface of the skin, has been only recently acquired.

Janeway postulates the whole conception of radioactive therapy as based upon the belief that the tissues of malignant tumors are more susceptible to the influence of the radiations of radium than the normal tissues, and the aim of treatment is to take the greatest advantage of this difference by such a distribution of the source of radiation and by such a dosage that complete destruction of the malignant tissue is accomplished with a negligible damage to the normal tissues. In attempting to bring about this object close attention must be paid to the details of the procedure, and the fact must always be borne in mind that there is a considerable difference between the susceptibility of malignant and normal tissues to the action of radium, and the endeavor should be made to estimate as nearly as is possible how great this difference is. Janeway points out that the great susceptibility of rapidly dividing tumor cells indicates that the destructive effect of radium upon tumor tissue depends in part upon its direct action upon the nucleas of the cell. He is of the opinion that the cells of the majority of malignant growths, certainly tumors of the breast and rectum, are approximately four times more susceptible to the destructive action of the rays of radium than the normal tissue. It must be emphasized, however, that to obtain the best results, even in the case of superficial tumors, it is necessary, because of the rapid decrease of intensity of radiation with increasing distances from any applicator, to taks advantage of every technical procedure which will favor the uniform distribution of the radiation throughout the affected tissue. Uniform distribution of radiation is essential, for the reason that, owing to the selective action of radium on the cancer cells, it will be possible to furnish the cancer cells with a maximum fatal dose without at the same time producing an injury to the normal tissue. It is a matter of the utmost importance to avoid causing injury by radiation to the normal tissue, because such injury takes a long time to heal and is also accompanied by a proliferation of the connective tissue in the region exposed. Severe radium inflammations are objectionable, not merely on account of their chronic character but also because they materially diminish the probability of a cure. Consequently, as said before, it is of the first importance to insure a uniform distribution of the radiation. There is an optimum curative dose of radiations for cancer, and Janeway lays stress upon the fact that only small deviations from this optimum dose, particularly at the first treatment, will make all the difference between success and failure.

Janeway thus tabulates the methods best calculated to produce uniform distribution of radiation: (1) By numerous minute, unfiltered, or lightly filtered emanation tubes, 0.1 to 0.5 mm. German silver or 0.25 mm. aluminum. Such tubes are best supported in moulds made of dental composition, and their use is indicated in the case of all superficial lesions or the superficial portions of more advanced growths. (2) Central applications of one or more tubes, highly filtered, or relatively unfiltered except by the tumor tissue, and depending upon the limited character of the growth and the structure of the organ for the completeness of the radiation. (3) Deep radiation by the use of strongly filtered emanation tubes, arranged side by side, so as to form flat surfaces of emanation placed in direct contact with the tumor. (4) Distant, highly filtered emanation surfaces, placed either over the tumor so as

*Radium Therapy in Cancer at the Memorial Hospital, New York, by Dr. Henry H. Janeway, M.D. Published by Paul B. Hoeber, 1917.

to surround it from one side, or, better still, whenever possible, in a manner to surround the part of the body bearing the growth. The method is highly efficient, and provides fairly uniform radiation of all the deep tissues.

Up to the present time, radium has not been given the opportunity to demonstrate its value under the most favorable conditions. It has been perhaps too often employed as a last resort. In many instances it has had beneficial effects on advanced cancer, and, as Janeway says, such being the case, it is reasonable to believe that it will have the same complete action on early cancer without some of the disadtages, such as the effect on the nerves, the fibrosis, the dermatitis of the skin, which have not always been avoided with the use of large amounts of radium.

MILK INTOXICATION.

THE term "intoxication from milk" is used more or less vaguely. In connection with young nurslings we perhaps think first of local phenomena induced by some ingredient in the milk, and consisting of vomiting and diarrhea. The irritating substance, even if it causes violent symptoms, is not, however, technically a poison unless it enters the blood and attacks the viscera, especially the kidneys, during elimination. Marfan, in an article in *Le Nourisson*, abstracted in the *Journal de médecine et de chirurgie pratiques* for October 25, is opposed to the use of the term poison unless such can be shown to exist by definite tests. Nurslings vomit at times after the mother or nurse has eaten seafood or vegetables of the cabbage type, but no toxic substance can be recovered from the milk. Alcohol is hardly eliminated by the mammary gland, yet the nursling of an alcoholic mother may show marked nervous phenomena. When a mother takes a purgative her milk is diminished in quantity, although at times the child may seem to have absorbed some of the purgative. Certain substances, like arsenic, mercury, and colchicum, are known to find their way into the milk, and these, if any, should be able to poison the nursling. Marfan saw an apparent case of mercurialism in the nursling of a woman who was using intrauterine injections of sublimate, yet the presence of the drug does not appear to have been shown in the milk or in the nursling's urine. In menstruating nurses and recently vaccinated nurses the milk may disagree with the child, and this is true of feverish angina. Toxins may circulate in the blood in such cases and enter the milk, but of this we have no real evidence. Absorption must be minimal and effects transitory.

In artificial feeding the possibilities of actual poisoning are far greater. Chlorate of potassium has by mistake been added to milk for sugar, and hemolysis has followed, with intestinal hemorrhages. Milk preservatives belong in this category. Cows at times eat medicinal plants (colchicum), and various substances used as fodder, especially waste products from breweries and distilleries, lead to the production of a milk upon which the nursling, for whatever reason, cannot thrive. It is, however, only occasionally that these cattle foods seem unwholesome, and we are still in the dark as to the existence of definite toxic principles. When, as sometimes happens, the nursling shows an extraordinary intolerance to milk which is up to standard, we can only imagine an anaphylaxis, which involves the action of a toxic principle.

NON-SPECIFIC CHARACTER OF MERCURIAL STOMATITIS.

THE fact that mercury produces salivation and "touches" the gums causes us to take it for granted that the associated stomatitis is specific, although it is well known that the latter can be minimized by mouth hygiene. Favre, in an article abstracted in the *Journal de médecine et de chirurgie pratiques* for October 10, asserts that mercurial stomatitis is not a clinical entity, for the same symptoms can be produced by spirilla, and that the mere supervention of a stomatitis after ingestion of mercury is no proof of its specific character. In fact the mineral does no more than determine an irritable congestion of the mucosa. Buccal parasites do the rest and are equally in evidence in other kinds of sore mouth. The mercurial affinity for the mouth is of course due to its elimination by the salivary glands. It is possible to prevent the stomatitis by constitutional or local treatment, by administering arsenic with the mercury, and by the local use of silver nitrate solution, 1 to 100, applied after thoroughly cleansing the mouth by means largely mechanical. This treatment may be begun in the midst of severe stomatitis. The weak solution of silver is followed by one much stronger, say 1 to 15 or 1 to 20. This treatment is successful even when the patient continues his mercury.

THE PRESENCE OF SPIROCHÆTA ICTEROHÆMORRHAGICA IN BRAZILIAN RATS.

AN epidemic icterus is known to exist in parts of Brazil. Dr. MacDowell of Belém, in the State of Para, was responsible for the appearance of a graduation thesis upon this subject by Bentes. The attention of the Oswaldo Cruz Institute was called to this subject in connection with an assumed parasite, and Aragão began a study of the rats in Rio from this viewpoint while a Belém rat was sent to the institute by Bentes. Aragão makes a very brief preliminary report on his finds in the *Brazil-Medico* for September 29. The kidneys of the suspected rats were minced and the resulting mash was diluted with saline infusion and injected into the peritoneal cavity of guinea pigs. Within 10 days animals injected with this material died with total icterus and hemorrhagic foci in the lungs and stomach. Emulsions of guinea pigs' liver conveyed the disease in like manner to others. A spirochete was now found in all the organs of the second inoculated group, and in special numbers in the liver, which agreed in all its characteristics with the *Spirochæta icterohæmorrhagica*. The author awards high praise to the clinical intuition of MacDowell in making a diagnosis of the disease where its presence was not even suspected.

News of the Week.

Smallpox in Pennsylvania.—Dr. Samuel G. Dixon, State Health Commissioner, has issued a statement telling how during the last few weeks 38 cases of smallpox have appeared in widely separated portions of the State, all of which could be traced to three carriers of the disease. There is an epidemic of smallpox in Clearfield County, Pa., which is directly due to the fact that a case of smallpox was secreted and the knowledge of it was kept from the health authorities.

State Troopers Maintain Quarantine Against Smallpox.—An outbreak of smallpox in the Cattaraugus Indian Reservation in New York State recently made necessary the quarantining of the entire reservation. As the reservation is seven and one-half miles in length by three in width, it was found that it would cost $100 a day to guard this territory satisfactorily. In order to avoid this expenditure the State Department of Health requested that a body of State Troopers be detailed to guard the reservation. The reservation was effectively surrounded by mounted troopers, and quarantine satisfactorily maintained.

American Child Needs Physical Training.—Dr. Isaac W. Brewer, M. R. C., U. S. A., in the November *Bulletin* of the New York State Department of Health points out that the physical examinations made at the recruiting stations of the army show the need of rational physical training for American children. He states that of 278,537 applicants for enlistment during the period from 1914 to 1917 205,281, or 73.7 per cent., were rejected at the recruiting office because of physical defects that were apparent to a man who had no medical training. At the recruiting stations, where the men were subjected to a rigid physical examination by a medical officer, an additional 3.6 per cent. were rejected, making a total of 77.3 per cent. rejected. Of 4,027 men from New York State examined at the recruiting depots, 17.6 per cent. were rejected. During April, May, and June, 1917, 1,833 applicants from New England and part of New York State were examined by several medical officers, and 7.6 per cent. were rejected. Not less than 56 per cent. of the men were rejected because of diseases or deformities that were preventable or could have been removed by surgical operation.

Mortality Statistics for 1916.—The Bureau of Census, Department of Commerce, Washington, D. C., has just made a preliminary announcement with reference to the mortality statistics of 1916. These statistics cover the registration area of the United States, which contains about 70 per cent. of the population. During the year there were 1,001,921 deaths, nearly one-third of which were due to the three causes—heart disease, tuberculosis, and pneumonia—and nearly another third were charged to the following nine causes: Bright's disease and nephritis, cancer, apoplexy, diarrhea and enteritis, influenza, arterial diseases, diabetes, diphtheria, and typhoid fever. The number of deaths per 100,000 population of the more common diseases were as follows: Heart disease (organic diseases of the heart and endocarditis), 159.4, as against 123.1 for 1900; tuberculosis, 141.6, as against 200.7 in 1904; pneumonia, 137.3, as against 180.5 in 1900; Bright's disease and acute nephritis, 105.2, as against 89 per 100,000 in 1900; cancer and other malignant tumors, 81.8, as against 63 in 1900; apoplexy, 81.3, a gradually increasing rate; diarrhea and enteritis, 79.3, as against 133.2 in 1900; influenza, 26.4, which is higher than any year since and including 1900, with the exception of 1901, when it stood at 32.2; arterial diseases, 23.9, as against 6.1 in 1900; diabetes, 17, as against 9.7 in 1900; diphtheria and croup, 14.5, as against 43.3 in 1900, a decline of 67 per cent., which is greater than that shown by any other important cause of death; typhoid fever, 13.3 in 1916, as against 35.9 in 1900. Measles, whooping cough, and scarlet fever together caused 24.6 deaths per 100,000 population in 1916. In 1913, measles caused more deaths than either of the other two diseases, and in 1914 and 1915 whooping cough had first place. The rate for scarlet fever for 1916 was the lowest on record, 3.3. Acute poliomyelitis caused 10 deaths per 100,000 population. The rate from this disease declined from 2.7 per 100,000 in 1910 to 1 per 100,000 in 1915. The rate for 1916 was ten times as great as for the preceding year. Deaths resulting from accidents in 1916 numbered 60,071, corresponding to a rate of 83.9 per 100,000. This rate is considerably in excess of that of 1915, which was 76.3. The most marked increase was in deaths due to railroad and automobile accidents and for those resulting from the effects of heat. The death rates from these causes have advanced continuously since 1906. There were 2.3 deaths per 100,000 population caused by machinery accidents and 3 per 100,000 caused by mine accidents. Deaths from these causes have shown a material decline since 1910. The death rate from heat was 2.9 per 100,000, the highest rate shown from this cause in the last fifteen years. The suicide rate was 14.2 for 1916, the lowest for the past ten years. The suicidal use of firearms shows a decline as compared with 1914 and 1915, but an increase as compared with the period just previous to those years. Despite the decline in the number of deaths from tuberculosis, this disease causes more deaths annually than any other malady except heart disease, and about 37 per cent. more than all external causes, accidents, homicides, suicides combined.

Two Committees at Work for New Drug Laws.—The Whitney Legislative Committee met on November 28 and decided to make a thorough investigation of the drug evil as it exists in this city. A series of hearings has been arranged for at which testimony will be taken regarding the various phases of the drug traffic. A special effort will be made to have drug victims themselves appear before the committee and tell how they get their supplies. The aim of the Whitney committee, according to Senator Whitney, is to put the law in such shape as to prevent future addiction and to cure as many of the present addicts as possible. At the same time that the above committee was in session the New York City Committee on Drug Evils met in the Criminal Court Building. The members of this committee agreed that what was most needed was Federal control of a definite and comprehensive sort. It was shown that the present laws had checked the sale of drugs in the underworld, but that an illegitimate traffic had developed among un-

scrupulous physicians, and had even penetrated some of the army camps. A bill was submitted for consideration which provides that the Government shall restrict the sale and manufacture of narcotics through the imposition of a tax which would tend to make the distribution of drugs for any but legitimate purposes prohibitive. This bill will be submitted to Government officials at Washington.

New York City Example in Food Saving.—The Food Administration has issued a statement showing the immense saving of meat and wheat through the observance of meatless and wheatless days and other conservative measures adopted by the hotels and restaurants of the city. The figures show that the hotels and restaurants of the city are doing more than the homes of the nation to save food for the European nations. The actual figures show that on November 13 the saving in meats amounted to 193,545 pounds, or 96.75 tons. The saving of wheat flour on November 14 was 101,295 pounds, or 517 barrels. By the use of whole or partial substitutes for wheat flour, the saving in wheat flour for the week of November 12 was increased to 121,554 pounds, or 620 barrels. If the hotels and restaurants of the whole country were saving as are those of New York, John McE. Bowman, chief of the hotels division of the Food Administration, believes this industry alone will save sufficient to furnish several shiploads of meats and wheat each week to send to our armies and allies.

Licenses to Make Salvarsan.—The Federal Trade Commission has licensed three firms to manufacture and sell salvarsan, patent rights of which have been held by German subjects. The orders for licenses are subject to acceptance and agreement by the licensees to the stipulations made by the commission. Hereafter this drug will be manufactured and sold under the name of "Arsphenamine." The Public Health Service has prepared rules and standards and will supervise its manufacture. The *Official Bulletin* announces that the three firms which will be permitted to manufacture and sell arsphenamine are: Dermatological Research Laboratories of Philadelphia, Takamine Laboratory, Inc., of New York, and Farbwerke Hoechst Co. (Herman A. Metz Laboratory) of New York. The original patent was issued to Paul Ehrlich and Alfred Bertheim, German subjects, and assigned to Farbwerke Vormals Meister, Lucius and Bruning, of Hoechst on the Main, Germany. Before the war began the patented drug was sold at $4 per dose, which is approximately $3,500 per pound. While the price of the product is not fixed at this time by the commission, the right to fix prices is retained, and $1 per dose to the Army and Navy, $1.25 per dose for hospitals, and $1.50 per dose for physicians, are the prices at which some, at least, of the licensees have stated that they intend to offer the drug.

Medical Colleges Form Merger.—Bennett Medical College and the Chicago College of Medicine and Surgery have united to form the medical department of Loyola University of Chicago. The purchase of the buildings and equipment of the Chicago College was recently made by Loyola University officials. Dr. Lawrence Ryan has been appointed dean of the new faculty of the school; Dr. Alfred de Roulet is junior dean, and Dr. G. E. Wyneken is secretary.

Hospital Destroyed by Fire.—The Hotel Dieu Hospital at St. Hyacinthe, Quebec, was destroyed by fire on November 28. All of the inmates, about 1000 in number, were removed to safety. The institution consisted of three stone buildings erected at a cost of $600,000.

National Board of Medical Examiners.—The next examination of the National Board of Medical Examiners will be held at Bellevue Hospital, New York, January 9 to 17, 1918. The board points out that its certificate confers many advantages; the holder is given a commission in either the medical corps of the Army or Navy without further medical examination. Twelve States now recognize the certificate of the board for licensure, and as many more will do so as soon as their examining boards have received authority from the legislatures. Medical officers in training camps near New York who contemplate taking the examination should apply for information and also for leave of absence to cover the dates of the examination. Further information may be obtained by writing to the secretary, Dr. J. S. Rodman, 310 Real Estate Trust Building, corner Broad and Chestnut Streets, Philadelphia.

Harvey Society Lecture.—The fourth of the present series of lectures will be delivered at the New York Academy of Medicine on the evening of December 8, at 8.30 o'clock, by Prof. A. S. Warthin of the University of Michigan. His subject is "The New Pathology of Syphilis."

The Medical Society of the County of New York at its one hundred and twelfth annual meeting, held on November 25, elected the following officers: *President*, Dr. Howard C. Taylor; *First Vice-President*, Dr. Charles H. Peck; *Second Vice-President*, Dr. Samuel A. Brown; *Secretary*, Dr. Daniel S. Dougherty; *Assistant Secretary*, Dr. J. Milton Mabbott; *Treasurer*, Dr. James Pederson.

Dr. William Seaman Bainbridge of New York has had the degree of LL.D. conferred upon him by the trustees of Lincoln Memorial University.

Court Action in Alleged Medical Negligence.—The charge of manslaughter against Dr. Paul A. Barrett of Forest Hills, L. I., has been dismissed by the courts. In this case it was charged that the physician had been negligent in the treatment of a two-year-old child in that he had given an overdose of codein. The County Court of the Borough of Queens dismissed the case, stating that as there had been no autopsy before the body was cremated no other course was open to the court.

Cost of Health Supervision in Industry.—A recent publication issued by the Conference Board of Physicians on Industrial Practice shows the cost of health supervision in industry. The compilation is based on data for 1916 as reported by 99 industrial plants of many varieties located in fifteen States. The total average number of employees was nearly 500,000. It is shown that the average annual cost of medical and surgical supervision per employee was $2.21.

The Southern Medical Association, which held its eleventh annual meeting at Memphis, Tenn., on November 15 and 16, elected the following officers: *President*, Dr. Lewellys F. Barker of Baltimore, Md.; *First Vice-President*, Dr. William H. Deadrick of Hot Springs; *Second Vice-President*, Dr. T. C.

Halloway of Hazard, Ky.; *Secretary-Treasurer*, Dr. Seale Harris of Birmingham, Ala., having been granted leave of absence during his term of service in the Army, Dr. M. G. Dabney of Birmingham, Ala., was appointed acting secretary and editor of the *Southern Medical Journal*.

The Fourth District Medical Society of Texas, which met in Brownwood, Tex., on November 6 and 7, elected the following officers: *President*, Dr. J. E. Dilley of Brownwood; *Secretary-Treasurer*, Dr. J. W. Blasdell of Ballinger.

The Chattanooga County Medical Society, organized on November 11 and elected the following officers: *President*, Dr. B. F. Shamblin of Lyerly; *Vice-President*, Dr. W. D. Medlin of Summerville; *Secretary and Treasurer*, Dr. H. D. Brown of Lyerly.

Obituary Notes.—Dr. ALOYSIUS KESSELER, retired, a graduate of New York University Medical College in 1876, died at his home in New York City on November 30, at the age of 74 years.

Dr. THOMAS F. MOSES, a graduate of Jefferson Medical College, Philadelphia, in 1861, died at his home in Waltham, Mass., on November 21, aged 81 years.

Dr. FRANK MORTIMER WINCHESTER, a graduate of Jefferson Medical College, Philadelphia, Pa., in 1880, died at his home in Charlotte, N. C., November 11, at the age of 60 years.

Dr. HENRY RODEMICH of St. Louis, Mo., a graduate of the Marion Sims College, St. Louis, Mo., died of apoplexy, on November 10, aged 53 years.

Dr. M. L. WITHER, a retired physician of Bristol, Tenn., died in a hospital near Richmond, Va., on November 12, aged 76 years.

Dr. ABRAM PHILIP FETHEROLD died at his home in Allentown, Pa., on November 20, aged 74 years. He was a graduate of Bellevue Hospital Medical College, in 1865.

Dr. WILLIAM E. HENKEL, a graduate of the Louisville School of Medicine, in 1885, died at his home in Hammond, La., on November 8, aged 56 years.

Dr. PAUL H. MORRISON of Rushville, Mo., a graduate of the Central Medical College of St. Joseph, Mo., died in a hospital in Atchison, Kan., on November 2, aged 37 years.

Dr. THOMAS LUBBOCK KENNEDY died at his home in Galveston, Tex., after a brief illness, on November 9, aged 47 years. He was a graduate of the University of Texas Medical Department, in 1895, and was chief surgeon of the Galveston, Houston and Henderson Railway Company.

Dr. ALONZO G. TRAFTON, a graduate of the Medical School of Maine, in 1877, died after a brief illness at his home in South Boston, on October 29.

Dr. SIGMUND DEUTSCH died at his home in New York City on November 30, aged 41 years. He was a graduate of the College of Physicians and Surgeons of Columbia University in 1902, attending physician to the German Hospital Dispensary and Vanderbilt Clinic, and a member of the Army Medical Reserve Corps, expecting to be called to the service in the near future.

Dr. NATHANIEL BABCOCK DARLING, a graduate of the College of Physicians and Surgeons, Columbia University, in 1873, for forty-four years a practitioner of medicine, died at his home in Brooklyn, N. Y., November 29, aged 83 years.

Correspondence.

OUR LETTER FROM PARIS.

(From Our Regular Correspondent.)

NEW UNIVERSITY HEADQUARTERS—EXPANSION OF THE AMERICAN RED CROSS.

PARIS, October 30, 1917.

THE American University Union in Europe has secured as its Paris headquarters the Royal Palace Hotel, 8 Rue de Richelieu and Place du Théatre-Français. Its exclusive occupancy of the hotel began October 20. The central location and excellent accommodations of the University Union will make it an attractive center for all American college men and their friends in Paris. It will afford the customary advantages of an American university club, including bedrooms and numerous bathrooms, an excellent restaurant where meals will be served separately or "en pension," and lounging and reading rooms plentifully supplied with American newspapers, magazines, and the college registration, which will be of special service to men desiring information as to Americans in military or war relief service in France. A unique feature of the Union will be the special bureaux within it already established by a number of American universities, including Harvard, the Massachusetts Institute of Technology, Michigan, Princeton, and Yale, in charge of official representatives. The interests of other colleges will be similarly served by the general staff of the Union.

Some thirty universities and colleges have already joined the American University Union, thus entitling all their members, without individual initiation fees or dues, to its privileges. The Paris headquarters, however, will be open to all American college men, whether graduates or not, and to guests regularly introduced by them. Men from colleges not belonging to the Union and all introduced guests will be given the advantage of the fixed tariff accorded to its members, but will be charged a nominal Union fee in addition if they have rooms at the Union. Thus, in every way, the American University Union will, to the extent of its capacity, serve the general interests of a very considerable number of Americans now in service abroad.

The American Red Cross has come to France under circumstances which have no parallel in history. The war which has gone on for three years has drawn into it the entire life of the belligerent nations. Every resource, every unit of strength, every person in France, is, as a matter of fact, engaged in the war, and all of them are suffering from the war. The American Red Cross, therefore, not only aims to help the sick and wounded soldiers, but it has established a Department of Civil Affairs, as in the United States.

This Department of Civil Affairs has asked the question: What are the present actual immediate needs, in view of the three years of war? The Red Cross is by no means entering a virgin field, for France has done wonders through governmental agencies and through private committees. What are the remaining immediate needs? Wherever and whenever that question is asked one hears of

the problem of refugees, "rapatriés," devastated regions, "mutilés," tuberculosis, and children.

The "rapatriés" are arriving at Evian 500 to 1,000 per day, after three years of hardships under alien rule. There exists the splendid organization worked out by the French government and the Citizens' Committee of Lyons for their reception, but inevitably, here also, no agencies could wholly meet such an unprecedented task. The need first impressed upon the attention is that of more ambulances and automobiles to help to get the sick and aged from the railway station to the central clearing house and to the hotels and hospitals in which they find a temporary resting place. The American Red Cross sent eight automobiles and ambulances, with a full corps of drivers, who have been working daily from 7 in the morning until midnight with a good will. Three or four more are to be sent. Inevitably in war time physicians for civilians are scarce throughout France. The American Red Cross, therefore, aims at aiding in the medical care of children at Evian. It has leased one of the large hotels at Evian, which it hopes to open in a very short time as a reception hospital for sick "rapatrié" children. It also intends to establish a children's hospital near Lyons for such children needing longer care.

In the devastated regions there are immediate needs, and there are future needs. The immediate needs are shelter, clothing, furniture, and, in some cases, food. To help in some slight degree toward meeting these immediate needs they have certain district delegates, who keep in touch with the local authorities and organizations, no matter whether they are French, English, or American. In a small way they are beginning the provisional repair of structures, in which certain of the refugees that have returned can find shelter until such time as more permanent reconstruction can be provided for.

Besides these emergency war needs there are two others which are, perhaps, more significant for the future welfare of the French people. In all countries tuberculosis is one of the greatest enemies to human welfare. The Department of Civil Affairs of the American Red Cross, working with the tuberculosis commission of the Rockefeller Foundation and in the closest cooperation with public authorities and private organizations dealing with tuberculosis, are converting a chateau at Ypres into a sanatorium, this particular enterprise having been taken over together with the funds from the Edith Wharton committee. They are providing additional equipment, food, and facilities for the comfort and recreation of those in the tuberculosis hospitals erected on the grounds of general hospitals in the city of Paris. They are hoping to do work of the same kind for the patients in the tuberculosis hospitals outside Paris.

Lastly, and perhaps most important of all, they have been permitted to take some little part in the great work of conserving the childhood of France. M. Mirman, prefect of the Department of Meurthe-et-Moselle, has given them the opportunity to help in the operations of his children's asylum at Toul for young children driven from the regions in the rear of the lines by gas attacks. One of their physicians, a specialist in children's diseases, will start in a day or two for Nesle with a unique equipment for taking medical care to the children of that devastated region. They are arranging to establish child welfare dispensaries in connection with the tuberculosis dispensaries wherever those may be organized, and they hope to strengthen the already admirable work carried on in France for the reduction of infant mortality.

I would, however, emphasize the fact that the American Red Cross is a late comer in these fields, that the most it can do will be only a very small contribution when compared with the tremendous work which has been done and will continue to be done by public authorities and private organizations.

Progress of Medical Science.

Boston Medical and Surgical Journal.

November 22, 1917.

1. Wounds of the Knee-Joint. Berkeley Moynihan.
2. The Founding of the Berkshire District Medical Society, with Notes on the First Period of the Existence of the Massachusetts Medical Society. Walter L. Burrage.
3. Progress in Gynecology. Stephen Rushmore.

1. Wounds of the Knee-Joint.—Berkeley Moynihan states that there is probably no department of surgery in which greater changes have been wrought since the early days of the war than in that concerned with the treatment of wounds of the knee-joint. When he was first in France in November, 1914, the majority of the cases of wounds of this joint exhibited, by the time that a base hospital was reached, a grave suppurative arthritis; very often the patient was extremely ill, with a high temperature and all the evidences of a severe constitutional infection; and in a large number of cases only the most drastic procedures offered any hope that the limb might at last be saved. Too often, perhaps, they failed to remember that a man had two legs, and only one life, and conservative measures were pushed to excess. In the work of the French army, as he saw it, amputation was in such circumstances often advocated and practised forthwith; and there can be no doubt, that though some limbs were sacrificed which continued care might have saved, many lives were rescued that would otherwise have been jeopardized or lost. Gradually as surgical knowledge increased, and transport facilities improved, cases were obtained earlier and a more direct attack was made upon the wounds with improvement in results. He classifies the injuries as follows: Cases of clean perforating wound of the knee-joint by rifle bullet. Cases of penetrating or perforating wounds of the joint with a larger aperture of entry, or of exit, or of both, when the projectile is retained in the joint. Cases of perforating or penetrating wounds of the joint with intra-articular fracture. Cases of injury to the knee-joint, with extensive fracture of the articular ends. He offers the following conclusions in the handling of these cases: (1) In all cases of wounds of the knee-joint, the limb should be fixed immovably upon a splint at the earliest possible moment, and until circumstances and surroundings permit of a complete operation. (2) At the casualty clearing station, or other operating center, an *x*-ray examination is made in all cases. The whole limb is then prepared for operation. (3) The following are the essential features in all operations: excision of the wounds and of the track of the projectile after preliminary sterilization by the cautery or otherwise; a free exposure of the joint either by enlarging existing incisions or by long internal or external incisions or by the formation of a flap by division of the patellar ligament. (4) All foreign bodies must be removed from the joint. Even the smallest piece of clothing or of metal may be the nidus of a continuing infection. (5) The wounds are closed in layers by catgut sutures. Drainage is secured by leaving a gap in the line of suture of the synovial membrane, or by leaving a tube close "down to but not into" the joint. (6) Drainage

tubes are never placed within the joint cavity. They do not drain the joint, they are harmful in their effects upon the delicate synovial membrane, and they are often a channel by means of which infection is conducted to the joint. (7) In cases of severe infection of the joint by staphylococcus, or especially by the streptococcus, the wounds must be reopened, the synovial membrane stitched to the skin, free drainage of the joint secured, and the Carrel-Dakin or other method of progressive sterilization of the wound adopted. In more severe cases, with an infection rapidly gaining ground, excision of the joint may be necessary. (8) In cases of severe comminution of the articular ends with much loss of substance (the whole of one condyle, for example), a resection of the joint is performed forthwith. (9) In severe and extensive wounds with heavy infection, the method of resection with wide, temporary separation of the ends of the bones (Fullerton) should be practised. (10) In cases of very extensive damage, especially with infection, amputation is desirable.

New York Medical Journal.

November 24, 1917.

1. Tuberculosis Treated by Tuberculin. Richard Cole Newton.
2. A Criticism of the Standards of Diagnosis of Pulmonary Tuberculosis in Children Issued by the National Association for the Study and Prevention of Tuberculosis. Maurice Fishberg.
3. Prophylaxis in Syphilis of the Central Nervous System. Isadore Rosen.
4. A Study of Drug Action. Thomas J. Mays.
5. Urinary Antiseptics. A. K. Detwiler.
6. State Examinations and Treatment for Eye Disease in School Children. Alexander Rovinsky.
7. Colored Photomicrographic Slides of Sections. Edward A. Hunger.
8. The Assassination and Autopsy of King Henry III of France. Charles Greene Cumston.

3. Prophylaxis in Syphilis of the Central Nervous System.—Isadore Rosen states that the importance of the early recognition of syphilis of the nervous system is best appreciated when one visits a large institution for the treatment of the disease and its complications, and is brought face to face with an endless chain of hopeless and incurable cases of conditions which we now feel could have been prevented if our present diagnostic methods had been in vogue twenty years ago. Not until the medical profession in general recognizes the necessity of early lumbar puncture as a routine measure in all cases of syphilis shall we be able to prevent optic atrophy, tabes, and paresis, for it is only by anticipating the ravages of the spirochete during the early latent period that we can hope to eradicate the disease and prevent secondary degeneration. Since it has been proved by Fordyce and others that involvement of the nervous system takes place in the secondary period of the infection, why wait until we are ready to discharge the patient as cured, as shown by repeated negative blood tests, before ascertaining the status of the spinal fluid? At the Vanderbilt Clinic it is their aim to puncture all secondary cases early, that is, after about the third month of their infection. In primary cases with a negative Wassermann there is less liability of involvement unless a later generalization of the organism should take place, as shown by a positive Wassermann, and puncture is not here insisted upon until after a regular course or courses of treatment. Up to a year ago they were content to defer lumbar puncture, unless clinical symptoms of neurosyphilis were present, until just before the dismissal of the patient as cured. They have come to the conclusion, however, from the study of a large number of cases that this involves unnecessary delay and that it is to the patient's interest to determine the findings in his fluid, whether he is without signs or is just beginning to show some pupillary abnormality or other neurological symptom, in order that they may prevent an advancing pathological condition by prompt and intensive treatment. What is our present conception of prophylaxis in syphilis of the central nervous system? Does it imply that infection of the cerebrospinal axis is preventable? This must be answered in the negative except for cases of primary syphilis where early energetic treatment kills the spirochetes *in loco*. When the disease has become constitutional investigation has shown that the spinal fluid of the individual who is to become the victim of neurosyphilis is already infected. He summarizes the necessary efforts towards prophylaxis of this condition as follows: (1)Since infection of the central nervous system takes place during the early secondary period, the spirochetes remaining dormant for months or years without producing signs or symptoms of a morbid process, it is imperative that a routine lumbar puncture should be carried out early in the secondary stage of all syphilitics if neurological complications are to be prevented. Spinal puncture properly performed is a harmless procedure and while the headache which follows in so many cases may incapacitate the patient for several days, the discomfort is well worth the information which can only be gleaned from cytobiological examination. (2) Early and repeated examination of the eyes and nervous system should be made in the case of every patient in order to detect any changes in their inception. (3) Careful serological observations should be employed as a guide for the indication or contraindication of intraspinal medication. (4) Systematic and intensive treatment, both intravenous and intraspinal, should be administered to patients with a strongly positive spinal fluid. (5) If tabes, paresis, optic atrophy, and other grave conditions are to be prevented interference must occur early, and by so doing the new school of syphilology which with its modern serological and therapeutic measures stands for progress and prophylaxis will soon be looked upon as a great blessing to mankind, notwithstanding the adverse criticism of some of our colleagues. (6) Every clinic for the treatment of syphilis should have facilities for all the special examinations necessary and an infirmary where the proper therapy can be employed. It should be emphatically insisted upon that no clinic be allowed to treat the disease unless it can comply with the qualifications specified. In this way only can the secondary complications from syphilis be eradicated or reduced to a minimum.

Journal of the American Medical Association.

November 24, 1917.

1. Comparative Results of Various Functional Kidney Tests, Based on a Series of Cases. B. A. Thomas and J. C. Birdsall.
2. Recurrence After Operations on the Biliary Passages Daniel N. Eisendrath.
3. Sacroiliac Joints in Obstetrics and Gynecology. Jennings C. Litzenberg.
4. Breath Sounds in Incipient Tuberculosis. H. A. Bray.
5. Certain Factors in the Etiology of Gallstones, on the Basis of Their Chemical Composition. Jacob Rosenbloom.
6. The Reduction of Gastric Acidity: Preliminary Account of Methods. Edmund Jacobson.
7. Intestinal Obstruction, Complete and Incomplete. William Draper.
8. Ten Years' Experience with the Grading of Milk. Henry Field Smyth.
9. An Additional Case of Sporotrichosis. Edward H. McLean.
10. Cancer of the Rectum and the Pelvic Colon: Statistical and Clinical Review of Four Hundred and Ninety-one Cases. Jerome M. Lynch.
11. Mixed Infection with the Pneumococcus in Epidemic Meningitis. George Mathers.

2. Recurrence After Operations on the Biliary Passages.—Daniel N. Eisendrath. See MEDICAL RECORD, June 16, 1917, page 1061.

8. Ten Years' Experience With the Grading of Milk.—Henry Field Smyth, Acting Secretary, Board of Health, Radnor Township, Delaware County, Pa., tells of what has been accomplished since 1907 in this township with reference to the betterment of milk. Radnor Township, being a rural community of the better class, the dairy farms are owned and run in many instances by gentlemen farmers with whom dairying is a hobby, as well as a large number of dairy farms owned and managed by the regular farmers. Strict impartiality was shown in enforcement of the necessary rules, and it occasionally happened that, on account of carelessness in the dairy, one of these farms of the richer set would be summarily removed from the grade of excellent or good class to the fair or even poor class. Smyth states that on two occasions, not the same one each time, one of these dairies has been forbidden to sell milk at all until conditions were improved. The aim

of the board has not been so much to do police work and punish delinquents as to do missionary work and encourage the dairymen to be constantly improving conditions. It has seldom been necessary to prosecute delinquents, and after the first natural opposition to a new plan, the dairymen have come more and more to welcome the visits of the milk hygiene agent and to look to him for advice and help in planning improvements. In 1916 the agent received forty-seven requests for such help; the majority of these were during the poliomyelitis epidemic. Also, advice has been solicited in the selection of a dairy. The board has divided the grading of the milk into practically six classes according to the bacterial colony count. Class A cannot have over 10,000 per c.c., with no disease-producing germs or peptonizers, while the cattle furnishing this milk have undergone the tuberculin test in a dairy scoring not less than 90 out of 100 points on the score card, which entitles to the rating of an "excellent dairy." Class B allows of a bacterial colony count not over 100,000 per c.c., including practically the same A conditions and a dairy scoring of 80 per cent. on the score card, which gives a rating of a "good dairy." Class C allows of not over 500,000 per c.c. in the bacterial count, with a dairy scoring card of 70, and rated as a "fair dairy." Class D is pasteurized milk having a bacterial count of not over 1,000,000 per c.c. before pasteurization and not over 50,000 per c.c. after pasteurization with no disease-producing organisms. Class E includes all raw milk with a bacterial colony count of over 500,000 per c.c. from dairies with a score card under 70. Certified milk from farms having the certificate of the Philadelphia Pediatric Society forms the sixth class, and is practically of the same grade as Class A milk. Smyth states that in the beginning there were over 59 per cent. of poor dairies, over 20 per cent. of fair, over 18 per cent. of good, and less than 3 per cent. of excellent dairies. A gradual improvement has been found in dairy conditions with very little change having taken place in the certified or pasteurized classes, but with a big improvement in Classes A, B, C, and E. There was a decided decrease in the number of producers in E, due to the fact that in April, 1916, the board prohibited the sale of Class E milk unless it was labeled as "cooking milk." This resulted in all of the Class E producers who would not or could not improve conditions going out of business. Of the eighteen producers in this class in 1915, one-half, when they found it necessary, succeeded in moving up into Class B or C, while the other nine simply stopped producing milk for sale. There has been a decrease in the total number of dairies in 1917. This was due not only to strict enforcement of rules, but to economic conditions. Smyth considers, however, that this condition is probably less marked in this township than in many other places, since, owing to the careful supervision of the milk supply, the consumers are more ready to pay a fair price for milk. When this work was begun milk sold for from 5 to 8 cents a quart, while now few producers get less than 12 cents.

The Lancet.

November 3, 1917.

1. Experiences in the Use of Nitrous Oxide and Oxygen with Rebreathing in Military Surgery. Edmund G. Boyle.
2. Observations on Circulatory Inefficiency, with Special Reference to the Nervous Factor. E. B. Gunson.
3. On the Presence of a Spirochæte in the Urine in Cases of Trench Fever. A. T. Nankivell and C. E. Sundell. With an Introductory Note by John Rose Bradford.
4. Operation for the Repair of the Crucial Ligaments. Ernest W. E. Groves.
5. A Report on the Treatment of a Series of Recently Inflicted War Wounds with "Proflavine." L. College, Hamilton Drummond, R. T. Worthington, J. W. McNee, A. F. Sladden, and J. E. McCartney.
6. Rations in Relation to Disease in Mesopotamia. W. H. Willcox.
7. The Influence of Hypnotic Suggestion on Inflammatory Conditions. J. Arthur Hadfield.
8. A Case of Epilepsy Cured by Removal of Calcareous Intracranial Tumors. Theodore Thompson and Albert J. Walton.

2. Observations on Circulatory Inefficiency.—E. B. Gunson based his investigations mainly upon a clinical study of the nervous and circulatory phenomena occurring in diphtheria and dysentery, in which two distinct types of circulatory inefficiency were encountered in diphtheria. One is always preceded by the onset of arrhythmia and has long been attributed to a state of "cardiac paralysis." In the second form a normal rhythm is maintained even in fatal cases. Cases which maintain a normal rhythm he classes as under the vascular type; while cases which develop a marked arrhythmia with rapid pulse and in which paroxysms of regular tachycardia may occur he places under the cardiac type. The first type—normal rhythm—are usually fatal within the first ten days of the disease, and present the appearance of profound exhaustion. The pulse remains regular, but soon becomes weak and frequently disappears entirely from the wrist. The heart, however, continues to act until within a few hours of death. Consciousness is retained throughout, apathy is marked, and death is usually preceded by a convulsion. The sequence of events points to a primary failure of the peripheral circulation leading to venous stasis and engorgement with subsequent embarrassment of the heart. The terminal convulsion is attributed to cerebral congestion. Involvement of the capillaries is shown by purpuric eruptions and gastric submucous hemorrhages and subcutaneous hemorrhages. In the second class, "cardiac paralysis," a syndrome including marked cardiac arrhythmia, increase in cardiac and liver dulness, and triple rhythm on auscultation is present. The pulse remains of comparatively good strength till the arrhthymia has persisted for several hours at least. The onset of the arrhthymia, due usually to the presence of frequent premature contractions, and often associated with paroxysms of regular tachycardia, occurs usually in the third week, but may be preceded by premonitory signs of the same for several days. Such cases rally frequently and may make a complete recovery. Congestion of the lungs is absent except as an occasional terminal event. In fatal cases marked signs of circulatory failure are frequently wanting at the time of death, which is due to failure of respiration, to which a diaphragmatic palsy or bronchopneumonia may be contributory. Among the nervous symptoms presented in these cases there is a crossed leg reflex which is held to indicate a definite spinal cord lesion, a point of special importance.

British Medical Journal.

November 3, 1917.

1. An Address on Injuries to the Peripheral Nerves and Their Treatment. Berkeley Moynihan.
2. The Surgical Treatment of Severe Penetrating Wounds of the Chest in a Casualty Clearing Station. J. Anderson.
3. The Surgical Treatment of Severe War Wounds of the Chest. J. E. H. Roberts and J. G. Craig.
4. Notes in Connection with the above Articles on Surgery of the Chest. H. M. W. Gray.
5. Plastic Transcostal Tjoracotomy. E. M. Cowell.
6. The Early Operative Treatment of Penetrating Gunshot Wounds of the Chest. Frank J. Hathaway.
7. The Treatment of Gunshot Wounds of the Elbow-joint: A Plea for Primary Excision. C. Mansell Moullin.

1. An Address on Injuries to the Peripheral Nerves and Their Treatment.—Berkeley Moynihan gives four divisions of lesions of the nerve trunks as the result of wounds. He considers that in the majority of cases the nerve trunk has not sustained a primary injury, but it may be exposed more or less in a wound of the soft parts with or without fracture. The nerve fibers may or may not have been directly, or only trivially implicated, but the projectile may have passed so near the nerve trunk as to have opened its sheath. The nerve then becomes adherent to the track of the missile, and a mass of fibrous tissue is found firmly welded to its lateral aspect. The nerve may have been partly severed by a projectile, or a fragment of bone. In the second instance a central neuroma may occur, while in the latter case a lateral neuroma might result. Again the nerve may be completely severed, causing a gap between the divided ends; while bridging this interval there may be a connecting band of fibrous tissue, or a blurred mass of scar material in which both cut ends are lost. In this case a terminal neuroma may be formed. Experience has shown that the musculospiral nerve was injured in 25 per cent. of the cases; the ulnar in 24 per cent.; median in 14 per cent.; sciatic and external popliteal in 12 per cent.; internal

popliteal and anterior crural in 1 per cent.; lower portion of the brachial plexus in 7 per cent., and the upper portion of the same in 4 per cent. A positive reaction to faradism is regarded as a contraindication to operation, but failure to respond gives no definite information, for voluntary movement may return after nerve injury before the faradic response. The muscles are next investigated by a constant current. The character of the contraction is important. A brisk twitch may indicate the presence of some conducting nerve fibers in the tested muscle, while a slow "vermicular" response is usually associated with a complete interruption of nerve fibres. A condenser is next used on the nerve muscle. The method depends upon the fact that a condenser discharge through a constant resistance gives a current which varies in duration according to the capacity of the condenser used. The more severe the damage to the nerve the greater will be the capacity of the condenser required to excite it; or, in other words, the longer the duration of the current the more chance there is of obtaining a response in such a nerve muscle. Thus a definite measurement of current of condenser used may be noted, and future progress may be accurately followed. Complete absence of both faradic and galvanic response is an indication for early operation, and the cases which require careful and repeated examinations are those where there is pressure on the nerve trunk by a contracting scar. In total loss in some fibers the nerve is tested both above and below the site of injury, in which case special sterilizable electrodes with long connecting cords which can be boiled are used. The nerve is gently lifted upon two small glass hooks and a very weak faradic current used. Operation is decided upon in cases of complete division, in cases of the same where progress is arrested, and where there is severe neuralgic pain, "causalgia." Operation is deferred for one month after the closure of the wound where soft parts only are injured, also for two or three months after complete closure of the wound where there is an involvement of bone, and definitely deferred so long as progressive signs of recovery in nerve functions continue. The suture of the nerve may have to be delayed until unsatisfactory joint conditions are improved. Contractures of the knee, for example, should be corrected before the sciatic nerve is sutured, otherwise the nerve would be in danger of rupture if the deformity were subsequently rectified. In other cases the nerve may be sutured and the joint dealt with at the same period and subsequently. Moynihan considers it to be of first importance to start active measures to prevent or remove stiffness and deformity in the parts supplied by a wounded nerve, which can be done for many weeks before it is possible to repair the nerve. He further states that it is not sufficiently realized that a nerve to be of use after suture must act upon live and supple tissue, therefore joints and muscles must be kept in condition for the nerve impulse which some day will come to them again. In operating Moynihan discourages the use of a tourniquet for two reasons: It is possible to harm the nerve, or other nerves in the limb if the rubber band is applied too tightly, and for the long period sometimes necessary in this procedure; and when the operation is complete and the tourniquet removed, there will probably be an escape of blood into the wound—a thing in these cases most undesirable. In these wounds there is often a good deal of young fibrous tissue, from which free oozing may occur in the period of hyperemia which follows removal of a tourniquet. He also does not approve of the fashion employed by some surgeons of surrounding the sutured nerve with some material supposed to have protective power, either a piece of vein or fat wrapped round the nerve for the purpose of insulating it in its new position. He considers that this method is often harmful and is doubtful if it ever helps. In the diagnosis and treatment of an organic lesion of a nerve it should never be forgotten that there may be added a functional disability. It is always desirable to remove this difficulty in order to appreciate the organic condition. This is particularly important when the organic lesion is well on the way to recovery. Thus in a recovering lesion of the inner cord of the brachial plexus it may be impossible for the fingers to be flexed until re-education has trained the laggard muscles into obeying orders from headquarters. He summarizes the results of his experience as follows: (1) The earliest examination should be made of all wounds in which division of a nerve trunk is probable. If at the casualty clearing station such a lesion is found, end-to-end suture should be adopted forthwith. This is more likely to be possible in cases where primary suture of the wound, after excision, is found practicable. (2) If secondary sutures of the wounds, after the Carrel-Dakin method has been practised, is to be undertaken, the union of divided nerves should be secured at the same time. (3) If these methods have been attempted and have failed, they do not prejudice the later union of the nerve. On the contrary, they probably ensure that an easier and more satisfactory operation can then be practised. (4) Throughout the whole period before late nerve suture is attempted the strictest attention must be paid to the relaxation and nutrition of all paralyzed muscles, to the maintenance of suppleness in all joints moved by these muscles, and to the preservation of the integrity of the skin. (5) Operations upon nerve trunks demand the most scrupulous observance of the ritual of asepsis. There must be the greatest gentleness of manipulation; the nerve must not be injured by instruments or by the surgeon's finger; it must not be separated from its sheath or disturbed overmuch from its bed; it must not be chilled or allowed to dry. All sutures must be of fine catgut, and introduced with most punctilious accuracy. Axial rotation of the nerve must be avoided. The cut ends of the nerve before approximation must show clearly the fibers of which the trunk consists. (6) Nerve-grafting is of little or no value; nerve anastomosis is to be sharply condemned; the turning down of flaps from the nerve to bridge a wide gap is useless. (7) Tendon transplantation is of great value in cases where nerve suture is impossible, or has given a result not entirely satisfactory.

La Presse Médicale.

September 27, 1917.

Three New Cases of Rabies in Man.—Grenier de Cardenal, Legrand, and Benoit, refer to the six cases recently reported by Jourdran and Marchand, in which the disease was of the convulsive type with death within 48 hours in part of the material. There was but one case of the paralytic type in which death did not take place for five days. The bulbar syndrome was predominant, and hyperesthesia was absent. There was complete lucidity and in two cases euphoria alternated with depresssion. In these cases there was wide departure from the classical type in which a stage of excitation is followed by a paralytic stage, the first-named being attended by hallucinations and maniacal excitement. The material of the present authors likewise shows departures from type. One case is given in detail. A mobilized man of 34, in charge of horses, gave no history whatever of a dog bite. There were no prodromes. After his usual breakfast, eaten with relish, he complained, toward noon, of a headache, and refused both food and drink. Later he vomited and lay down. A medical man made a diagnosis of angina. Next morning he made grimaces and had spasms of the masseters and pharyngeal muscles. The pulse showed notable instability, and the pupils were unequal. Despite the failure of characteristic symptoms a diagnosis was made of tetanus, in part because of his occupation (hostler). Headache and vomiting became so prominent that meningitis was suggested and lumbar puncture made with negative result. Mental excitement now appeared in paroxysms alternating with intervals of quiescence. By a coincidence the proffer of a glass of water made the diagnosis, as a typical hydrophobia crisis was induced. Sensitive-sensorial hyperesthesia appeared, and became intense. Taken to the neuropsychic clinic, he did not seem very ill, was able to undress himself and even passed a quiet night. In the morning he rose and dressed himself, but a crisis of excitement developed with vomiting. He kicked against the door, upset the furniture, and scattered the bed covers. The features, haggard, showed both fear and anger. Respiration seemed

labored and there was oppression about the heart. He answered questions rationally, but did not seem to have complete insight into his condition. A proffer of water was not followed by a crisis, but there was an apparent inability to swallow. After the attempt he coughed and vomited. Later he developed convulsions in the extremities and facial muscles; then assumed a fixed attitude and died in syncope on the third day of his illness. Autopsy was very largely negative, save for cerebral hyperemia. Diagnosis was confirmed after studies of the cerebrum and bulb. The second case in a woman of 50 ended in death within 48 hours, while the third occurred in a girl of 12 and likewise pursued a fulminating course. The Pasteur treatment had been refused from fear of the punctures. The disease began at 5 in the morning, with inability to drink. Delirium soon developed, followed by a prolonged stage of fainting attacks and vomiting. Death occurred in syncope after an illness of only 12 hours. In cases two and three there was a history of bites by dogs known to be rabid. In none of the cases was there a prodromal stage. Bulbar symptoms dominated the picture, while hydrophobic spasms were present only as isolated phenomena. The average duration of the disease was about 35 hours, and death in all cases occurred in syncope. In the absence of history of a dog bite diagnosis is extremely difficult, and in the first of the cases but a single hydrophobic spasm is recorded. Among possible false diagnoses are a local throat affection, tetanus, meningitis, acute mania, delirium due perhaps to infectious disease, etc.

Correspondenz-Blatt für Schweizer Aerzte.

September 29, 1917.

Atypical Case of Chronic Farcy.—Lutz reports a case of this affection of so unusual a type that it escaped diagnosis for years. It was once reported as a hemorrhagic, papulo-bulbous, and ulcerous eruption of hematogenous origin. The patient was a woman, which fact may have helped to obscure the diagnosis. The peculiar joint symptoms were suggested, but the subcutaneous abscesses of the typical case were absent. The first lesion appeared on a finger and all the lesions were limited to skin and mucosæ. A papule would appear with a hemorrhagic center, would enlarge, and perhaps heal with a pigmented trace, or instead, go on to form an ulcer of a necrotizing character. Whether by extension or confluence, large ulcerous areas were formed. Some ulcers healed with keloidal scars. The lesions appeared to come out in successive crops, and a gram negative bacillus was found in the blood during one of these crises. Improvement in the case was attributed to neosalvarsan injections, but the source of the mischief was not controlled. The Wassermann and tuberculin tests were negative throughout. There was never much systemic reaction (subfebrile temperature at times), and death was due to extensive ulceration in the pharynx and larynx. An elaborate histological and bacteriological study, including animal inoculation, was negative. Only by exclusion apparently was the diagnosis made for farcy alone is able to produce such lesions. The author believes that infection occurred in the finger. How the lymphatic system escaped so thoroughly is not even debated. The viscera were all intact.

Case of Blastomycosis of the Skin.—Dösseker describes a condition extremely rare in Switzerland in a patient aged 46 years, who had no illnesses since childhood. It had appeared 8 years before with lesions suggesting pustules, or boils, in the left axilla. After six months of futile therapy the entire lesion-bearing area was excised. After three years' respite the lesions appeared in the opposite armpit, and some months later in the groins, extending directly to the scrotum and anal furrow. There was at no time any ulceration, although the continuous secretion had a very offensive odor. Gradually the general health showed impairment. Patient had never been out of his home land for any length of time. Professor Jadassohn made the diagnosis, by exclusion, of a mycosis. The lesions could be characterized as neoplasms in the lower folds, while in the axillæ they were distinctly inflammatory. In both localities, however, there were large numbers of what might be termed minute fistulæ, which furnished an extensive secretion. Biopsies and bacteriologic and inoculation studies were quite negative, and especially were there no evidences of mycosis. Persistent following up of the secretion, however, eventually led to obtaining a pure culture of yeast cells. Intensive and prolonged iodine treatment was unavailing, as was the use of yeast vaccines, and the *x*-ray. For some reason, however, the disease seemed to have been checked; the general health improved, and yeast cells could no longer be cultivated from the secretions. Naturally the author was none too certain that these bodies had caused the disease, although the large numbers present at one time could hardly have been mere saprophytes. A study of blastomycosis as described by Busse-Buschke in Europe and Gilchrist in America seems to leave little doubt as to the nature of the author's case.

Revue Médicale de la Suisse Romande.

September, 1917.

Relapse After Goiter Operations.—Sarkissiantz admits that his material is rather small for generalization but gives his conclusions for what they are worth. They pertain to the nodular forms and are as follows: Anastomoses between trachea and isthmus and those originating in the distribution of the esophageal arteries—even after ligature of the superior thyroid artery—assume sufficient vitality for the remains of the thyroid after ligature of the four thyroid arteries and even in addition of the fifth. But ligature of all of these vessels will not guarantee against a socalled pseudorelapse. Ligature in fact provokes a considerable proliferation of connective tissue and perhaps at times of a vascular neoplasia which makes a second operation hard to control and requires laborious dissection as compared with the ordinary operation for enucleation, although repair may be proportionately accelerated. A simple but thorough unilateral operation although deficient in cosmetic result gives a better prognosis against recurrence. Combinations of ligatures of various plans do not give divergent results. Multiple ligatures in enucleation operations, perhaps because of the resulting proliferation of connective tissue, predispose to an unwelcome type of recurrence which has an increased tendency toward cyst formation of a conglomerate character.

Photoanthropometry for the Control of Child Growth.—Jeanneret and Messerli refer to the need of measuring the growth of the various segments of the body. That introduced by Godin involves measurements and graphic representation and requires much time and precision. Much of the method has to do with circumferences and generally speaking there are many opportunities for subjective error. Weissenberg also takes ordinary anthropometric measurements of segments and uses tables of figures but no graphics. The authors have found the photographic method far more simple while the personal equation is eliminated. Any photographic technician can take the pictures and schematics are not required. The photographs are reproduced on grilled paper, the squares measuring 1 cm. life size, but reduced to a tenth on the photograph. To illustrate the growth increase one half of a photograph at a given period is placed on contact with the opposite half of a picture taken at a subsequent period. By this method the most trivial peculiarities of growth are brought out. Thus we note that the nipple at 16 was 6 cm. higher than at 15; while at the navel line the difference was but 5 cm. The relation between the tip of the medius and the level of the thigh was a constant. There was a difference of not more than 1 cm. in the height of the pubes, although the total gain in stature was 9 cm.

Prolonged Survival after Operation for Cancer of the Cervix.—Thaler reports on the fate of 70 women who had lived 5 years after Schauta's vaginal hysterectomy. In a period of 10 to 15 years after operation 60 women were still living and well. Hence he would not ray the operable case.—*Correspondenz-Blatt für Schweizer Aerzte.*

Book Reviews.

American Public Health Protection. By Henry Bixby Hemenway, A.M., M.D. Author of The Legal Principals of Public Health Administration, Etc. Price, $1.25 net. Indianapolis: The Bobbs-Merrill Company, 1916.

Dr. Hemenway has dedicated this book to the Women of America, as "the power behind the throne." He goes on to state that "in the past they have done much to assist in securing better conditions; but amateur sanitarians should not themselves attempt to determine administrative policies or legislative provisions. In the place of trying to decide how dairies should be managed they should make sure that a competent health officer is employed, and then follow his leading." In connection with this good advice should go, hand in hand with the training of the women of America, a course of study in public health and this book would make an excellent member of the reading course.

It outlines the present methods of public health administration, with the good and poor points clearly shown, the National health agencies, the lack of attention paid to this important work of limitless value in the medical schools, medical inspection of schools, organization of health departments, and the preparation of health officers.

If all women all over the land could be made to realize the tremendous importance of the work Dr. Hemenway is so earnestly calling attention to, and which he has so splendidly outlined in his book, public health administration would develop so rapidly, the standard of general civic health would be so quickly changed, that the progress made in this direction in the past ten years would be but as child's play, compared to the results that could come were the women of the land fully awake to the possibilities of this throbbing, life-giving subject.

The time is fast coming when women, whether they wish it or not, must assume control of matters vital to the community and the world at large. The men have left this work in their hands. Hands and minds unaccustomed to think and work beyond the home must now come forth to learn quickly, and to assume responsibilities and positions unheard of in the lives of the women of yesterday; soon to be but a common occurrence in the lives of the women of the Now.

Dr. Hemenway has appealed to the true, the right note in the preface of his book. Back of him must stand the medical profession, and beyond that the United States, in this big effort of the women to attain national results never known in the world before.

The Diagnostics and Treatment of Tropical Diseases. By E. R. Stitt, A.B., Ph.G., M.D., Medical Director, U. S. Navy; Commanding Officer and Head of Department of Tropical Medicine, U. S. Naval Medical School; Graduate, London School of Tropical Medicine; Professor of Tropical Medicine, Georgetown University; Professor of Tropical Medicine, George Washington University; Lecturer in Tropical Medicine, Jefferson Medical College; Member, National Board of Medical Examiners; Member, Advisory Board, Hygienic Laboratory; Formerly Associate Professor of Medical Zoology, University of the Philippines. Second Edition, Revised and Enlarged; with 117 Illustrations. Price $2. Philadelphia: P. Blakiston's Son & Co.

The new edition of this useful little book contains four new chapters, in addition to several new paragraphs, as well as much careful revision of the original matter. The new chapters are those on typhus fever, spotted fever of the Rocky Mountains, special problems attaching to diagnosis in the tropics, and the diagnostic value of clinical manifestations from the side of the cutaneous system and organs of the special senses. In spite of its small size, this volume is of more than ordinary value. It is intensely practical, is well arranged and written, and is thoroughly up to date. The second part of the book, which deals with the diagnosis of tropical diseases, is packed full of just such information as the busy practitioner stands in need of. Although this edition is larger than its predecessor by more than one hundred pages, it still remains a pocket manual. Its very moderate price is an additional attraction in these days of "high prices."

Modern Dietetics. Feeding the Sick in Hospital and Home. With Some Studies on Feeding Well People. By Lulu Graves, Dietitian Lakeside Hospital, Cleveland. Price, $1.00 net. St. Louis: The Modern Hospital Publishing Company, 1917.

This book is a compilation of papers that were written by the author and published in *The Modern Hospital*, a monthly journal devoted to the interests of hospitals, sanatoriums, and other institutions of like character. It is truly scientific in the material offered, and has the added advantage of being written in a style sufficiently popularized to meet the need of readers of all types who are interested in foods, both from the physiological and chemical standpoint. Added to these, the author has intelligently handled the management of food for the many as well as the few, well or ill. Many recipes are offered, and it would seem to the reviewer that the book should have a place on the shelf of the housewife who has had sufficient college training to appreciate the value of just such working knowledge as Miss Graves has presented in these 202 clearly written and valuable pages. The book naturally offers itself as a fund for reference in connection with college courses on this and allied subjects.

The Prescription, Therapeutically, Pharmaceutically, Grammatically and Historically Considered. By Otto A. Wall, Ph.G., M.D., Professor of Materia Medica, Pharmacognosy and Botany in the St. Louis College of Pharmacy; Member of the Committee for Revision of the Pharmacopœia of the United States, 1880-1890 and 1890-1900; Second Vice-President of the Convention for the Revision of the United States Pharmacopœia from 1900-1910; Presiding Officer of the United States Pharmacopœia Convention of 1916; one of the Authors of the "Companion to the United States Pharmacopœia"; Author of "Handbook of Pharmacognosy," "Lessons in Latin," etc. Fourth and Revised Edition. St. Louis: C. V. Mosby Company, 1917.

The art of prescription writing is almost lost in this country, notwithstanding the fact that the knowledge of how to write a prescription correctly is extremely useful to the medical practitioner. Dr. Wall in the work before us enters into the subject thoroughly, and his book should prove very serviceable to members of the medical profession.

Massage, Its Principles and Practice. By James B. Mennell, M.A., M.D., B.C. (Cantab.), etc. Medical Officer, Physics Therapeutic Department, St. Thomas' Hospital; Civilian Medical Officer in Charge of the Massage Department, Military Orthopedic Hospital, Shepherd's Bush. With an Introduction by Sir Robert Jones, C.B., F.R.C.S., Colonel R.A.M.C., Inspector of Military Orthopedics. With 135 illustrations and an appendix. Price, $3. Philadelphia: P. Blakiston's Son and Co., 1917.

Massage, that is massage scientifically done by trained men and women under the supervision of surgeons, has naturally been very largely employed during the present war. Its value as an aid in the rehabilitation of disabled soldiers is obvious and has been established on a firm basis. Sir Robert Jones, certainly one of the first authorities on orthopedic treatment in the world, points out in an introduction to Dr. Mennell's work that in order to obtain the best results from massage the masseur or masseuse must cooperate loyally with the surgeon, and that when this close alliance is maintained, massage may be successfully employed as a preliminary to, as a concomitant with, and as a sequel to active surgical treatment. Massage may be of diagnostic value as a preliminary to surgical treatment, and may be employed to alleviate pain, reduce edema, assist circulation, and promote the nutrition of tissues.

As a sequel to operative treatment, it serves to restore the nutrition of tissues, and initiate the patient into an appreciation of muscle sense and movement lost by months of disuse following a severe septic injury, thus paving the way to recovery of voluntary muscle action, which is the ultimate aim of all orthopedic treatment. The writer of the book is well versed in scientific massage and has produced a work on the subject, which is especially apropos at the present time. The book is excellently illustrated and is in every respect an eminently satisfactory text book on massage.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held November 1, 1917.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

THE subject of the evening was "The Study of Crime and the Criminal from the Point of View of Modern Psychiatry."

Dr. WALTER B. JAMES, in opening the meeting, said that there were very few branches of medicine in which more advances had been made in recent years than in psychiatry and in few other lines had advances been made that promised to do more for the relief of the people from the burden imposed upon them by the criminal and the delinquent than in psychiatry. There was one branch of this subject that had been receiving special attention, and that was the method of handling the delinquent. To this Dr. Healy, who was to be the first speaker, had been devoting his attention for a number of years, first in the Juvenile Delinquent Home in Chicago, where all who had seen his work were impressed with its great value to the community, and later in Boston, where he had been called to take charge of the Judge Baker Foundation and organize a somewhat similar work.

The Study of the Juvenile Delinquent.—Dr. WILLIAM HEALY of the Judge Baker Foundation, Boston, made this address. He said that with his invitation to present his subject to the Academy of Medicine he had received specifications for his address. These stated that the address was to be informal, was to tell what they were doing, why they were doing it, and what their results were. He would try to follow orders, but he could not keep the points which he had been called upon to discuss separated. To put it in the simplest terms, they were studying from the psychological standpoint the conduct of numbers of individuals. They were doing this because such a study was desperately needed. He had found at the beginning of his work ten years ago that a little work along these lines had been done in France, but nothing in this country. He had become interested in this subject because from the cases seen in the clinics he felt that there were defective mental conditions which caused conduct disorders which thus far had not been recognized for what they were. He felt that perhaps if these causes were understood, they might be able to forfend the careers of certain individuals who seemed destined to follow a criminal career. In order to study the problem they were obliged to study the offenders as they appeared in the courts, because the average case was not available for study until he came into court. They were now studying the cases in court because they were so imminent and the courts were failing to properly and efficiently handle the problem which the juvenile offender presented. An English prisoner, writing in the *British Medical Journal*, in 1903 or 1904, stated that there were 186,000 convicts in English prisons and that 100,000 of these had been convicted before. The same condition prevailed in this country, though unfortunately we had no national statistics to show it. The statistics at Sing Sing Prison showed 60 per cent. of recidivists. They were dealing with the juvenile offender rather than the confirmed criminal for several reasons: (1) They got the juvenile offender earlier and were thus able to ascertain more with reference to his home environment, his heredity, and his development, so that scientifically it was more worth while to study the offender at an early age. (2) Nearly all professional criminals had picked their careers during childhood. Dr. Glueck, in recording the life history of criminals, showed that a large percentage of criminals had chosen their careers during adolescence or mid-adolescence. (3) They had studied the young offender because they could do more with him. By directing him and giving him a favorable environment he might be benefited physically and mentally and might thus be less crippled in his career. They were studying more particularly the mental life of the young offender, because it was the mental life that lay back of misconduct and, of course, of conduct in general. They were studying the juvenile offender from the standpoint of psychology rather than of psychiatry. He hesitated to use the term psychiatry because he did not want to give the idea that the average individual guilty of misconduct was mentally diseased, for he knew that many of them were not the victims of actual mental disease. By a study of the subject's mental imagery one would find that the individual held in his mind certain definite pictures of conduct, certain ideals of things to be reached out for, and that he had as a result certain impulsions or obsessions based on his mental imagery, but this was not to be thought of as mental disease. Again an individual might have certain abilities which denied ordinary and legitimate satisfaction led to a maladjustment of the individual to his environment and to misconduct. With this conception in mind it was evident that the field of study presented by the juvenile delinquent transcended that of psychiatry which dealt only with disease entities and was satisfied with word classifications. On the other hand, they were thinking of practical ways of helping the individual in his particular trouble, in the present instance, his misconduct. They were studying the physical makeup of the young offender because of its bearing on his mental life and on his misconduct. In the same way they went into his environment because certain unsanitary conditions in his surroundings might have a deleterious effect on his mental life and conduct. The mental impressions which an individual received from his mother or from his own mind when in a state of vacuity were most important in making up his conduct. Dr. Healy then showed that the psychological life in institutions had a very deleterious effect on the inmates. It was to be recalled that "an empty mind is the Devil's workshop." When the inmate of an institution had nothing else about which to think he turned his attention to planning what he would do when he regained his liberty, and these plans were usually for a continuance of his criminal career. Another point they were studying was heredity. In this field they were feeling their way very carefully and had avoided drawing conclusions. They were making their studies from the medical and psychological standpoint and focussing them on what lay directly at the basis of misconduct. The first thing they endeavored to find out was the facts in the case, and then they were in a position to consider therapeutic measures. They had the records of thousands of individuals studied in this way. He cited the following instances as an illustration. A certain boy was brought into court and the lawyers argued that because of the acts he had committed he must be insane. He was placed in an institution for the feeble-minded. He soon committed arson and was then placed in the house of correction. He behaved so badly there that he was transferred to the men's department. This boy had never been happy. The speaker had known him for nine years. As a child he had had middle-ear disease, did not hear well, and did not do well in school. He had always been unhappy and had never had what he wanted. It was found that he had considerable artistic ability. He was given a set of paints, took a course in drawing and painting, and for the first time in all his life he had the human satisfaction he demanded. After that he gave no further trouble. That boy was not insane, but under ordinary conditions no one would ever have found what his mental content actually was and how to readjust him. These juvenile delinquents were of no one type and there was no one set method of examination; each case must be individualized. They were simply beginning to handle a big human problem that was of vast importance to society and with great possibilities for the future, not only with reference to a scientific understanding from the pathological side, but with possibilities of obtaining a better understanding of the ways for developing the potentialities of the normal individual. Psychiatry and psychology were sciences of very recent growth. A passing judgment rendered as the result of giving a few tests, when one thought of the brain with its five million cells and the mind with its thousand intricate recesses which were just beginning to be explored, could be worth little; the psychologists realized this themselves, and if the psychiatrists would take into consideration the more normal phases of the human mind their opportunities of assisting in the development of a big human service would be very much greater.

The Study of the Prison Inmate.—Dr. BERNARD

GLUECK spoke on his experience in the Psychiatric Clinic at Sing Sing Prison. He said that Dr. Healy's address had given him a little optimism, much needed after a year or so spent in an institution like Sing Sing. He did not disagree with Dr. Healy as to the possibility of reconstructing the lives of these people, but one was apt to become pessimistic about the situation when he saw case after case committed to prison with such extremely bad careers back of them, and especially so when there was so little opportunity to study and handle them individually. It was felt when the Psychiatric Clinic was established at Sing Sing that it could be of some help to the administration if a clear definition of each individual delinquency could be found, a clear outline made of the forces that had been at work in making the criminal what he was at the time he was admitted to prison. It was believed that they would thus find the way to attack the problem more successfully in individual cases. Hence the first function of the clinic was definition. There was frequently considerable agitation on the subject of prison reform, but most people had no conception of the difficulties of prison management itself and the attaining of better conditions. Many attempts in the direction of reform had been made and given up as failures. Men in charge of prisons knew the difficulties which the problem of handling prisoners involved, but the community outside, that provided the facilities, seemed indifferent to the actual facts. Dr. Glueck said he believed there was some hope of changing the mental attitude of the prisoners toward life in general, but that was a matter of individual therapy. The question to be solved was that of giving the prisoner a different outlook on life, especially after leaving prison. The charts exhibited showed that the effort at definition had been successful to some extent. They had collected a great deal of information with reference to the past histories of the inmates. It was shown that considerably over one-half of the prisoners were recidivists; some of them had been imprisoned a number of times before. The percentage showing bad heredity and subnormal physical and mental conditions was also shown. It must be remembered that in Sing Sing they were dealing with a highly specialized group of people. Dr. Healy got his cases at the beginning of their antisocial careers; the speaker had been seeing them at the end results. It seemed that a long criminal career served to deteriorate these men, and their mental condition was very difficult to change. Dr. Healy had called attention to the physical conditions that lead to abnormal mental states; of course, as was well known, the physical conditions at Sing Sing were not of the best and it was difficult or impossible to utilize the recommendations of the Clinic, particularly along industrial lines. Under better conditions, it could undoubtedly be of aid in discovering the special aptitude of individual prisoners and of assistance in placing them in more suitable occupations. Time should not be wasted in trying to educate prisoners who were not educable, for in some of these adult cases no progress could be made in this direction. The Clinic, however, hoped to be of more use along these lines after the new prison was built. Much more might be accomplished if, when a man left prison, he had the opportunity to consult someone who knew his case thoroughly and who would guide him when he came to stressful points in life. In this way conflicts with the law might in many instances be prevented. This was a possibility that the new prison offered. If the Clinic continued to meet with the cooperation it had thus far received from prison people, even more useful work might be done in the future than had been done in the past.

D. BULKLEY HUBBELL, Esq., of the New York State Commission on New Prisons, said he had learned early in life that it was well not to dispute with the doctors; perhaps the fact that one of them was his father might have aided him in reaching that conclusion. When he received the invitation of the honored president of the New York Academy of Medicine to take part in this discussion, he felt that the invitation like that of royalty was equivalent to a command, consequently he acquiesced in it with becoming humility. He wished to say that he had never in his life undertaken a work which had been so fascinating as this work in connection with the Prison Commission, and he had served the State and City in various capacities. While on the Board of Education he had taken an active part in introducing the examination of school children for contagious diseases and in having teachers regularly examined for tuberculosis. In this work he had been ably supported by the doctors and they had likewise given him their support and cooperation when he was on the State Hospital Commission. When the New Prison Commission found itself confronted with the task of demolishing the old Sing Sing Prison, that monument of iniquity, and replacing it by a modern structure, he immediately turned to the doctors for assistance and advice. He claimed for himself sagacity when he selected Dr. James as the first member of his Advisory Committee. The speaker then paid a glowing tribute to Dr. James for his unflagging zeal and the value of the expert advice which he had contributed to the solution of their problems. He also commended Dr. Glueck's work at Sing Sing and said that as a result of the cooperation from these various sources a new prison had been planned which would be a clearing house for the State, where men would be classified by the methods demonstrated this evening. He felt that now that the facts in relation to the causation of crime were becoming known they were in a fair way to solve some of the problems which had baffled them in the past. The main point it seemed was to get the criminal when he was young, and to train him in such a way that his criminal tendencies would be overcome. The indeterminate sentence would be of some assistance in controlling and keeping under observation certain criminals; the health of such individuals would thereby be improved, they would be given the opportunity for reformation, and at the same time they would be kept from preying on society.

Hon. GEORGE W. WICKERSHAM said that the only qualification he had for speaking on this subject was his interest in the administration of justice. In this direction little progress had been made in a century and a half. Thus far they had made little progress in gaining a knowledge of the facts upon which justice must be based. He was interested in the science of psychiatry because it was a scientific method, its best point being a relentless investigation of facts. All science must be based on a ruthless search for truth. In Sing Sing Prison they had been studying crime and the criminal to a greater extent than anywhere else in the United States. They had searched for the facts in relation to the cause of crime, and they must place these facts before the public before they could hope to change existing methods of dealing with the criminal. In determining the consequences of crime one should be guided by the condition of the offender. Crime must be dealt with from the standpoint of prevention and treatment. The point that stood out prominently in the charts they had been looking at and that Professor Kimball and Judge Olsen of Chicago had emphasized was the necessity of preventive treatment through an effort to supply the child with an environment which did not permit him to become a criminal, but saved him to be an asset of the State, for there was no greater asset to the community than the lives of its children. There was an abundance of legislation, some wise and some unwise, but whether it was wise or unwise, it showed that the public conscience had been quickened in reference to the value of the child. This was shown in the establishment of children's courts, and out of this move good results must come. This reaching out after human justice held much promise for future years. Mr. Wickersham said he did not think much could be done for the old offender; as a rule, he was unfit to live in organized society. In dealing with him the indeterminate sentence offered some relief, but it might be many years before the economic value of this method would be appreciated. The second point that struck him in the statistics presented this evening was the large percentage of native born criminals. We had been flattering ourselves that a large percentage of crimes was committed by foreigners. It seemed from these statistics that it behooved us to give ourselves more concern for the native born.

Dr. AMOS SQUIRE, physician to Sing Sing Prison, said he was glad of this opportunity to state that he was in favor of, and in sympathy with, a study of the criminal from the point of view of psychiatry, or any

other point which would give promise of lessening crime, or improving the mental and physical condition of the criminal. This applied not only *after* he got to prison but more particularly *before* he was sentenced by the Court. One week ago today a man was brought to Sing Sing prison for a term of four years, who gave a history of mental disturbance covering a period of three years. Had this man been examined, it was the speaker's opinion that he would have been sent to Matteawan for treatment and not to Sing Sing prison for punishment. Dr. Squire said that not being a psychiatrist he would not discuss the subject from that standpoint in medicine, but would simply say a few words about his experiences with criminals, as physician in charge of Sing Sing prison. No one could be there long before being impressed with the fact that a large percentage of their prison population were below the average in mental and physical condition. Dr. Glueck had stated in his report that about 59 per cent. were below par in respect to their mental and physical condition. He had been impressed more and more every day with the fact that the treatment of the criminal was a medical one and that the only hope of success lay in a careful, thorough, and systematic study of each individual case, and not in a haphazard or slipshod examination. It had been their custom for some time past to make a careful physical examination of every new admission. Whenever they found an inmate suffering from any physical disability which could be corrected by surgical interference this fact was noted on his card and at the earliest possible moment the condition was corrected. Although he had not seen the criminal as yet that had what might be called the general criminal physique, he did believe that there were physical conditions, peculiarities, and ailments that had a very direct bearing on prisoners or delinquents and should be corrected, if possible, not only to improve the inmate's health but also not to stand in the way of his social success. Among these ailments which concerned the causation of delinquency were the following: (1) Ocular ailments, which led to eyestrain, defective vision, irritability, and headaches had their influence on the education and other interests of the subject. (2) Teeth. The examination of the inmate's teeth was a part of the regular procedure. This year $500 had been appropriated for the services of a dentist and they now had a visiting dentist who spent one day a week at the prison, but their crying need was for a full time dentist. Seventy-five per cent. of the inmates needed the services of a dentist. All physicians realized that carious teeth were a menace to the general health and stood in the way of social achievements. All men upon admission to a prison should be furnished with a toothbrush and other toilet articles, a need which the speaker had mentioned in his report just completed. (3) Nose and throat, adenoids, tonsils, and nasal obstructions had received attention, as they believed that they were frequently the cause of physical weakness and general malaise. During the year ending July 1, they removed 40 tonsils and performed 41 submucous resections. (4) Syphilis. During the year, 928 inmates were admitted and 20 per cent. of them responded positively to the Wassermann reaction. How far this disease was a factor in causing delinquency was a question to be studied. Every man who entered Sing Sing with a positive Wassermann was the next day placed on anti-syphilitic treatment. With the effect of alcohol and drugs on delinquency all were familiar, but it appeared to him that they were getting more prisoners with the drug habit than formerly. Last week out of about 15 admitted three were suffering from the drug habit. As the medical staff of Sing Sing Prison consisted of an assistant and the speaker, together with an oculist and a genito-urinary man spending a portion of a day each week gratuitously, it might be seen that they were unable to give the men the individual attention their physical needs required. Last year 678 minor and major operations were performed and 15,707 prescriptions written. This was no one man's job, but needed the combined efforts of the best talent in all branches of medicine. They were looking forward now to the building of a new prison hospital provided with complete modern equipment, and when that was obtained their work would be coordinated and better results would follow.

Stated Meeting, Held November 15, 1917.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

Anniversary Address: The Origin and Nature of Life.—HENRY FAIRFIELD OSBORN, LL.D., President of the American Museum of Natural History, delivered this address, in which he presented a new energy conception of evolution, according to which all life consisted in the capture, storage, and release of energy. He reviewed the various theories that had been advanced to explain the origin of life—the creative, the vitalistic, and the materialistic or mechanistic—and argued that all these theories, including the natural selection theory of Darwin, failed to explain the unquestionable facts of evolution. He then presented his theory which he said was better supported by reason and modern scientific data than any of the theories thus far advanced. Descartes had led all modern natural philosophers in perceiving that the explanation of life should be sought in the physical terms of motion and matter. The more modern scientific opinion was that life arose from a combination of forces preexisting in the cosmos. To hold the opinion that life did not represent the entrance of either a new form of energy or a new series of laws, but was simply another step in the general evolutionary process was certainly consistent with the development of mechanics, physics, and chemistry since the time of Newton. Every advance in the quest as to the nature of life had been in the direction of a physicochemical rather than a vitalistic explanation. Thus far all theories of the origin of life, had failed because investigators had started from the tremendously complicated organism and tried to work back to a simple organism. He had attempted to reverse the method and had tried to imagine the earth before the development of life, when there was nothing but the bare rock, soil, water, and air. So far as the creative power of energy was concerned one was on sure ground; in physics energy controlled matter and form; in physiology function controlled the organ; in animal mechanics motion controlled and in a sense created the form of muscle and bones. In every instance some kind of energy or work preceded some kind of form, rendering it probable that energy also preceded and controlled the evolution of life. Lavoisier had immensely advanced science when he discovered the laws of action and reaction and the conservation of energy. Action and reaction referred chiefly to what was going on between the parts of the organism in chemical or physical contact and were subject to two dynamic principles. Interaction referred to what was going on between material parts which were connected with each other by the two great dynamic principles alone without a knowledge of the structure that connected the interchanging parts. As an illustration of this, one might cite the interacting nerve impulse darting from a microscopic cell in the brain which gave rise to a powerful muscular action or reaction at some distant point. An interacting enzyme, hormone or other chemical messenger circulating in the blood might profoundly modify the growth of a great organism. Now the central theory to be developed was that every physicochemical action and reaction concerned in the transformation, conservation, and dissipation of energy produced also, either as a direct result or as a by-product, a physicochemical agent of interaction which permeated or affected the organism as a whole or affected only some special part of it. Through such interaction the organism was made a unit and acted as one because all of its parts were correlated. The functions of co-ordination, balance, co-operation, compensation, acceleration, retardation of actions and reactions were all examples of interaction. It was the peculiar evolution and elaboration of the physical principle of interaction which distinguished the living organism. Thus the evolution of life might be rewritten in terms of visible energy as it had been written in terms of visible form, namely, inorganic environment, the sun, earth, air, and water. There were present in the inert earth the elements, hydrogen, oxygen, nitrogen, carbon, phosphorus, sulphur, potassium, calcium, sodium, iron, etc. The structure and form of life depended upon the combination of these elements. There was also the sun, a source of heat, light, and other

forms of energy, though it was possible at that early date that there might have been some heat generated in the earth itself. Thus the earth, air, and water contained all the elements known to be essential to bacterial or prechlorophyllic life. An initial step in the origin of life was the bringing together of these elements. Molecules of hydrogen, nitrogen, carbon, and oxygen assembled into protein. All the functions of life were due to the motions, actions, reactions, and interactions of these. The motion of even one molecule gave heat and sound. But there were much finer forms of motion than those of the molecule, namely, those of the atoms of which the molecules were composed and those of the electrons which drove the atoms. In these one arrived at pure energy. If one took the smallest visible grain of sugar it contained 100,000,000 molecules, 300,000,000 atoms, and 300,000,000,000 electrons. These electrons travelled with velocities of 10,000 to 100,000 miles a second. We thus had ionization causing action and reaction and catalysis or interaction, which was the term applied to all phenomena of motion not explained by action and reaction. An ion was an atom or group of atoms carrying an electric discharge, and it possessed the principle of electric attraction and repulsion. The molecules of the nonmetallic elements, carbon, oxygen, nitrogen, and phosphorus, exerted a strong attraction for the negative electrons and gave off negatively charged ions which moved toward the anode. The molecules of the metallic elements hydrogen and the salts of potassium, sodium, calcium magnesium, and manganese exerted relatively weak attraction and gave off positively charged atoms. The atoms were, under certain conditions of light and heat, torn apart by their electrons and recombined into other molecules. Sugar, for instance, served as an example of the storage of energy. A molecule of sugar contained 12 atoms of carbon, 22 of hydrogen, and 11 of oxygen. It was apparently inert until taken into an animal, when this latent or potential energy was released and turned again into the heat and motion of the body. Thus we would have a cycle of the capture, transformation, storage, and release of energy, all of which came ultimately from the sun, either its light or heat. The simplest organism of which one could conceive was such an energy seeker.

The theoretic evolution of the four complexes of energy might be conceived somewhat as follows: (1) The organic environment, energy, and matter as seen in the sun, earth, air, and water, forming an entirely orderly system, held together by gravitation, moving under Newton's laws of motion and subject to the laws of thermodynamics. (2) What we called organism, a union of the external and internal adjustment of energy. In the course of the evolution of life every law and property in the physicochemical world was turned to advantage, every chemical element assembled in which inorganic properties might serve organic functions. There was an immediate or gradual separation of the organism into two complexes of energy; first the energy complex of the organism, perishable with the life of the individual, and, second, the germ, or hereditary substance, which was perpetual. (3) The hereditary germ in some respects bore a likeness to latent or potential interacting energy, while in other respects it was entirely unique. The supposed germ energy was not only cumulative, but was in a sense imperishable, self-perpetuating, and continuous during the whole period of life upon the earth. (4) The energy complex of the life environment was a new factor which entered with the multiplication and diversification of individual organisms. Thus were combined three and possibly four complexes of energy, each of which had its own actions, reactions, and interactions. If a single name were demanded for this conception of evolution it might be termed the *tetrakinetic* theory in reference to the four sets of internal and external energies which played upon and within every individual and every race. In respect to form it was *tetraplastic* in the sense that every living plant and animal form was plastically moulded by four sets of energies.

As soon as the grouping of chemical elements reached the stage of an organism interaction became essential, for the chemical activities of one region of the organism must be harmonized with those of other regions. Here we had the action of a catalyzer or chemical messenger, which modified the velocity of any chemical reaction without itself being used up by the reaction. Catalysis had been proven to underlie the great series of functions in the organic world. In the human body such a catalyzer was an enzyme. It accelerated or retarded reactions in the body by forming intermediary unstable compounds which were rapidly decomposed, leaving the catalyzer (enzyme) free to repeat the action. It was imperative that life should have originated in the colloidal state because that state was more favorable to action, reaction, and interaction.

In the human body the secretion of the pituitary body served as an example of a catalyzer regulating and controlling growth. As a part of this theory of the origin and development of life one must also take into account that upon the resultant actions, reaction, and interactions of potential and kinetic energy in each organism selection was constantly operating wherever there was competition with the corresponding actions, reactions, and interactions of other organisms. In examining this theory of life the question also presented itself whether we might have here also the basis of an explanation of heredity. The origin of heredity offered quite as difficult a problem as the origin of life itself. It was quite possible that we had in the chromatin of the body cell the germ of heredity. Goodale's experiments by which he transplanted the testicular tissue of a cockerel into a hen and the ovarian tissue of the hen into the cockerel, and, as a result, found the sex characteristics of the hen appear in the cockerel and *vice versa*, served to show the action of the chromatin of the sex cells as a catalyzer and suggested the possibility that this chromatin might be the germ of heredity.

In closing Dr. Osborn said that quite possibly what had been said of other theories might be said of his theory of the origin of life: "What is true in it is not new, and what is new is not true."

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting Held October 23, 1917.

DR. GEORGE W. KOSMAK IN THE CHAIR.

Severe Toxemia of Pregnancy of Hepatic Origin Treated by Transfusion.—Dr. A. J. RONGY reported this case. He stated that the patient was 37 years of age, a VI-para. Five of the children were living, the oldest being 19 and the youngest seven years of age. The patient was admitted to the hospital on February 4, 1917, at 11 P.M. At this time the cervix was dilated three fingers and she was having pains every ten minutes. The membranes had ruptured. The blood pressure was 155 mm. Prior to admission to the hospital the patient had been in bed for fifteen days and was attended by her family physician for a severe form of jaundice. She was deeply jaundiced at the time of admission to the hospital. At 12 o'clock the fetal heart sounds were heard in the right lower portion of the abdomen; at 3 P.M. the fetal heart sounds were no longer heard. At 3.30 P.M. the mother gave birth to a dead fetus. The urine showed a small trace of albumin, but no casts. The pulse, temperature, and respiration was normal at this time. The following day the temperature fell to 95° F., the pulse became slow and the patient showed signs of drowsiness, but she could be awakened. Toward evening she became very sleepy and gradually went into coma, respiration becoming slow. She continued in this condition during the entire night and the following day. Towards evening her condition seemed to be apparently hopeless. Dr. Rongy said he then suggested that the only treatment that might be of benefit to the patient was a direct transfusion of a large quantity of blood. The husband was chosen as the donor. Dr. Unger performed the transfusion at about 10.30 P.M. The patient at this time was apparently in a toxic condition. Gradually 20 c.c. of blood was taken from the patient and she was then transfused with 1,000 c.c. of fresh blood from the husband. While the patient was being transfused she began to show some signs of life but could not be awakened from her coma; this continued until 3 A.M. the next morning. At 4 A.M. she was fully awake and responded to ordinary questions. The morn-

ing following the transfusion her temperature was 102° F. and then gradually fell to normal. On the eighth day postpartum the patient had a chill and in a short time her temperature had gone up to 105°, pulse 140, and respirations 45. A blood culture was taken and examined by Dr. Lederer, who reported that the blood was positive for *Streptococcus viridans*, which grew both on plain and glucose culture media and plain and glucose agar media. The patient was still profoundly jaundiced, and her general condition was very poor. The treatment was mainly supportive. Between February 13 and February 19 the temperature ranged from 101° to 104° F. At times the patient became stuporous but she never fell into coma again. On February 19 her temperature fell to normal and remained normal until the day of her discharge, February 24. Clinically this case appeared to be a form of liver toxemia, with scarcely any involvement of the kidneys and, in the speaker's opinion, the case was not one of sepsis because at no time did the patient have a temperature until the second day post-partum. She was ill at home for two weeks before coming to the hospital and gradually became jaundiced. The area of liver dulness was diminished and there was probably a toxic substance produced by the pregnant state which affected the liver cells so that the liver could not functionate normally. Primary liver toxemia, the speaker said, was a very rare condition. He believed that every patient who showed evidence of jaundice during pregnancy ought to be watched very carefully and the proper treatment instituted if necessary. Transfusion in cases of toxemia of pregnancy would eventually, he believed, play a very prominent part in the treatment of this condition. If the patient showed evidence of toxemia she should be transfused at an earlier period of the toxic state, and in this way a severe toxemia might possibly be prevented. Our knowledge of this subject was very meager and it would be worth while studying this question more closely and in that way we might collect the accumulated experiences from many clinics which would probably give us information which would guide us in our treatment of these cases.

Ruptured Pus Tube and Diffuse Peritonitis.—Dr. ARTHUR STEIN presented this report. He stated that the rupture of a pus tube was a relatively rare occurrence, especially in non-puerperal patients, although perhaps not quite so uncommon as it was assumed to be. In order to extend their knowledge of this important complication it was desirable that all corresponding observations should be published. This was the reason he was giving his personal experience as well as the results of an investigation of the general literature. For a series of cases of peritonitis due to this particular cause we were indebted to Johanson, a Swedish operator, who, in 1912, reported 59 cases of peritonitis derived from pus tubes. A study of this series of cases showed that in certain cases traumatism of different kinds, notably gynecological or obstetrical, as for example in criminal abortion, entered into consideration as an etiological factor. The changes of the tubal walls were not uniform, but varied from very small interstitial abscesses through which the lumen of a pus tube might open into the peritoneum to small round ulcerations or simple softening and edematous infiltration of the wall. The seat of the perforation was located in one of the peritoneal surfaces of the tube, usually the middle or external portion. The size of the opening was variable and might not exceed a pin head in circumference. Although single, as a rule, the rupture was some times multiple and might involve both tubes. It was a noteworthy fact that perforated pus tubes were usually not much enlarged or distended. As a rule they had lost all communication with the uterus. In diffuse peritonitis from ruptured pus tubes the pus spread between the adjacent coils of small intestine, but the inflammation was not generalized over the entire peritoneal serosa and the case was accordingly not hopeless provided suitable and timely treatment was instituted. Rupture of a pus tube might also occur in connection with childbirth or abortion and culminate in peritonitis. Attempts at criminal abortion had been known to induce abscess formation in the tubal wall followed by rupture of the pus pocket and diffuse peritonitis. This patient, an Italian, 33 years of age, married, was admitted to the Harlem Hospital on July 6, 1917. Her family history was negative. She had two children, her confinements being normal. A previous curettage had been performed. Menstruation began at the age of 12 years and was of the 25, 30, 28-day type, lasting six days. The last period occurred on May 18, though she bled slightly in June. Her present illness began with pain in the lower abdomen a week before admission to the hospital. It had increased on the left side and the patient had vomited once on the day of admission. The patient was acutely ill, showing the usual symptoms of peritonitis, with a temperature of 102° F., pulse 120, and respirations 24. There was extreme tenderness and rigidity all over the lower abdomen. The abdomen was somewhat distended. The tenderness was so marked that no mass could be made out. The vaginal examination showed that the fornix was extremely tender. To the right of the uterus occupying the site of the adnexa was a tumor the size of a fairly large melon, extending nearly to the umbilicus. The surface was even and rather soft. Behind and to the left of the uterus, and partly filling out the cul-de-sac, was a small mass of similar consistency. The body of the uterus seemed imbedded between these two masses. Operation was performed on July 7, 1917. A median vertical incision was made below the umbilicus. Free pus was found in the abdominal cavity and a double tuboovarian abscess, the left one being ruptureh. A bilateral salpingo-oophorectomy was performed. Pus was all over between the coils of the intestines and the appendix was involved, one-half of it being necrotic. The appendix was removed and the abdomen closed. The patient made an uneventful recovery.

Early Ectopic Pregnancy Complicated by Appendicitis.—Dr. STEIN also reported this case. He stated that the patient was 26 years of age. Her previous history was negative. She had had one child, seven years ago. On the day previous to admission to the Harlem Hospital she was suddenly seized with severe pain in the right lower abdomen, accompanied by pains in the vagina. Her menstruations had always been regular up to the last time. She had finished her last menstruation about three weeks before. Examination showed bleeding from the vagina and the uterus somewhat enlarged and soft. There was marked tenderness extending over the right lower abdomen and up as far as McBurney's point. The right adnexa could not be definitely made out. There was no tissue discharged from the uterus. The patient was then transferred to the private building of the German Hospital for further observation. Being unable to make a definite diagnosis in two or three days, a probable diagnosis of ectopic pregnancy or subacute appendicitis was made, although the definite signs of appendicitis (rigidity of the muscles and rebound upon withdrawal of the hand after pressure) were not present. On the third day the patient had another attack of severe pain and operation was decided upon. A curettage preceded the laparotomy. Some apparently decidual tissue was removed. A transverse incision was made. Upon opening the abdomen the right tube was found to be about as thick as a thumb with blood oozing from the fimbrian end. There were marked adhesions with the omentum, and also with the appendix. The right tube and ovary were lying very high on the ilium. This location seemed to be the reason for their inability to locate and properly palpate the right adnexa. The right tube was then removed *in toto*, whereas the right ovary was left behind. The stump of the tube was secured with chromic catgut suture. The appendix which was adherent to the tube and was also subacutely inflamed and thickened with dilated vessels. It was removed and the stump buried with silkworm suture. The operation required twenty minutes.

Recurrence of Ovarian Carcinoma After Non-radical Operation.—Dr. HERMANN J. BOLDT presented this report because it served to emphasize the value of knowing what a previous operator's findings were at operation, in case a patient had had an abdominal operation done formerly. He said that undoubtedly this was a fact appreciated by every surgeon, and yet it was too frequently neglected. A goodly number of instances had come under his observation which proved the necessity of taking more careful histories and acquiring complete reports of the cases. The instance which he

would relate was the last he had met with and served as a good illustration. This patient had had a right ovariotomy done at Warsaw in 1903. On July 31, 1906, Dr. Boldt said he removed a left ovarian tumor. The patient, being then only 19 years of age and engaged to be married, he decided to retain a zone of seemingly functionating ovarian structure at the base of the tumor, particularly since the other ovary had been removed completely. She then married, and was later delivered by a well-known surgeon of New Haven by cesarean section. In September of this year she again consulted the speaker. An indefinite abdominal tumor in the lower part of the abdomen was present. The pelvis was filled with plastic exudate and the abdomen filled with ascitic fluid; its origin could not be ascertained. The seeming mobility of the abdominal tumor, despite the diagnosis of probable malignancy, would have justified an exploratory abdominal section if it had been impossible to obtain additional information. The patient gave none, but her companion, after she had left the consulting room, on questioning, told him that three months previously she had been operated upon at another hospital. On inquiry he learned that she was found to have an inoperable tumor and that the abdomen was closed. In referring to his notes of July 31, 1906, he found that he had noted that the tumor looked suspicious of malignancy. The pathologist's report he did not recall, nor was he able to find it on his file. He found a note, however, stating that he had seen the patient at a later date and that the patient was then menstruating regularly and was in good physical condition. The patient was then given a letter detailing all he knew about her case with the request that at the hospital to which he had requested her admittance the ascitic fluid be drawn off and *x*-ray treatment instituted. The surgeon in charge, from the result of physical examination, was led to think that the tumor might be extirpated. This was found to be impossible. The tumor was an adeno-carcinoma. Having seen one instance in which a cure resulted from Roentgen ray treatment in a similar condition, he believed that additional experimentation should be made with this agent.

Ruptured Uterus.—Dr. O. A. GORDON presented this specimen by invitation. The uterus had been ruptured during an attempt to induce abortion.

A Good Illustration of the Use of the DeLee Stethoscope.—Dr. FREDERICK C. HOLDEN made this presentation. He said that his object in presenting this specimen was not that it had any feature of special interest in itself, but because it afforded an opportunity to call attention to the use of the DeLee stethoscope, which was considered a help in obstetrical work. The specimen was a normal placenta and cord in which there were two knots in the cord at the time of delivery. The patient was a primipara, who had passed through a normal pregnancy and a normal L. O. A. labor. The interne in charge of the case was making repeated examinations of the fetal heart as the head descended. With the head on the perineum he suddenly was not able to hear the heart sounds which he had heard only a short time before. He immediately did a medial perinorrhaphy, and by an accouchement forcé was able immediately to deliver the child, which was in a condition of pronounced asphyxia, but was resuscitated with very little difficulty. In this instance one was impressed with the idea that the DeLee stethoscope was the means of saving this child's life. It was during the perineal stage when one was sterile which was the most important time to know the condition of the fetal heart, and yet many neglected to keep as close watch on the fetal heart as they should. One could not recommend this little instrument too highly, as it was a definite life-saver; it could be used without breaking the aseptic technique at a time when it was very important to know the condition of the child.

Metabolic Disturbances of Gestation.—Rissmann states that in Osnabrück there has been much less eclampsia and nephritis since the outbreak of the war. One primipara with albuminuria was found to be overfeeding. The use of mineral waters and vegetarian diet is commended.—*Correspondenz-Blatt für Schweizer Aerzte.*

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held October 22, 1917.

THE PRESIDENT, DR. J. BENTLEY SQUIER, IN THE CHAIR.

Resolutions on the Death of Dr. Brooks H. Wells.—The following resolutions on the death of Dr. Brooks H. Wells were presented by Dr. Charles Gilmore Kerley and Dr. John Van Doren Young:

"Dr. Brooks H. Wells was the son of the Rev. Edward Livingston Wells and Mary Huder Hughes Wells. He was born July 28, 1859, died July 6, 1917. After obtaining his preliminary education he graduated from the College of Physicians and Surgeons of New York in the Class of 1884, and served as Interne in the City Hospital on Blackwell's Island. Dr. Wells was Professor of Gynecology for many years at the New York Polyclinic Medical School and Hospital, likewise Associate Visiting Surgeon at the Women's Hospital, Consulting Physician to Beth Israel Hospital of New York City and the Brattleboro Hospital, Brattleboro, Vermont. He became a Fellow of the American Gynecological Society in 1902 and was elected one of its Vice-Presidents in May, 1917. He was also a Fellow of the New York Obstetrical Society, the American College of Surgeons, and the New York Academy of Medicine. He was also a member of the Medical Societies of the County and of the State of New York and the American Medical Association.

"In 1892 Dr. Wells became the Editor of the *American Journal of Obstetrics and Diseases of Women and Children*, and continued this work actively until his death. His editorial work is too well known among the readers of this journal to need any comment; suffice it to say that his success was founded upon sound judgment, a clear comprehension, an inherent sense of honesty, and a singleness of purpose. Dr. Wells demonstrated through all his work his firm belief that gynecology and obstetrics constituted one of the most important specialties, and his influence will long serve as a compelling factor in bringing this truth home to the profession. Dr. Wells was interested in the work of the Medical Reserve Corps and was recently commissioned a Captain in the Medical Officers' Reserve Corps. His patriotism and devotion to the work of this organization were characteristic of the man.

"Dr. Wells was keenly alive to the needs of our profession and a firm believer in organization for the accomplishment of good. This was demonstrated by his active interest in our Society, for when called to do anything for the Medical Society of the County of New York, no matter how much work was entailed, he was always ready. He felt his duty to the profession could only be discharged by a punctilious devotion to the work of the office to which he had been elected. That this devotion and ability were appreciated by the Society is shown by the fact that he served as Censor for four years, 1910-1911 and 1914-1915, and as First Vice-President in 1912 and President in 1913. His work and worth in the offices he held is best known to the members of the Comitia Minora, who served with him, but the whole Society had reaped the benefit of his effort and will continue to do so for many years to come.

"He has gone as have Drs. Richardson, Houghton, Townsend, LeFevre, and Huddleston, all devoted workers for the best interests of our Society; the ranks must close and their places be filled, if the work is to go on. They will not be forgotten; their example will inspire to greater effort and nobler achievement in the future.

"The Society extends to the family of Dr. Wells its deepest sympathy, well knowing that their loss is far greater than ours, but bids them remember that his work was always well done, and that he was honored and appreciated by our Society and the whole profession, a high reward indeed."

Results Following Operation in Seventeen Cases of Hour-Glass Stomach Due to Benign Ulcer.—Dr. WILLIAM A. DOWNES made this presentation. He said that he realized that this number of cases was far too small to justify positive statements, but the fact that 15 of them had been observed for an average of two and one-half years after operation, and one for more

than nine years, at least permitted an opinion as to the comparative value of the various operative procedures employed. There were 16 females and one male in the series. The average age was 39 years. There was one operative death, the patient dying from pneumonia on the sixth day after mediogastric resection. Well taken radiograms were of great value in establishing the diagnosis and in giving a fairly accurate idea of the relative size and shape of the pouches, the width of the channel connecting them, and the condition of the pylorus. This information was of great assistance to the surgeon in determining the operative procedure best suited to the given case. The one absolute requirement of any operation employed in the treatment of hour-glass contraction was that the symptoms due to obstruction be relieved. If at the same time the procedure adopted could include excision of the ulcer or the cicatrix of a healed ulcer, without too great risk, so much the better, but the fact must not be lost sight of that the great majority of these patients came to them on account of weakness due to inability to take or retain sufficient food. At least four operative procedures—gastroenterostomy, gastroplasty, gastrogastrostomy, and mediogastric resection—were available in the treatment of hour-glass contraction. To these pylorectomy should be added as the method to be adopted if the constriction was near the pylorus, thus forming a small distal pouch. Gastroenterostomy was the operation most generally used for the relief of this condition. It was employed in six of the writer's cases and was combined with gastroplasty in a seventh. This operation was indicated in those cases in which the constricted area was of wide extent, and in those in which adhesions prevented mobilization of both pouches. Gastroplasty had a limited field in the treatment of hour-glass contractions due to the fact that it was suitable only for those cases in which the pouches were movable, their walls free from induration, and the contracted area narrow. It was simple, easy to perform, and permitted direct inspection of the interior of the stomach, thus affording an opportunity for treating an active ulcer by excision or cautery application. It might be combined with pyloroplasty or gastroenterostomy if the pylorus was stenosed. Four of the writer's cases were operated on by this method. The end results in this group of cases had been most satisfactory, although in one the hour-glass deformity, to a certain extent, persisted to the present time, three and one-half years after the operation. Gastrogastrostomy was especially adapted to the cases in which the stomach was adherent along the lesser curvature to the liver, in which the pouches were relatively large, nearly equal in size, and could be approximated at their dependent portions. The stomach wall should be free from induration at the site selected for the anastomosis. The pylorus must be patent; otherwise pyloroplasty or gastroenterostomy would have to be added. Gastrogastrostomy was performed in three of the cases in this series with complete clinical recovery in each instance, one of the patients having been followed for nine years. Medio-gastric resection or resection of continuity was the ideal operation for hour-glass deformity of the stomach provided the pylorus was not stenosed, and should be performed in all suitable cases. The ulcerated area, active or quiescent, as well as the constricted portion of the stomach wall, was removed by this method. The end results demonstrated the value of this method but unfortunately it was limited to the cases with few adhesions in which the pouches were fairly large and permitted of free mobilization. It was a longer and more difficult operation to perform than those already mentioned, and for this reason, if the patient was in poor condition, should not be given preference over them. In order to overcome the tendency for the constriction to persist after resection in continuity, a wide excision should be made. Mid-gastric resection was the method adopted in five cases. In three a perfect result seemed to have been obtained. In a fourth case there was a persistence of the deformity and the patient continued to have some distress in her stomach. The fifth case died of pneumonia on the sixth day after operation. The 15 surviving patients had been examined and checked by radiographs during the past few weeks. All had gained in weight and, with the one exception noted, were practically free from the symptoms for which they sought relief. Some of each group had been followed sufficiently long to warrant the claim that a cure had been effected. From a study of the clinical results, the writer felt justified in concluding that each of the four operative procedures above mentioned gave equally good results provided the correct one was applied in a given case, and was executed in a proper manner.

Conservative Surgery of Chronic Intestinal Stasis.—Dr. Frank C. Yeomans presented this communication: After reviewing the factors responsible for intestinal toxemia, the essayist said that, stimulated by the work and writing of Mr. Lane, the entire subject of chronic intestinal stasis and toxemia had been restudied from every angle, in recent years. As a result some internists held (erroneously) that all cases were purely medical, while the surgeons had been either conservative or radical, with the recent trend toward conservatism. Was there a surgery of chronic intestinal stasis and, if so, what were its indications? The answer was in the affirmative (with limitations) and the sole clear indication was intestinal obstruction, either mechanical or physiological. This occluded organic stricture but included all lesions that interfered with normal physiology. The speaker then reviewed the lesions amenable to conservative surgery and commented on the more radical measures. Of the former lesions he spoke of anal fissure or irritable rectal ulcer with hypertrophied, spasmodic sphincter muscle which became obstructive and was relieved by simple incision of the muscle under local anesthesia. Houston's valves when thickened and obstructive were divided by a spring clip applied in the office. The sigmoid colon was a point of segmental delay often neglected. When it was free, oil enemata would restore normal physiology in most of the simple cases. Bands and adhesions that held it fixed and kinked must be divided. Recurrent volvulus required sigmoidopexy or shortening of the mesosigmoid. Nothing but removal of the involved segment of bowel would cure true cases of Hirschsprung's disease. The speaker reported several cases illustrative of conservative surgery of the sigmoid. Spastic constipation was to be differentiated from stricture by *x*-ray plates taken at different times. Surgery was indicated only when a diseased appendix, prolapsed kidney, or other lesion was found that was responsible for this reflex disturbance. In general enteroptosis or Glenard's disease, distortion of the intestines, as shown by the *x*-ray configuration, was not of vital import provided the organs had adjusted themselves to their new relations and were functionating in harmony. Surgery, however, might be required for particular segments as the prolapsed stomach or the transverse colon prolapsed into the pelvis, especially if adherent were there. The so-called hammock operation of Coffee had been very beneficial in the latter. Peritoneal bands and omental adhesions were met in most unexpected places and their division yielded excellent results. Deformity of the long prolapsed cecum and ascending colon and their constriction by bands, adhesions and "veils" gave less favorable surgical results. To sum the whole question up from an operative standpoint the surgeon must approach the open abdomen with an open mind, prepared to do whatever could safely and conservatively be done to relieve the pathology discovered. Surgery alone would effect a cure in cases in which obstructive or mechanical factors amenable to operative relief were responsible for the stasis. In other cases, however, in which profound tissue changes and marked general toxemia were present, operation was only the first step in treatment. The physician must keep these cases under observation and direct their hygiene, diet, and mode of life with the object of relieving the toxemia that had been years in developing, otherwise the patient would not derive the full benefit of his operation and even conservative surgery when properly performed in carefully suspected cases, would be discredited.

Dr. John D. Stewart expressed his thanks to Dr. Yeoman for offering him the privilege of discussing his excellent paper. It was said on reliable information that from 75 to 80 per cent. of constipation was rectal in origin, that was, the predisposing factor was found within one to three inches from the anal margin. The most common were the various forms of proctitis which gave rise to the hypertrophic changes seen in

the thickening of the anal papillæ, external and internal sphincter, Houston's valves, and the most noticeably inflammatory changes found in the levatorani muscle. Frequently in examining these cases one would find this muscle so enormously thickened and enlarged that it had much the feeling of a rope, supporting the rectum posteriorly. Invagination of the sigmoid was frequently observed as a causative factor in constipation. Frequently patients would say when they had to go to stool that at first the bowel would move easily and the movement would be sufficient in amount. Then there was a sensation that something remained and after straining they forced the invaginated bowel down into the rectum. A large number of cases of constipation or obstipation (the more appropriate term)—in which abdominal conditions were present, particularly where the lumen of the gut was obstructed by external conditions, as adhesions of the appendix or gallbladder, diseased adnexa, etc., causing angulations, kinks, and adhesive conditions—as Dr. Yeoman so well put it, should be dealt with surgically. Sigmoidopexy in cases of true invagination, those in which all the coats of the bowel were involved, most frequently were attended by very excellent results. Dr. Yeoman spoke of the efficacious manner in which many rectal conditions might be relieved under local anesthesia. This was quite true, particularly in fissures, which were the most painful rectal disorders with which we came into contact and the easiest to relieve, and with which constipation was so frequently associated. To be very frank, these cases of intestinal stasis, aside from ileocecal insufficiency and ptosis, were evidence of a condition that could only be dealt with surgically.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, Wednesday, October 24, 1917.

Dr. Moses Behrend, Vice-President, in the Chair.

Some Unusual and for the Most Part Unrecognized Forms of Ringworm.—Dr. M. B. Hartzell observed that while all are familiar with the ordinary forms of ringworm, represented by scaly annular patches on non-hairy parts and by round, partly bald areas covered with stumps of hair on the scalp, both of which are common in children, but few are acquainted with the varieties seen for the most part in adults and which resemble in some instances eczema of the hands and feet. These forms, known as eczematous ringworm, approach both in their clinical and histological features the infectious granulomata. Dr. Hartzell's reference was principally to the unusual and generally unrecognized forms, showing on the screen examples of exceptionally severe and extensive ringworm of the axillæ and thighs, eczematoid ringworm of the hands and feet and deep ringworm of various regions presenting severe and extensive follicular inflammation in a few instances accompanied by ulceration. Some twenty lantern slides were exhibited showing the clinical and histological features of these unusual varieties of ringworm.

Interpretation of the Causes of Salvarsan Reactions Based Upon Laboratory Studies.—Dr. Jay F. Schamberg read this paper, which was illustrated by lantern slides. He said it had been definitely established that dioxydiamino-arsenobenzol dichlorhydrate (salvarsan) was the most remarkable synthetic chemical compound introduced into medicine and the premier remedy in syphilis and certain other affections. An exhaustive study of the toxicity of the drug undertaken with his colleagues, Drs. John A. Kolmer and George W. Raiziss, had justified the following conclusions: (1) Salvarsan may be used in concentrated solutions up to 0.6 gms. in 10 cc. *in animals;* without any increase in toxicity. (2) The failure to neutralize the solutions of salvarsan with alkali leads to an increase in toxicity of fifty to sixty per cent. in solutions of ½ to 1 per cent. concentration. (3) The addition of a moderate excess of alkali beyond the amount required for neutralization does not increase the toxicity, though untoward effects are possible. (4) The use of sterile, freshly distilled water appears to possess advantages over sterile, stale-distilled or non-distilled water with regard to toxicity, although this difference is not pronounced. (5) Salvarsan in alkaline solution tends to undergo oxidation on standing, with consequent increased toxicity. The rapidity of oxidation and degree of toxicity, however, are variable. If a delay of two or three hours after preparation is unavoidable in its use the solution should be kept in a cylinder full to the stopper that no air may be present. (6) Immediate, early, and delayed reactive symptoms may occur after the use of salvarsan. The "immediate" symptoms are due to a paresis of the blood vessels; the "early" symptoms coming on in a few hours are febrile and gastrointestinal in character, and the "delayed" may be referable to the brain or the liver and gastrointestinal tract. (7) The etiologic factors in the reactive phenomena may be related to the patient, the technique, and to the medicament. We believe that the most important factor is referable to the drug. It is our belief that the immediate vasoparetic reactive symptoms are due to traces of an unidentified impurity in the drug, which we have for convenience termed *substance X*, and that they are not due to 'arsenoxide.' (9) Salvarsan and its congeners are not compounds of absolute chemical purity. We cannot, therefore, expect absolute constancy in biological effects. (10) Salvarsan and its congeners may vary, within certain limits, in therapeutic effect, and to a greater degree in toxicity. The ampoules obtainable in the open market exhibit striking variations in toxicity. (11) Even the poorest compounds are tolerated by animals in much higher amounts than the maximum dose administered to man. There is, therefore, nearly always a latitude of safety. (12) We believe that the commercial products should be tested out intravenously as well as subcutaneously, and that they should be tolerated by rabbits in the dose of 60 mg. per kilo of body weight. (13) Salvarsan is a safer substance than mercury and can be tolerated intravenously by white rats in fifty times the dose of the latter, weight for weight."

X-Ray Treatment of Diseases of the Skin.—Dr. George E. Pfahler employed the *x*-ray in diseases of the skin for (1) the stimulating effect, as in eczema; although comparatively few eczemas should be subjected to this treatment; (2) for the destructive effect, as in epithelioma; (3) for the production of atrophy, as in the treatment of keloids. Many obstinate chronic inflammatory lesions would yield to the stimulating effect of *x*-ray treatment. He estimated that from 85 to 90 per cent. of the basal-cell epitheliomata would yield to treatment by the *x*-ray and that all of such type of epithelioma should yield to the combination of electrocoagulation and *x*-ray. In squamous cell epitheliomata which were more difficult to treat he believes the best results are obtained by the combination of electrocoagulation and the *x*-ray. This he said was particularly true of lesions of the mucous membrane of the mouth. The reduction of keloids was possible by application of the *x*-ray continued over a long period. When practicable good results were possible by careful excision of the keloid followed by immediate application of the *x*-ray to a sufficient degree to prevent recurrence.

Dr. Albert Strickler agreed with Dr. Hartzell that the forms of ringworm described were far more frequent than suspected. Examination for the ringworm fungus was so easily made that he feels that a further spread of the knowledge of the cases of real ringworm by this means would add greatly to the possibility of cure. In connection with the reactions of salvarsan he cited an incident in a case of syphilis which Dr. Schamberg had asked him to attend during his absence. Although the same preparation employed by Dr. Schamberg had been used by Dr. Strickler the man became very sick on the table. A few days later the patient reported that his illness was due to his lack of faith in the ability of the doctor to give the treatment. The case illustrated, Dr. Strickler thought, the individual idiosyncrasy in the matter of salvarsan. Dr. Pfahler's statement that acne and eczema should not always be treated by the *x*-ray was gratifying to Dr. Strickler, believing as he did that many cases of eczema were due to food; some to nerves. Such cases he said were not often benefited by the *x*-ray and after continued treatment by this means, cure by any means was most difficult. A case in point was cited of a young girl under his care at the present time who for two years had been treated with the *x*-ray for eczema of the face and arms. A study of the case had shown food to be the etiological factor.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Virginia State Medical Examining Board.

June, 1917.

ANATOMY.

1. Ulna—(*a*) Description of articular surfaces. (*b*) Relations to other bones. (*c*) Action.
2. Patella—(*a*) Shape. (*b*) Size. (*c*) Location. (*d*) Function.
3. Diaphragm—(*a*) Location. (*b*) Relations. (*c*) Openings.
4. Femoral Artery—(*a*) Course. (*b*) Relations.
5. Ulnar Nerve—(*a*) Origin. (*b*) Course. (*c*) Distribution.
6. Pancreas—(*a*) Location. (*b*) Relations. (*c*) Description of duct.
7. Hernias—(*a*) Usual locations. (*b*) Anatomy of Direct Inguinal.
8. Essential anatomy of Spinal Puncture.
9. Essential anatomy of Aspiration of Bladder.

HISTOLOGY.

Histology of the Ovary or Histology of the Testicle.

PHYSIOLOGY AND CHEMISTRY.

1. Define digestion. (*a*) Name the different organs that directly contribute thereto. (*b*) What class of foods are digested in the stomach?
2. What is meant by blood pressure and state causes that influence it?
3. Where is the center of respiration located and how may same be stimulated directly and indirectly?
4. What is the function of serous fluids?
5. Give mechanism of secretion of bile and the function of same.
6. What effect would division of the pneumogastric nerve in the neck have on the heart's action; and secondly, galvanization of the peripheral ends?
7. Earthy phosphates being insoluble in water, why are they held in solution in normal urine? (*a*) What abnormality precipitates them?
8. Give source and manner of obtaining iodine. (*a*) Give test for detecting same.
9. How do you estimate the amount of carbon and hydrogen in organic compounds?
10. What tests may be used in detecting the presence of morphine, brucine, and strychnine?

MATERIA MEDICA, THERAPEUTICS, AND TOXICOLOGY.

1. Define serum therapy and name those that have proven most valuable.
2. Define hypnotics, analgesics, and nervous sedatives and give examples in each class.
3. Compare the therapeutic uses of pepsin and pancreatin, how are they prepared, and in what medium does each act best?
4. Write a prescription for a collyrium, a suppository, and for acute dysentery.
5. In what pathological conditions are diuretics indicated? Give name and doses of four most efficient.
6. Give causes of high blood pressure and state what measures and drugs are indicated.
7. Name the antidote for practically all alkaloids and explain its action.
8. Give the maximum dose of the following drugs and in case of poisoning name chemical and physiological antidote for each: morphine, strychnine, carbolic acid, bichloride of mercury, arsenic.
9. Give causes, symptoms, and treatment of chronic lead poisoning.
10. Give cause, symptoms, and treatment of ptomaine poisoning.

ANSWERS.

ANATOMY.

1. The *upper extremity of the ulna* is large and irregular and presents the olecranon process, the apex of which is received into the olecranon fossa of the humerus. The coronoid process projects from the anterior surface and is received (during flexion) into the coronoid fossa of the humerus. The great sigmoid cavity is on the upper surface, and serves for articulation with the trochlear surface of the humerus; the lesser sigmoid cavity on the outer surface articulates with the head of the radius. The *lower extremity of the ulna* is small and cylindrical, and presents the head, which articulates below with the triangular fibrocartilage, and externally with the lower end of the radius. Above it is related to the humerus, and on the outer side to the radius. Its action is to bring about flexion and extension of the forearm; it also assumes a passive rôle in pronation and supination of the forearm.

2. The patella is a flat, roughly triangular bone, situated in front of the knee joint. It is about four centimeters long and about the same in width. It serves to protect the anterior part of the knee joint, and also increases the leverage of the quadriceps extensor muscle by making it act at a greater angle.

3. The *diaphragm* is a musculofibrous septum which divides the thoracic from the abdominal cavity; it is fan-shaped; the broad elliptical portion is horizontal, and the crura are vertical. It is attached to the ensiform, to the internal surfaces of the lower six costal cartilages, to bodies and intervertebral substances of first, second, and third lumbar vertebræ. Its *openings* are: (1) The aortic, transmitting the aorta, vena azygos major, and the thoracic duct; (2) the esophageal, transmitting the esophagus, pneumogastric nerves, and some small esophageal arteries; (3) the opening for the vena cava, transmitting the inferior vena cava, and small branches of the right phrenic nerve; (4) the right crural, transmitting the right splanchnic nerves; (5) the left crural, transmitting the left splanchnic nerves and the vena azygos minor. *Structures in relation with the diaphragm. Above:* Pleuræ and lungs, pericardium and heart; *below:* peritoneum, liver, stomach, spleen, pancreas, suprarenal bodies and kidneys.

4. The *femoral artery* is the continuation of the external iliac, beginning behind Poupart's ligament, passing down the front and inner side of the thigh, and terminating at the opening in the adductor magnus, where it becomes the popliteal artery. It passes through Scarpa's triangle. It is indicated by a line drawn from the central point of a line joining the anterior superior spine of the ilium and the symphysis pubis to the adductor tubercle on the inner condyle of the femur. *Relations. In front:* Skin, fascia, internal cutaneous nerve, sartorius, aponeurotic covering of Hunter's canal; *behind:* Psoas, pectineus, capsule of hip joint, profunda artery; *outer side:* Anterior crural nerve, vastus internus; *inner side:* Femoral vein, and adductors.

5. The *ulnar nerve* takes its origin in the inner cord of the brachial plexus. It passes down the inner side of the axillary and brachial arteries to the middle of the arm. From this point it runs obliquely across the internal head of the triceps, pierces the internal muscular septum and descends to the groove between the olecranon and the internal condyle. It then passes into the forearm between the two heads of the flexor carpi-ulnaris, and descends along ulnar side of forearm, and internal to the ulnar artery, as far as the pisiform bone. It is distributed to the elbow and wrist joints; to the flexor carpi ulnaris and the inner half of the flexor profundis digitorum; to the skin of the ulnar half of the back of the hand, and to the skin of the little finger and adjoining half of the ring finger on the palm of the hand.

6. The *pancreas* lies transversely across the posterior abdominal wall, the large vessels intervening between it and the wall—being on a level with the second lumbar vertebra (and sometimes with the first or third)—lying in the epigastric and left hypochondriac regions—having the stomach in front, duodenum to the right, and spleen to the left—and the aorta, vena cava, celiac plexus, thoracic duct, and diaphragmatic crura behind. It lies behind the posterior wall of the lesser omental cavity and is between the laminæ of the mesocolon of the transverse colon. The head of the pancreas is surrounded by the loop of the duodenum. The tail of the pancreas is in contact with the interno-inferior aspect of the spleen. Peritoneum covers the pancreas except upon its posterior surface. The viscus is about 6 inches in length, 1¼ to 1½ inches in width, and

about ½ inch in thickness.—(Bickham's *Operative Surgery.*) Its canal is the duct of Wirsung, which extends transversely from left to right and opens into the duodenum in common with the ductus communis choledochus.

7. HERNIAS. *Usual locations:* In the inguinal, femoral, umbilical, and ventral regions. *Anatomy of direct inguinal hernia:* The hernia does not occupy the inguinal canal, but leaves the abdomen to the inner side of the deep epigastric artery, through the space known as Hesselbach's triangle. There are two forms of this variety: (*a*) the hernia may escape between the epigastric artery and the obliterated hypogastric artery; (*b*) or it may escape between the obliterated hypogastric artery and the outer edge of the rectus muscle.

8. *Anatomy of spinal puncture.* The puncture may be made in any intervertebral space below the second lumbar vertebra; the space generally chosen is that between the third and fourth lumbar vertebræ. A line drawn connecting the highest points of the iliac crests passes through the spine of the fourth lumbar vertebra. The puncture is to be made in the first interspace above this line, and a little to one side of the median line. The reason is to avoid injury to the spinal cord, which terminates at the level of the lower border of the first lumbar vertebra. In the child, the spinal cord terminates opposite the body of the third lumbar vertebra; hence in children the puncture should be made below the fourth lumbar vertebra.

9. *Anatomy of respiration of the bladder.* The bladder occupies the anterior part of the pelvic cavity, lying behind the symphysis pubis. When empty it is triangular in form; when moderately distended, it is of a rounded form; and when fully distended it is of an ovoid shape, and extends into the hypogastric (or even to the umbilical) region. As the bladder rises into the abdomen it carries with it the peritoneum of the anterior abdominal wall, so that there is an area on the bladder, extending for from one to two inches above the pubes, which is uncovered by peritoneum; through this area a puncture or incision may be made into the bladder without opening the peritoneal cavity.

HISTOLOGY.

Histology of the testicle: "Each testicle is invested by a covering of the peritoneum, the tunica vaginalis, which is reflected from the scrotum. Inside this is a thick fibrous tissue, the tunica albuginea, which sends in processes which effect an imperfect division of the organ into lobules. The processes converge towards a thickening of the capsule at the back of the organ, the mediastinum testis. The ducts of the gland also converge towards this point, and from it there emerges a convoluted tube, the epididymis, which lies along the side of the testicle and passes at its lower end into a thick-walled tube, the vas deferens. The substance of the testis is made up of seminiferous tubules, whose lining cells elaborate the spermatozoa. These tubules begin near the tunica albuginea, run a convoluted course towards the mediastinum, and join with others to open into a straight tubule. The straight tubules join to form a network, the rete testis, and from the rete there open convoluted efferent tubules, which join the epididymis. The seminiferous tubules are surrounded by layers of fibro-elastic tissue with flattened cells. On a basement membrane are found cubical cells, spermatogonia. Between these cells are others placed at intervals. These are tall cells, the foot cells of Sertoli. Next to the lining cells is a layer of larger cells, many of which show mitotic figures. These are spermatocytes. In many tubules there are cells internal to the spermatogonia. These are the spermatids, small cells either rounded or elongated. Transitions between these cells and spermatozoa are also seen. The spermatozoa are seen lying in bundles with their heads in contact with one of the Sertoli cells, and their tails free towards the lumen of the tube."—(*Aids to Histology.*)

PHYSIOLOGY AND CHEMISTRY.

1. *Digestion* is the process by which the food is introduced into the body and prepared in such a way that it becomes suitable for absorption. The *organs concerned in digestion* are the mouth, esophagus, stomach, small intestine, salivary glands, liver, and pancreas. Proteins are digested in the stomach; a slight action also occurs on fats, and milk is curdled.

2. *Blood pressure* is the pressure of the blood due to the ventricular systole, the elasticity of the arterial walls, and the resistance of the capillaries. The normal arterial blood pressure varies; the systolic pressure being about 120 to 150 mm. of mercury, and the diastolic from about 90 to 120 mm. of mercury. Blood pressure is *maintained* by the contraction of the heart, the peripheral resistance, and the elasticity of the arterial walls. Blood pressure:

MAY BE RAISED.	MAY BE LOWERED.
1. By the heart beating more quickly.	1. By the heart beating more slowly.
2. By the heart beating more powerfully.	2. By the heart beating more feebly.
3. By contraction of the arterioles.	3. By dilatation of the arterioles.
4. By increase in total quantity of blood.	4. By deficient supply of blood to the left ventricle.

3. The respiratory center is situated in the medulla oblongata, on both sides of the posterior aspect of the apex of the calamus scriptorius. The respiratory center is probably automatic; but its activity is excited by: irritation of cutaneous or pulmonary sensory nerves, by the accumulation of carbon dioxide in the blood, by the diminution of oxygen, or by the presence of heat.

4. The *function of serous fluids* is to lubricate the serous membranes and thus allow the gliding of opposed surfaces over each other with a minimum of friction.

5. "The *secretion of bile* is a continuous process, and in periods when digestion is not taking place bile accumulates in the gall-bladder. About the third hour after a meal is taken the gall-bladder is emptied into the lumen of the duodenum, but the mechanism by which the contents are expelled has not yet been ascertained. Bile continues to flow into the intestine during the digestive process, and, later, again accumulates in the gall-bladder. . . . So far as is known, the secretion of bile is independent of nervous action, and is excited by the reabsorbed salts and by secretin."—(From Bainbridge and Menzies' *Essentials of Physiology.*)

The functions of the bile are: (1) To assist in the emulsification and saponification of fats; (2) to aid in the absorption of fats; (3) to stimulate the cells of the intestine to increased secretory activity, and so promote peristalsis, and at the same time tend to keep the feces moist; (4) to eliminate waste products of metabolism, such as lecithin and cholesterin; (5) it has a slight action in converting starch into sugar; (6) it neutralizes the acid chyme from the stomach and thus inhibits peptic digestion; (7) it has a very feeble antiseptic action.

6. Division of the pneumogastric nerve in the neck will cause the heart to beat more rapidly. Galvanization of the peripheral end, if gentle, will again inhibit the heart and cause it to beat slower; if more strongly, the heart will be slowed or even stopped.

7. The earthy phosphates are held in solution by the normal acidity of the urine; when the urine becomes alkaline these phosphates are precipitated.

8. *Iodine* is not found free in nature; but it occurs in combination with sodium, potassium, calcium, and magnesium in sea water, marine animals, seaweed, and mineral waters. Iodine is *prepared* by heating potassium iodide with manganese dioxide and strong sulphuric acid:

$$2KI + MnO_2 + 3H_2SO_4 = 2KHSO_4 + MnSO_4 + 2H_2O + I_2$$

Iodine is *detected* by the blue color which is produced when it comes in contact with starch.

9. *To estimate the amount of carbon and hydrogen in organic compounds:* "The determination of both elements is made in one operation, by taking advantage of the fact that when a compound containing carbon and hydrogen is heated with cupric oxide all the carbon is converted into CO_2, and all the hydrogen into H_2O. Thus, if $C_2H_6O + 6CuO = 2CO_2 + 3H_2O + 6Cu$. 46 parts of alcohol will produce 88 parts of carbon dioxide and 54 parts of water. The apparatus required consists of a tube of difficultly fusible glass, called a com

bustion tube, about 60 centimeters long, drawn out to a point and closed at one end, a "combustion furnace," in which this tube may be heated, and the absorbing apparatus referred to below. A weighed quantity of the substance of which a "combustion" is to be made (sealed in a small glass bulb if liquid) is placed in the closed end of the combustion tube, along with the requisite quantity of recently ignited cupric oxide, leaving space for the passage of the gases produced. The tube is then placed in the furnace and its open end connected with a U tube filled with fused $CaCl_2$, or with fragments of pumice moistened with concentrated H_2SO_4, whose weight has been determined, and whose purpose it is to absorb the H_2O produced. This first U tube is connected with a "Liebig's bulb" containing a strong solution of KHO, and this in turn with another U tube in all respects similar to the first, both the Liebig bulb and the last U tube having been previously weighed. The purpose of the Liebig bulb is to absorb the CO_2 produced, that of the second U tube to retain water carried over from the Liebig bulb by the current of gas. The combustion tube is then carefully heated until the evolution of gases ceases, when the closed, drawn-out end of the tube is broken and connected with a gasometer containing pure, dry oxygen, a current of which is passed slowly through the apparatus to bring the last portions of the products of combustion into the absorbing apparatus. Finally the U tubes and the KHO bulb are again weighed. The increase in weight of the first U tube is the weight of H_2O produced, every 9 parts of which represent 1 part of H. The increase in weight of the Liebig bulb and the second U tube is the weight of CO_2 produced, every 44 parts of which represent 12 parts of C."—(Witthaus' *Manual of Chemistry.*)

10. *Test for morphine:* A solution of molybdic acid in sulphuric acid (Fröhde's reagent) gives with morphine a violet color, changing to blue, dirty green, and faint pink.

Test for brucine: Concentrated nitric acid colors it bright red, which soon changes to yellow; colorless NH_4HS changes the red to violet.

Test for strychnine: Strychnine forms a colorless solution with concentrated H_2SO_4. If a crystal of potassium dichromate is drawn through this solution, it is followed by a track of color which is first (for an instant) blue, then violet, then rose-colored, and finally yellow.

MATERIA MEDICA, THERAPEUTICS, AND TOXICOLOGY.

1. *"Serum-therapy proper* is the prophylactic and curative treatment of certain infectious diseases by the subcutaneous or intravenous administration of a blood-serum containing an antibody (antitoxic, bactericidal, etc.) which is specific to the particular disease. As generally used, however, the term includes also the treatment of some of these affections by vaccines and by the toxic products (toxins) of attenuated cultures of their respective microbes; but these toxins, though sometimes grown on blood-serum, may be produced on other media, and are never administered in a blood-serum, as the antibodies invariably are."—(Potter's *Materia Medica.*)

Those that have proved most valuable are the diphtheria antitoxin and the antitetanic serum.

2. *Hypnotics* are agents which are used to induce sleep somewhat resembling natural sleep; as chloral, sulphonal, trional.

Analgesics are agents which relieve pain by blunting sensation; as opium.

Nervous sedatives are agents which exert a soothing influence on the system by lessening functional activity, depressing motility, and diminishing pain; as potassium bromide, gelsemium.

3. *Pepsin* is indicated as an aid to gastric digestion in gastralgia, gastric cancer and ulcer, atonic dyspepsia, and the vomiting of pregnancy. *Pancreatin* is indicated as an aid to digestion, and for the predigestion of food, in convalescence, in wasting diseases, and in intestinal dyspepsia.

Pepsin acts in an acid medium; *pancreatin* in an alkaline one.

Pepsin is made from the glandular layer of the fresh stomach of the hog; *pancreatin* is made from the fresh pancreas of the hog.

4. *A collyrium:*

℞.

Acidi borici, gr. vj.
Aquæ camphoræ.
Aquæ destillatæ āā, ℥j. M.

Sig.—Use as an eyewash.

A suppository:

℞.

Iodoformi, ℥j.
Balsami peruviani, ℥ij.
Magnesii oxidi, ℥j.
Cetacei, ℥ss.
Olei theobromatis q. s.
Misce; et fiant suppositoria, No. xij.

Sig.—Insert one morning and evening.

For acute dysentery:

℞.

Acidi sulphurici diluti, ℥ss.
Tincturæ opii deodorati, ℥j.
Spiritus camphoræ, ℥j.
Tincturæ capsici, ℥ss.
Spiritus chloroformi, ℥ss.
Spiritus vini gallici, ℥jss. M.

Sig.—One teaspoonful, diluted, every three hours.

5. *Diuretics are used:* To dilute the urine, to increase the flow of the urine, to remove liquids from the body (as in dropsy), to remove toxic substances from the body, and to stimulate atonic kidneys.

Example: Digitalis, dose 1 dram of the infusion; water; potassium acetate, dose 15 grains; spirit of nitrous ether, dose 30 minims.

6. *High blood pressure* is observed in arteriosclerosis, chronic nephritis, angina pectoris, cardiac hypertrophy, increased intracranial pressure, lead poisoning, gout.

Remedies are: Cardiac depressants (such as aconite, veratrum viride); drugs which dilate the arteries (such as sodium nitrite, amyl nitrite, nitroglycerin, spirit of nitrous ether, chloral hydrate), and measures which decrease the volume of the blood (such as venesection, cupping, application of leeches).

7. *Antidote for practically all the alkaloids* is tannin. The reason is, that tannic acid forms insoluble compounds with most of the alkaloids.

8. MORPHINE: *maximum dose,* half a grain; *antidote,* strychnine, and solution of potassium permanganate.

STRYCHNINE: *maximum dose,* 1/20 grain; *antidote,* chloral hydrate.

CARBOLIC ACID: *maximum dose,* 1½ grains; *antidote,* solution of sodium sulphate, and dilute alcohol.

BICHLORIDE OF MERCURY: *maximum dose,* 1/10 grain; *antidote,* white of egg or milk.

ARSENIC: *maximum dose,* 1/15 grain of the trioxide; *antidote,* freshly prepared solution of ferric hydroxide.

9. CHRONIC LEAD POISONING. *Causes:* "The contamination of drinking water from lead pipes. Contamination of articles of food or drugs by contact with leaden vessels, or from being enclosed in tinfoil containing an excess of lead. Drinking beer, cider, etc., which has been drawn through leaden pipes or allowed to stand in pewter vessels. The ingestion or constant handling of lead or its compounds, as the acetate, nitrate, carbonate (white lead—painter's colic), Goulard's extract, etc. The use of hair dyes containing lead."

The *symptoms* are: Wrist drop, severe colic around the umbilicus, constipation, feces clay colored, blue line on the gums at the junction with the teeth.

The *treatment* is first to remove the cause; then administer a purge of jalap and calomel combined with opium; iodide of potassium should also be given to help in the elimination of the lead.

10. PTOMAINE POISONING. *Causes:* The ingestion of meat, sausages, fish, milk, oysters, cheese, etc., containing ptomaines.

Symptoms: Chilliness, headache, vertigo, muscular twitchings, hallucinations, imperfect vision, weak and rapid pulse, nausea, vomiting, diarrhea, cyanosis, early dyspnea, often subnormal temperature, and occasionally cutaneous eruptions.

Treatment consists in the use of emetics and cathartics, or lavage and rectal irrigation. Morphine may be indicated for the relief of pain, and collapse is to be combated by atropine, strychnine, nitroglycerin, external heat, whiskey, etc. After thorough purging, salol, naphthol, or bismuth may be given.

(*To be continued.*)

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Original Articles.

THE TREATMENT OF HYPOPLASTIC AND MENTALLY IMPAIRED CHILDREN.*

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IN spite of the fact that mental impairment in children is practically always the result of a correlative physical impairment, the training and education of such children remain for the greater part in the hands of laymen. Medical treatment and advice, or what in any other class of cases would be considered medical treatment and advice, is often administered by those whose only claim to medical knowledge is based upon a few lectures upon the psychoses, an interpretative exposition of Freudian philosophy, and a visit to an institution for the feeble-minded.

To many it seems that the physician is logically the one who should direct and supervise the application of the closely interrelated hygienic, educational, and medical measures necessary for the adequate handling of the class of cases referred to above. The busy general practitioner, pediatrist, or neurologist has not the inclination, time, or facilities to give the detailed attention required. Thus it seems necessary to delegate this function to one who confines his attention to this particular field, which seems worthy of a place in the sun as a branch of medical practice, with a distinctive appellation of its own.

The writer some years ago suggested, after conferring with a leading authority on medical terminology, the name "pedology," which was defined as "that branch of pediatrics in which the physical and mental defects of child development are especially studied and treated by the physician."

The defects with which the pedologist deals are the result of interference, from many and diverse causes, with the normal processes of growth, which causes are either hereditary or environmental in character. Either class of causes may predominate as an etiological factor in a given condition, or group of conditions, to which an individual is subject—seldom, however, is either of these classes found alone.

*Read by invitation before the Clinical Society of the New York Polyclinic Medical School and Hospital, October 1, 1917.

HYPOPLASIA OR DEGENERATION.

(Schema drawn by Dr. Charles P. Noble.)

(*a*)	Hereditary Hypoplasia		Due to defect in the chromosomes, (the chromatin or hereditary material) of the ovum or the spermatozoon of parents.
(*b*)	Environmental Hypoplasia	1.	Due to toxemia in the parent or parents affecting (by poisoning) the ovum, or the spermatozoon, or both—giving rise to a defective (poisoned) impregnated ovum or germ. Preconceptional environmental hypoplasia or arrest.
		2.	Due to toxemia in the mother, or to local disease in the endometrium, leading to poisoning of the germ, the embryo, or the fetus, or to insufficient nutrition of the developing ovum. Antenatal, intrauterine hypoplasia.
		3.	Due to bad environment in postnatal life leading to disease, or to malnutrition, with toxemia, and arrest of development. Postnatal hypoplasia.
(*c*)	Mixed, Hereditary and Environmental Hypoplasia		Due to toxemia in the parent or parents, themselves examples of hereditary hypoplasia, before conception; or to toxemia, or to uterine disease, in the mother during pregnancy; or to bad environment leading to disease in postnatal life, in children of parents having hereditary hypoplasia.

"Hereditary hypoplasia was formerly spoken of as the hereditary diathesis or dyscrasias, as gout, diabetes, tuberculous tendency, the nervous diathesis, embracing hereditary neuroses and psychoses, and including epilepsy. It also embraces the hereditary tendencies due to defects or to reversion of the 'born criminals' of Lombroso, and the 'moral or sexual degenerates' of Krafft-Ebing. With exceptions, those suffering from hereditary hypoplasia are either continuously hyperenergized or are alternately hyperenergized and lethargic—or in the *Wanderlust* group.

"Environmental hypoplasia may be general, or specific as to organs or systems of organs, or diathetic in type. Environmental hypoplasia is invariably associated with a lessened capacity to develop energy. The entire group suffering from environmental arrest are subenergized."

This schema shows the mode of action of the above named causes. Much disagreement exists regarding the relative effects of heredity and environment, chiefly because of the confusion regarding the limitations of each. Many influences commonly considered hereditary are, in reality, purely environ-

mental; as in Class 1 and 2, under B, in the schema. Interference with the natural forces of growth by any vitiating influence interfering with cell development becomes aggravated through the interrelation and interdependence of the various systems of body cells, among the most important of which are those initiators and regulators of correlative growth —the sympathetic, autonomic, and ductless glandular systems. Thus conditions having a vitiating influence upon cell development result in growth disturbances in the developing embryo, and as a further interference with growth forces, in the first few weeks of fetal life when the ductless glands begin to appear, the cells of which they are composed also grow imperfectly; and, as they fail to secrete to the extent to which they were destined, further defective development ensues. As a result we have constitutional inferiority, infantilism, hypoplasia, degeneracy—call it what you will—in varying degree. Of these terms I prefer "hypoplasia." Hypoplasia may affect any organ and any structure and to almost any extent. Thus hypoplasia of the nervous system gives us idiocy at one extreme, and the so-called neurotic make-up at the other.

STIGMATA OF DEGENERATION.

1. Abnormalities in size and shape of the head. Softness or bossing of the cranial bones. Marked gaping or premature closure of the fontanelles and sutures. Undue distention or sinking of the fontanelles.

2. Malformations of the ears. Irregularity in size. Undue prominence or flattening. Misshaped helix, antihelix, tragus, antitragus, and lobule. Supernumerary auricles, auricular appendages, or atresia auris.

3. Anomalies of the eyes or lids. Drooping of one or both eyelids. Epicanthus and palpebral fissures. Congenital cataract, coloboma iridis or ididereмia. Microphthalmus or anophthalmus. Strabismus and nystagmus.

4. Malformations of the nose. Saddle-shaped, exceptionally small and broad, or unduly large and prominent. Partial or complete atresia of the posterior nares.

5. Malformations of the face. Undue prominence of the cheek bones with markedly retracted small chin. Clefts of face and lips. V-shaped or high vaulted palate. Enlarged, protruding, and often cracked tongue. Irregularly shaped and implanted teeth, deficiency or excess in their number. Inability to bring jaws closely together, owing to irregularity of dental arches, hence constant dribbling of saliva from half-open mouth.

6. Malformations of long bones. Curvatures of the bones of the upper and lower extremities. Supernumerary fingers and toes or deficiency in their number. Syndactylism or fan-shaped distribution. Disproportion in size of legs and arms. Talipes, spina bifida, and caudal formations.

7. Umbilical hernia; diastasis recti abdominis. Anomalies of the genitalia; epispadias and hypospadias. Malformations of the anus and rectum. (Sheffield.)

The various stigmata of degeneracy, noted in detail above, are somatic manifestations of hypoplasia. It may some day be possible, when our knowledge of endocrinology has become more complete, to trace by means of the stigmata of degeneracy the retardations and exacerbations in function, changes in chemical complexity and even structural abnormalities of individual glands of internal secretion, even back to early intrauterine and early postnatal existence. More even than this is possible as a result of an enlightened knowledge, it may be that the mysterious directive forces of hereditary transmission will be found, not to reside in the essential structure of the chromatin, but in the intricate harmonic constituency of the cells.

The hypoplastic child is distinguishable from his more normally constituted fellows by various anatomical, physiological, and psychic characteristics. The clinical picture most often seen is the underdeveloped, badly nourished child whose unstable nervous system is still further handicapped by the effects of reflex disturbances arising from nasal obstruction, defective vision, or perhaps phimosis. These and similar conditions are a part—not the cause—of the hypoplastic complex. Such children are subject to delayed epiphyseal union, as revealed by the *x*-ray, hypotonicity of ligaments and muscles, postural defects, visceroptosis, and hernia. Incontinence of urine and feces is frequently present. The *signe du sourcil* (deficiency of the eyebrows in the outer third) is often present and is considered by some a sign of thyroid deficiency. Delayed sexual development is common, though sexual precocity may be found. Premature eroticism leading to sexual misdemeanors is frequent in hypoplastic children—especially in emotional, physically inferior girls. In making examinations in juvenile court work I have been struck by the fact that practically without exception all girls charged with sexual offences have enlarged and over-active thyroids, in many even before the development of secondary sexual characteristics. The high-arched palate produced by yielding of the palatine bones owing to their relative poverty in calcium is a fairly constant symptom of hypoplasia, dental malocclusions are likewise common, and variations in bodily temperature and irregularities in pulse rate are frequent. Abnormalities in size and shape of the sella turcica indicating variations in size and function of the pituitary gland are common in hypoplastic children and within certain limits may be considered merely as stigmata of degeneracy. Information of positive value may sometimes be obtained through examination of the blood and through biochemical studies of the urine.

The following is the blood analysis of a hypoplastic boy who gave a positive Abderhalden reaction to sexual and pineal gland tissue:

Absolute Count: Hemoglobin (Sahli), 105; red blood cells, 6,512,000; white blood cells, 8000.

Differential Count: Neutrophiles, 39; lymphocytes: small, 26; medium, 20; large, (?); eosinophiles, 25; basophiles, (?); monocytes, 45; transitionals, 8.

Remarks.—Blood pressure 120. Wassermann, on March 19 and March 30, shows slight inhibition.

Volume	300 c.c.	
Reaction	acid	
Specific gravity (25°C.)	1.0272	
Color	Pale	
Nitrogen, total	3.730	gms.
" urea	3.538	"
Uric acid	.258	"
Creatinine	.081	"
Total Sulphur (as SO_3)	1.333	"
Inorganic " "	.741	"
Ethereal " "	.022	"
Neutral " "	.570	"
Total Phosphorus (as P_2O_5)	.328	"
Total solids	15.516	"
" inorganic solids	6.720	"
" chlorides (as Na Cl)	6.042	"
Inorganic " "	3.666	"
Calcium oxide	.094	"
Magnesium	.060	"
Indican	low	
Albumin	none	
Sugar	none	

The above is the biochemical analysis of the

urine of a child subject to attacks of petit mal. The uric acid and neutral sulphur are high, while the nitrogen is abnormally low.

In the psychic sphere hypoplasia may manifest itself in aprosexia and psychasthenia (the natural correlates to a condition of general adynamia), in hyperemotivity, in susceptibility to neuroses and psychoses and various perverse tendencies (delinquency, sex perversion and inversion, etc.), in isolated depression of function of higher cerebral centers (congenital word-blindness, word-deafness, etc.), and in mental deficiency sufficiently severe and general in scope to constitute feeble-mindedness.

The first requisite in the treatment of mentally impaired children is the same as that in the treatment of hypoplastic children in general, since it is fruitless to attempt to correct the mental impairment without at the same time stimulating and stabilizing the correlative development of all the forces of growth.

Treatment may be divided into prophylactic, hygienic, medical, and educational.

Prophylactic measures should date not only from the earliest moment of conception but should be applied to the parents at a period even earlier than

Fig. 1.—Esthetic dancing in the snow.

this. While not an ardent believer in the theories of the eugenists as popularly exploited at present, I do believe prospective parents should conduct themselves in accordance with the rules of healthful living and so do much toward insuring the healthfulness of their individual germ cells. After conception the responsibility rests upon the mother. Antenatal hygiene is of an importance not generally realized, though upon it depends, to a large extent, the future stability of the race. Insufficient nourishment, either from lack of food or because of metabolic disorders, worry and emotional disturbances, exhaustion, either as a result of overwork or of an over-strenuous pursuit of pleasure, lack of exercise and fresh air, all these are possible sources of hypoplasia in the offspring. An important phase of the prophylaxis of hypoplasia during the gestational period is treatment by glandular substances of ductless glandular insufficiencies of a minor character in the mother. Dr. Sajous presented an interestingly original paper on this subject before this society last year, the discussion upon which it was my honor to open. Trauma during labor is a frequent cause of mental impairment; the prevention depends upon proper obstetrics and the early relief of pressure symptoms as advised and practiced by Dr. Sharpe. Equal in importance to the prenatal period of existence is the period of infancy. Nutritional disorders during the first year are frequent causes of interference with growth forces. When one sees and considers what infants have to contend with, it is a wonder that any of them grow into childhood. Unusual care must be exercised when maternal nursing is not possible, not only because of the dangers incident to artificial feeding but also for the reason that the inability of the mother to nurse her child is frequently due to the fact that she herself is hypoplastic and consequently is unable to transmit to her offspring the vital force necessary to the energization of the processes of normal growth. Such children react intensely to all untoward influences of the environment—hygienic, pathogenic, and disciplinary, and if they survive make up a large number of our adult neurotics.

Treatment of hypoplastic children should be initiated as early as possible. The younger the child the better the chance of counteracting faulty hereditary influences and correcting the effects of improper environment. Among the most important of the hygienic measures is the matter of diet. The diet of the hypoplastic child should be based upon scientific principles. Not only should the caloric value be regulated according to his needs but the proportion of protein, fats and carbohydrates as well.

	Amounts	Calories	Protein	Fats	Carbohydrates
Shredded wheat	1/3 oz.	33.3	4.	1.	28.3
Sugar	1/10 oz.	11.66	12.	0.0	11.66
Milk 3	oz.	32.4	4.7	2.4	18.
Scrambled eggs	1/3 oz.	13.08	0.0	7.9	.48
Toast	1/2 oz.	62.5	5.7	13.7	43.1
	4 5/15 oz.	152.94	26.4	25.	101.54
		150.	30.57	20.38	101.96
(Breakfast)		+2.94	—4.17	+4.62	—.42
Lentil soup ..1	oz.	17.76	5.6	.46	11.7
Lima beans.1	oz.	45.89	9.49	1.8	34.6
Beets 1	oz.	11.6	2.7	.3	8.6
Cottage cheese	1/2 oz.	18.7	9.95	6.2	2.55
Graham erackers ..	1/2 oz.	61.45	5.85	12.55	43.05
Milk 2	oz.	21.6	8.	1.6	12.
Stewed pears 1	oz.	25.1	.7	1.1	23.3
	7 oz.	202.1	42.29	24.01	135.8
		200.	40.41	26.94	134.7
(Dinner)		+2.1	+1.88	—2.93	+1.1
Sliced tomatoes ..1	oz.	6.7	1.	1.1	4.6
Hulless beans 1	oz.	32.7	8.3	.7	23.7
Milk 2	oz.	21.6	8.	1.6	12.
White bread.1	oz.	76.4	9.3	3.7	63.4
Butter	1/16 oz.	12.5	.13	12.37	0.
	5 1/16 oz.	149.9	26.73	19.47	103.7
		150.	29.97	19.98	99.9
(Supper)		—.1	—3.24	—.51	+3.8

In the above table the first column gives the amount of each article of food in bulk, the second column the total number of calories contained in that article, the

third column the number of protein calories, the fourth the number of calories in fat, and the last column the number of calories derived from the carbohydrates. At the bottom of each column is shown the total of each for the meal, from which is subtracted the correct ratio, upon a basis of 3/15 protein, 2/15 fat, and 10/15 carbo-

Fig. 2.—A sun-bath.

hydrate, leaving an unavoidable variation which should not be greater than ten calories.

Ordinarily children, even of the well-to-do, do not have enough to eat. A child of twelve years, receiving the proper amount of exercise and fresh air, can very easily consume thirty-five hundred calories a day, sufficient to maintain in good health an adult at hard labor. The inordinate craving for sweets manifested by so many children is simply an outcry from starved tissues for more nourishment. The value of fresh air as a hygienic measure cannot be over-estimated. For this as well as for other reasons, hypoplastic children should never be subjected to the close confines of city life. Recent experiments show that it is not from the chemical content of "close" air that ill effects arise but rather through the absence of motion in such air, depriving the peripheral nerve endings of the nor-

Fig. 3.—Sleeping tent.

mal stimulation received from the varying currents present in what we call fresh air. In order to enhance the effect of fresh air clothing should not be impermeable, but should be as light and porous as can be worn without actual discomfort. The body surface soon becomes accustomed to contact with the elements and able to adjust itself to sudden and frequent thermic changes. There is no better way of improving nerve tone and stimulating metabolism and nutrition than this. The "barefoot boy with

Fig. 4.—Open-air sleeping shack.

cheek of tan" has many advantages over his hothouse cousin whom sun, rain, and wind must not come near. Fashion permits her children's knees to go bare, but except in the drawing-room, studio, and upon the stage views bare feet with contempt. Fig. 1 shows a child for whom "cold feet" has no terrors. Exposure of the entire body to sun, wind and rain is another valuable adjunct to treatment. Fig. 2 shows a child receiving a sun-bath in the open in mid-winter. I believe that the ill-effects ascribed to sun-baths are due to sudden and prolonged exposure but mostly to the effect of the glare of the sun upon the eyes. With proper preparation and the use of a black shade this danger is prevented. Open-air sleeping I consider a necessity in the treatment of hypoplastic children. Figs. 3 and 4 show various types of sleeping tents containing four bedroom compartments and a living

Fig. 5.—One-room sleeping shack.

room, and Fig. 5 shows one with but one large room. More delicate children should be inured to outdoor sleeping by degrees. Swimming in outdoor pools is beneficial not only as a hydrotherapeutic agent but also as an opportunity for free, unre-

strained exercise. Walking has become in this country since the advent of the automobile almost a lost art, though there is no more healthful form of exercise, especially cross-country hiking in hilly regions. As in other forms of outdoor activity,

Fig. 6.—Tobogganing as a means to repress fear and gain self-reliance.

the benefits are psychic as well as physical, for all tend to develop self-confidence and emotional control and to eradicate that bug-a-boo of the neurotic —fear. This advantage is possessed by both skating and tobogganing to a marked degree. (See Fig. 6.)

I have, after a number of years' experience in the treatment of hypoplastic children, come to rely upon but few drugs. Certain tonics and alteratives have their temporary use, but my chief reliance is upon physical measures, aided by organotheraphy. We are far removed from the crude empiricism of the days of Brown-Séquard and his over-enthusiastic followers. A fund of knowledge is in process of acquisition which places endocrinology upon a rational foundation and furnishes concise indications for the administration of definite gland substances in definite disease conditions. While hypoplastic children very often present symptoms pointing toward dysfunction of individual glands, as the thyroid, pituitary, adrenals, etc., in the majority the implication is pluriglandular.

I have found the following pluriglandular formulæ of great value as aids to the stimulation of meta-

Fig. 7.—Gymnastic exercises.

bolic processes and the forces of growth by bringing into equilibrium the various glands with their common though tangled relationships, with resulting improvement in nerve tone, in mentality, and bodily resistance.

Male.

Cerebrin	grain	1.
Didymin	"	1.
Pituitary	"	¼.
Suprarenal	"	¼.
Thymus	"	1.

Fig. 8.—Dancing as a therapeutic measure.

Thyroid	"	¼

Female

Cerebrin	grain	1.
Mamos	"	½.
Pituitary	"	¼.
Suprarenal	"	½.
Thymus	"	1.
Thyroid	"	¼.
Varium	"	½.

Hydrotherapy, massage and other forms of mechanotherapy are, when indicated, of the greatest value. These measures are particularly useful in the type of spastic cases with which Dr. William Sharpe of New York City has such great success, both in preparation for operation and as an adjunct to postoperative treatment. We have found that in the children who have been subjected for a few months before operation to the hygienic and therapeutic measures outlined above the risk is greatly minimized, the reaction is less, and con-

Fig. 9.—A lesson in articulation.

valescence is shortened. After convalescence the same measures enhance the favorable effects of the operation.

Swedish and other forms of gymnastics may be classed under medical measures, though they have

great hygienic and educational value as well. Esthetic dancing, folk dancing, and eurhythmics are likewise types of activities whose value cannot be exaggerated. It is difficult to draw a sharp line of demarcation between measures which are strictly educational and those which by broad interpretation would be considered medical and hygienic; for education, according to the new Standard dictionary, "includes not only the narrow conception of instruction, to which it was formerly limited, but embraces all forms of human experience, owing to the recognition of the fact that every stimulus with its corresponding reaction has a definite effect upon character." Every act of the child's daily life should be utilized for educational purposes in the systematic development and cultivation of the normal powers of intellect, feeling and conduct. Education is not something which can be administered like medicine out of a spoon, though this seems to be the prevalent idea—so much child, so much education. Formal educational measures are important—no one realizes this better than the writer—but to attempt to impart the three R's to a child, mentally impaired or not mentally impaired, whose

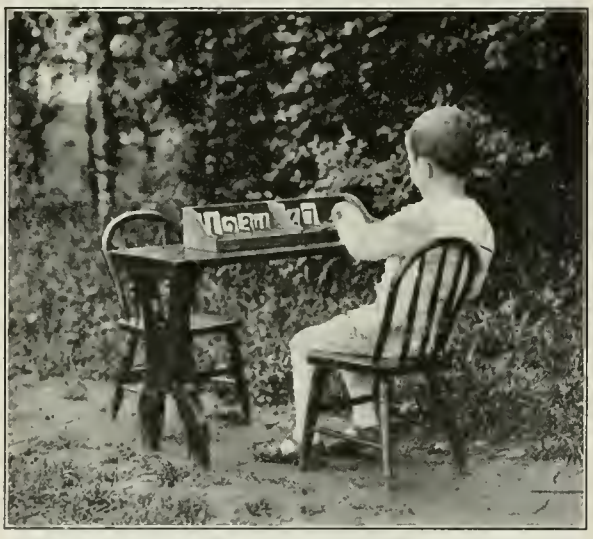

Fig. 10.—Boy working Montessori material.

nervous system is not supplied with good red blood or whose nervous system is incapable of proper coordinate control, is not education. The child's body must be educated as well as his mind, and the former is more important than the latter; to obtain the best results the two must be used synchronously.

The Montessori and kindergarten systems offer much that can be profitably adapted to the education of hypoplastic children. The specific requirements of individual children necessitate that methods shall be adapted to the child, not the child to the methods; consequently no system can be used in its entirety. Defects of speech require special training in articulation and breathing, as do word-blindness, word-deafness and other deficiencies, insufficiencies and irregularities in function of various special organs and faculties. Weather permitting, all instruction should be in the open air. Fig. 9 shows a lesson in articulation. This child, though she hears perfectly, has never talked. Training is more promising of results since Dr. Sharpe performed a decompression operation. Fig. 10 shows a little boy working with some of the Montessori material two weeks after an operation for external hydrocephalus by Dr. Sharpe.

I have in this paper endeavored to show that in the larger proportion of mentally impaired children the impairment is but a symptom of the general hypoplastic condition, that the improvement and cure of such children depends on the stimulation of the correlative forces of growth, and that any line of treatment or education is futile which does not reach and correct the underlying causes.

AN INTERESTING CASE OF BILATERAL URETERAL CALCULUS.*

By LEO BUERGER, M.D.,

NEW YORK.

ALTHOUGH the occurrence of bilateral renal calculi is so frequent as to arouse but little com-

Fig. 1.—Shadowgraph catheter forms a loop in the right ureter, the two shadows being considerably removed. Note grouping of the shadows in the right ureter and their medial position.

ment, the simultaneous occurrence of calculi in the ureters is much more rare, particularly when the calculi are mutiple. A case that has recently come under my observation presented a sufficient number of points of interest to warrant my bringing the matter up before you to-night, all the more so, since a number of instructive points in radiographic and cystoscopic diagnosis could be visually demonstrated in my series of radiograms.

S. F., female, 36 years of age, mother of five children, consulted me on the 28th of July, 1917. She had been operated upon 4 years previously, and a stone is said to have been removed from the right ureter. For

*Read before Surgical Section, New York Academy of Medicine, Oct. 5, 1917.

the past 6 weeks she had been complaining of pain in the left lumbar region, radiating down into the hypogastrium, but this pain had recently disappeared only to give way to a much more severe attack of colic in the right lumbar region, and radiating down into the right iliac fossa. I saw the patient on the 28th of

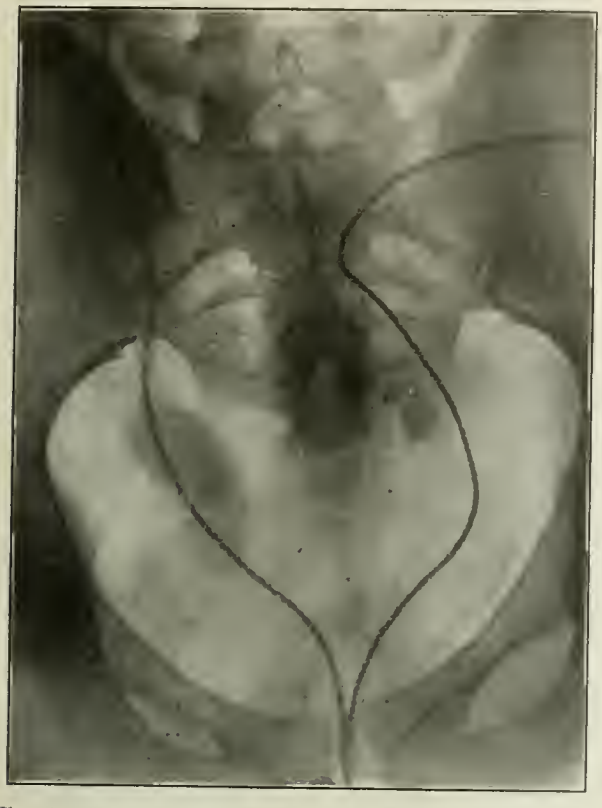

Fig. 2.—Shadowgraph catheter in right ureter passes far into the iliac fossa. Thorium solution in lower left pelvis makes a mass in which the two denser shadows represent calculi in a dilated ureter.

July, when she was in an attack of severe right iliac pain which necessitated an injection of morphine.

A radiographic examination made early in August, 1917, failed to show any definite evidences of calculi in the pelvic region, but some indefinite shadows, not far removed from the left ureter in the pelvis, were faintly visible. A subsequent *x*-ray, however, showed clearly that there were 5 distinct shadows in the pelvic region, presumably in the path of the right ureter, and 2 somewhat larger shadows, possibly in the left ureter, somewhat above the level of the sacro-iliac synchondrosis.

Cystoscopic examination on August 13, 1917, demonstrated the presence of a hydro-pyonephrosis on the right side, although the ureteral catheter met with *no obstruction*, suggestive of the presence of calculi. In the left ureter no obstacle was met, and perfectly clear urine of normal concentration with practically no abnormal element was obtained.

In short, in spite of the evidences suggesting the possibility of 5 calculi in the right ureter, possibly 2 in the left ureter, low down in the pelvis, cystoscopic examination showed no conclusive data other than the presence of purulent urine on the right side. On the left side nothing suspicious of calculus had been demonstrated.

Because of the presence of the clear urine on the left side and the questionable 2 shadows, I determined to pass a shadowgraph catheter in the left ureter. The catheter passed upward 20 cm. or more without encountering any obstruction. What was my surprise, therefore, when the radiographic plates (Fig. 1) showed that the catheter had not ascended the ureter, as I had thought, but had turned back on itself, forming a loop, whose upper end was situated over the sacro-iliac synchondrosis and the sacrum (Fig. 1). Surely this indicated an enormously dilated ureter, and increased the suspicion that the 2 shadows were calculi, even though they were not in direct contact with the shadowgraph catheter.

With a view to determining conclusively whether the 2 shadows in the lower pelvic region were lying in the ureter, and furthermore, with a view to identifying the 5 shadows on the other side, before deciding upon any operative procedure, it was deemed advisable to inject thorium nitrate into the left ureter, and to pass a shadowgraph catheter into the right ureter. Fig. 2 demonstrates the sausage-like mass of thorium in the lower left ureter, in which the 2 shadows suggestive of calculus are seen to lie. This was regarded as conclusive proof of the identity of the 2 shadows. On the right side the catheter is seen to take an unusual course, forming an angle over the sacrum and passing well into the iliac fossa.

The question arose as to whether the ureter had been perforated, but the subsequent course, the lack of untoward symptoms and the condition of the ureter found at operation, proved definitely that no perforation had occurred. Here again (Fig. 2), the 5 shadows were not found to be in contact with the catheter, but had taken a new position, re-arranging themselves over the sacrum, suggesting either mobility in a dilated ureter, or the possibility of their being extra-ureteral. It was decided to take another radiogram (Fig. 3), where another grouping of the shadows on the right side had taken place.

In view of the abnormal course of the shadowgraph catheter, and in view of the regrouping of the shadows, and the fact that they were not directly in contact with the shadowgraph catheter, I decided that we were dealing with a hydro-ureter of considerable size, and determined to do a ureterotomy.

On August 29, 1917, the right ureter was exposed through a Kammerer incision, and found enormously dilated and tortuous, so that it was easily displaceable into the iliac fossa. The 5 stones were palpated, found lying in the situation represented in the radiogram, and easily removed through a longitudinal incision. This

Fig. 3.—Five calculi in the right ureter. Note grouping and mesial situation, two calculi in left ureter.

was closed by 2 layers of fine chromic suture. The patient made an uneventful recovery, was out of bed on the 12th day, and the wound was completely healed after 2 weeks.

The lessons that may be drawn from a study of

the cystoscopic findings and x-ray plates are the following:

1. The existence of multiple calculi, even when they occur in both ureters in the lower pelvic region, may be overlooked if the radiographic plate be not sufficiently clear.

2. The collection of clear urine from one kidney does not exclude the existence of single or multiple calculi, even when such calculi are of considerable size, nor does the absence of any obstacle to the passage of a ureteral catheter exclude the existence of such calculi.

3. The use of a shadowgraph catheter, although demonstrating the path of the ureter when the latter is of normal width or slightly dilated, will fail to indicate the identity of suspected ureteral calculi (ureteral shadows), when the ureter is considerably dilated. Under such circumstances it will fail to coincide with the suspected shadows.

4. A ureteral catheter may form a large loop in the ureter, which can be demonstrated by radiographic plates without giving any sensation of obstruction to the manipulating hand.

5. When a radiogram demonstrates that a shadowgraph catheter has formed a loop in a ureter, suspected calculi and suspected shadows may lie in the ureter, although they be considerably removed from it.

6. Where a shadowgraph catheter takes an unusual course and appears to pass outward beyond the region of the ureter far over into the iliac fossa, it must not necessarily have perforated the ureter, but may be lying in a much dilated and tortuous channel.

7. When a collection of suspected ureteral shadows appears to be arranged in a row in one plate (Fig. 1), and subsequently becomes arranged in a clump, in short, when such shadows have evident motility, they may still be ureteral calculi, for they may lie in a hydro-ureter, which permits of wide range of motion.

8. When suspected ureteral shadows lie far mesial, and seem to overlap, or overlie the lateral portions of the sacrum, a situation too far mesial for the ordinary ureteral course, the shadows may nevertheless be ureteral calculi in a much dilated ureter.

9. Finally, when a suspicious row of shadows in the pelvic region takes a vertical direction, instead of a path with a concavo-convex outline, such as is usually expected in the pelvic portion of the ureter, we may be fairly certain that we are dealing with a hydro-ureter.

1000 Park Avenue.

THE LIBRARY OF THE ARMY MEDICAL MUSEUM.

By R. W. Shufeldt, M.D.,
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Having pointed out the pressing necessity for erecting and equippping the new Army Medical Museum, in that we might be prepared to meet what will very soon be required of that institution in the present war,[1] it is my aim to register, in this article, a similar plea for the library of the museum, considered apart from what was touched upon in my former contribution to the subject.

There is a very obvious difference between a medical museum and a medical library, when each is considered with respect to its usefulness, and either approaches an overstocked condition. As has been shown in my previous article, the museum first uses up all of its available space for the exhibition of the specimens that come steadily in. But the inevitable happens, eventually; no more space is to be had, and, for a greater or less time, overcrowding follows. This in turn results in an inability to accommodate further material or accessions through a sheer congestion of every inch of exhibition shelfage and floor-space. Later on, specimens cease to come in, or only a few per year, while appropriations and donations fall off to a large degree; in a few years more the institution becomes a veritable

Fig. 1.—Title page of the first edition of *De Humani corporis fabrica* by Andreas Vesalius.

antiquity and a fixture. It reminds one of a house in which some great personage has passed away. We see all his ordinary belongings, just as he left them at the time of his death; nothing is ever added, nor is anything, at any time, taken away; a mummified reminder of former days, with the spirit of activity withdrawn.

This is the present condition of the Army Medical Museum. For altogether too many years past it has been practically dead—it has come down to the stage of the watchman and the duster, and a few curious sight-seers pass daily through its silent and antiquated alcoves. In the meantime, England is, I understand, passing us in such achievements by leaps and bounds; and to prove it one has but to

appreciate what is being done at the Royal College of Surgeons of England, in London. But it is not my purpose to go into this matter in the present contribution.

As stated above, the condition and needs of the library of the Army Medical Museum offer a very different proposition, compared with what the Museum suggests. A library will grow where a museum will stagnate, e'en though both be under the same roof, as is the case in the present instance. Fire, alone, can utterly destroy a library; while the abrogation or entire suspension of its supporting income may powerfully curtail its usefulness. When its shelving capacity for books and other publications has been arrived at and passed, proper relief is demanded—if it be only for the credit of civilization and the requirements of a progressive literature and science.

There are many problems offered on the part of the present library to be considered, and, presumably, all these problems will be solved when the new Army Medical Museum is built, and the museum, library, and staff, with its various departments, are moved into it. That is an event which cannot be consummated any too soon. In the meantime, however, books, journals, manuscripts, and much other library material, continue to come steadily in, and it is a serious question as to how to properly manage all such matters under existing conditions, in order to sustain the world-wide usefulness of this professional library of all medical libraries of the world to-day. At one time it was seriously considered to merge this library of the Army Medical Museum—or of the Surgeon General's Office, as it is more generally known—into the Library of Congress; but fortunately such a great mistake—indeed, a calamity of the first magnitude—was escaped.[2]

It may be said in passing that the Medical Department of the army is justly proud of this library, and of the fact that it is under its control. Moreover, the Medical Department is directly responsible for its establishment; it has most successfully managed its affairs and career from its very inception, and, in the name of all that is fair, no change of the kind not long since suggested, should ever remove this time-honored institution from the custodianship of those who now have its welfare in charge.

Without entering upon any details along this line, it may be said, with all truth, that this library has, up to the present time, served the cause of medicine in all of its departments, in the most efficient manner possible, as thousands of physicians and surgeons, from all parts of the world, will be only too glad to testify to and proclaim. The time has come, however,—as it was certain to do sooner or later—when this library has outgrown the quarters, support and assistance that have united to sustain it for so many years. It stands much in need of a more liberal appropriation by Congress, when the usual annual appropriations are made. Its available space for books, journals, and other library material is practically exhausted; there is a crying need for larger rooms, book-stacks, and offices, and, finally, the working staff needs be added to in more than one of its departments.

FIG. 2.—General view of the Library of the Army Medical Museum, showing crowded book stacks.

Be it said to the credit of our civilization, medical literature of all classes is ever on the increase; and, as the library of the Surgeon General's Office aims to have on its shelves a copy of every medical work issued, with a large number of others of allied sciences, as for example those in the several fields of botany, biology, bibliography, biography, and so on, it goes without the saying that a day is sure to arrive, sooner or later, when proper room for more books fails to exist. A year ago last August there were, bound and unbound, 224,522 volumes in this library; adding the pamphlets to these, the total amounted to 561,642. At the time stated, the library was receiving and placing on its shelves, by way of current periodicals, 1865, not including incidental accessions.

In this library there is a large number of absolutely priceless volumes on medicine, some dating back to the very dawn of history; but, up to the present writing there is no adequate means in the library room for exhibiting these treasures as they should be exhibited. Some of these books are kept in glass-covered cases; but the latter are totally inadequate and altogether unsuitable in style. They are of an out-of-date pattern; occupy altogether too much floor-space, and should be relegated to the museum for specimen exhibition. They should be replaced by at least six cases of the style and proportions to be seen in the Library of Congress, and there used for the display of unique volumes. This could easily be afforded for the library as it now stands, and these cases subsequently used for the same purpose in the new Army Medical Museum, when it is finished and the library is duly moved into it.

Congress should make an annual appropriation for this library of no less a sum than $40,000; and it would be an excellent plan to have it opened for the convenience of those entitled to use the works contained in it, several hours on Sundays—that is, from 9.30 a. m. to 4.30 p. m. To make this effective, the staff should be increased to meet the requirements, and should receive salaries coequal with the duties performed At the present time the salaries of the civilians on duty in the museum are ridiculously low, compared with the work they perform and with the responsibilities assumed in some instances; so inadequate, indeed, that, as the author of the present article, I am ashamed to cite examples to substantiate this statement.

Since June, 1916, there have appeared at least two very able brochures on the subject of this library; they are both by its present librarian, Col. Champe Carter McCulloch, of the Medical Corps, U. S. Army. The information they convey has proved to be of the utmost use to librarians throughout the world.[3]

In speaking of the present classification of the books and pamphlets in the library, Colonel McCulloch points out that it "Is far from being complete, perfect, or satisfactory. It is only applicable to collections of bound medical books, and not to arrangements of pamphlets and reprints by subjects, which require a more extensive classification. It simply represents the best available in this library under present conditions of shelf-room. The library now contains some 250,000 bound volumes, and only three additional book stacks have been added by Congressional appropriation since the original stacks were put up in 1887. The collection of medical periodicals in the first story of stacks on the floor of the library hall has more than once been shifted and rearranged in order to secure additional shelf-room for incoming files; but it would be impossible to rearrange the above collection of classified books without additional shelf-room in new stacks or in a new building, nor would it be advisable to attempt this except under these conditions, since the present library force is very small and could not attempt the task without seriously interrupting the large amount of current work in which the library has at present to deal."

Some of the rarest volumes on ancient medicine are to be found in this library. In order to give an idea of some of these, a Vesalian illustration has been selected, and a reproduction of it is here published for the first time. (Fig. 1.) It is the title page of the first edition of *De Humani corporis fabrica*, the work of Andreas Vesalius, which, in 1543, marked the beginning of modern anatomical research.

The library also owns a complete edition of the works of Hippocrates, published in the Greek text by the famous printer of Venice, Aldus (1526). Philippus Pincius printed at Venice in 1497 a folio by Celsus; it is his *De Medicina*, in eight books. These are also to be found among the rarities of the library.

A copy of the *Opera Omnia* of Galen (1490), in two large folio volumes, is also to be found in this grand library, as are, indeed, some of the rarest known works in medicine; it should be the pride of every true American in this country that such an institution is in existence here.

In its usefulness, this library is by no means limited to officers of the Army and to local researchers in medicine; it is open to the profession everywhere. In one of his above-cited pamphlets, Colonel McCulloch remarks: "The physician living at a distance can borrow such works as he wishes to consult (except our very rarest specimens and unbound current journals) by sending an identifiable request for them and paying the postage or expressage each way. These he is allowed to keep for two weeks, or for longer periods, on proper request for extension, if there has been no other application for the books. If an individual is unknown at the library, a small deposit is required to cover possible loss; otherwise, and from old 'customers,' no deposit is required. Every facility is given to visitors at the library to consult the card catalog, and copies of the cards can be obtained by the distant worker on the payment of a nominal fee for the labor of copying them outside of office hours. We endeavor to make these transactions as informal and simple as possible, as we are anxious that physicians everywhere should learn the advantage that the library offers and make use of our rich collections to the fullest extent."

Such a valuable and absolutely indispensable institution as this surely deserves every encouragement that can be extended to it, and the most generous financial support that Congress can mete out to it.

As a matter of fact, the building of the new Army Medical Museum is really what is demanded,

and this should be done at as early a day as possible. It is needed in that we may reap at least some benefit from the bloody and expensive war into which we are now plunged.

REFERENCES.

1. Shufeldt, R. W.: The Army Medical Museum, MEDICAL RECORD, October 20, 1917.
2. See extracts from debate in the *Congressional Record*, January 22, 1915, pp. 1-4.
3. "The Surgeon-General's Library." Presented at the Nineteenth Annual Meeting of the Medical Library Association at Detroit, Mich., June 12, 1916. Published separately, pp. 1-15.
"Classification and Arrangement of Books in the Library of the Surgeon-General's Office." Reprinted from the Bulletin of the Medical Library Association, Baltimore, Md., April, 1917, pp. 1-11.

3356 EIGHTEENTH STREET.

AN INTRATHORACIC THYROID TUMOR.

REPORT OF A CASE WITH AUTOPSY FINDINGS.

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TUMORS of the thyroid gland occur with so much greater frequency above the thoracic cavity than within it that one feels justified in reporting a case upon which a post-mortem examination has been made. Dr. Frank H. Lahey in the *Boston Medical and Surgical Journal*, March 8, 1917, writes that "there is no disease of the thyroid so often overlooked by the physician or surgeon unfamiliar with thyroid diseases as substernal or intrathoracic goiter. Cysts and adenomata of the thyroid occurring as frank tumors of the neck are so self-evident that they cannot be mistaken. Substernal or intrathoracic goiters, on the other hand, present difficulties in diagnosis apparently in inverse proportion to the degree of prominence of the upper pole of the tumor. These tumors are either adenomata or cysts, originating in the right or left lower pole or isthmus of the thyroid and gradually enlarging downward into the thorax along the path of least resistance."

"Two factors enter into the production of the intrathoracic growth of goiter, (1) the path of least resistance for these growths originating at the lower poles of the gland is downward and into the chest, and (2) the upward and downward motion of the thyroid gland in deglutition is the second important factor."

The prominent symptoms are: (1) a feeling of pressure beneath the sternum on swallowing; (2) the feeling of a mass ascending and descending on swallowing; (3) huskiness of the voice; (4) dyspnea; (5) intermittent attacks of suffocation; (6) broken cardiac compensation. This condition should be suspected in some cases of asthma.

Much has been written recently concerning the functions and abnormalities of this gland, but the greater part of the literature is upon imperfect function and changes in size and composition.

The usual classification of the different enlargements are: (1) parenchymatous, in which the enlargement is general and the follicles contain a gelatinous, colloid material; (2) vascular, in which the enlargement is chiefly due to dilatation of the blood vessels without the formation of glandular tissue; (3) cystic, in which the enlarged gland is occupied by large cysts, the walls of which often undergo calcification.

An enlarged thyroid gland may undergo malignant degeneration.

We occasionally meet with thyroid tissue in addition to the normal gland. Such tissue is known as aberrant, accessory or supernumerary thyroid glands and may appear anywhere from the root of the tongue to the arch of the aorta, causing tumors which vary in size from the smallest nodule to those filling the greater part of the chest cavity on one side. A large tumor may compress the trachea causing dyspnea and collapse of the lung, or, passing beneath the sternum, the tumor may interfere with the return flow of blood to the heart, causing signs of broken cardiac compensation. These tumors have been divided into the true and the false, the false being growth of the parent thyroid and attached to it by a pedicle. The true are thyroid tissue which may be attached or free, and may be single or multiple.

The patient whose case I report was admitted to my service at the Kings County Hospital, Brooklyn, N. Y., August 1 of this year, with signs of arteriosclerosis and of broken cardiac compensation; he died August 15 and an autopsy was performed.

On admission the patient stated that he had always enjoyed good health and had never been treated for any illness other than some of the minor diseases of childhood. The present illness began six months before admission to the hospital, with slight pain in the precordium, dyspnea on slight exertion, and during the past few weeks swelling of the legs after being up all day, with the swelling disappearing upon lying down.

During the patient's stay in the hospital, which was 15 days, he complained only of the difficulty of breathing; he became weaker, was irrational the day before he died, and without any evidences of pain or discomfort became unconscious and stopped breathing.

The physical examination showed an arteriosclerotic man of apparently 66 years of age, dyspneic, somewhat cyanotic, propped up in bed because of less dyspnea in the upright condition. The man presents a picture of cardiac incompetence, the face is emaciated, and the superficial veins of the face and neck are moderately engorged. Examination of the eyes, ears, nose, and mouth shows a condition commensurate with his age. Examination of the neck shows a slight fullness on the right side above the clavicle near the sternum. There is marked pulsation of the vessels of the neck on both sides. There is no tracheal tug; no difficulty in swallowing.

On inspection of the chest we note the dyspnea, the emaciation of the patient, large, tortuous, engorged superficial veins of the right side of the thorax, and large, engorged superficial veins of the right arm and hand. The veins of the left arm are over-full of venous blood, but not as full as those of the right arm. There is also a moderate edema of the right arm and hand.

Upon examination of the heart we find the area of cardiac dullness enlarged; the heart is enlarged downward and outward; the apex beat in the sixth interspace, outside of the midclavicular line; the apex 18 cm. to the left of the midsternal line. To the right there is an area of dullness blending with the area of dullness of the base of the heart and aorta, extending below to the fourth rib and to the right midclavicular line. Surrounding this area of dullness the percussion note is almost hyperresonant. The breath sounds are transmitted more distinctly over this area. There are signs of a moderate amount of fluid in the right pleural cavity. The heart sounds are of poor quality, rapid with a marked irregularity. There is a systolic murmur at the apex which is not transmitted to the axilla; there is also present at the apex a presystolic murmur. The second pulmonic sound is roughened and slightly prolonged. The second aortic sound is of a poor qual-

ity. The clinical impression is of enlarged heart with broken compensation and a tumor in the right chest cavity.

The accompanying diagram (Fig. 1) shows the physical findings in the chest:

The abdomen is relaxed; there is no tenderness and no free fluid in the abdominal cavity. The liver, which is easily felt, is enlarged and extends to the level of the umbilicus. The spleen is not enlarged. There is marked edema of the legs and of the scrotum.

While under observation the patient's urine was that of arteriosclerotic kidneys. His blood pressure was the same in both arms, systolic pressure 225 and diastolic pressure 110, the systolic being higher than normal. There was always marked venous stasis. Examination of the blood showed 3,160,000 red blood cells, with 50 per cent. hemoglobin, 9400 white blood cells with 80 per cent. polys and 20 per cent. small mononuclear cells. The sputum was negative for tubercle bacilli. The blood and spinal fluid gave negative Wassermann reactions. The spinal fluid was not under pressure when obtained, and examination of it showed nothing abnormal.

An *x*-ray picture of the chest, Fig. 2, shows the presence of a tumor as outlined by the physical findings.

At autopsy, upon opening the body a large amount of straw-colored fluid was found in the right pleural cavity; no fluid was found in the left pleural cavity or in the pericardial sac. The peritoneal cavity contained a large quantity of dark clotted blood and free blood, which came from a rupture of the transverse colon with the accompanying hemorrhage between the layers of the mesentery. The transverse colon for a space of six inches where it passed beneath the stomach was much thinned out as if rubbed between two hard surfaces and was ruptured in one place. The stomach and intestines otherwise were negative upon gross examination; on microscopic examination the specimens showed sclerosed blood vessels and connective tissue. No evidence of any growth or irritant could be found. The liver was increased in size and showed fatty degeneration. The kidneys were small and sclerotic.

In the mediastinum, remains of the thymus were not present. There was present a pear-shaped cystic enlargement of the thyroid gland not adherent to any structure, nor pressing on the trachea. It extends downward to press upon the transverse aorta, which it flattens out slightly. The tumor measures from above downward 14 cm.; from side to side, 8 cm., and from

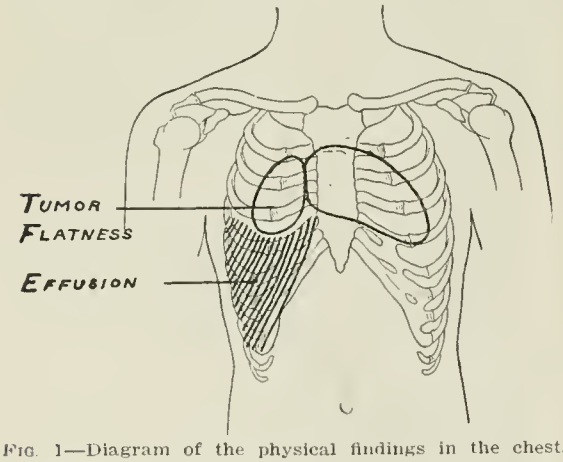

FIG. 1—Diagram of the physical findings in the chest.

before backward 6.5 cm. The outer covering is quite smooth. The aorta is not damaged.

The heart is large and flabby. The epicardial fat is increased in amount. On section the valves of the right side present no roughening, but are relatively incompetent. There is some thickening of the mitral valve, which is incompetent. On section of the heart muscle several areas whitish in appearance are noted. There is present sclerosis of the coronary arteries.

This patient presents an interesting pathological condition not commonly found. How much this condition contributed to his death can be surmised only on the basis of how much additional strain it caused to a poorly nourished sclerotic heart. The condition of general arteriosclerosis was well marked, and the immediate cause of death was hemorrhage from the rupture of a thin sclerotic transverse colon involving one of the large blood vessels. The patient at no time complained of abdominal distress nor showed physical evidence of impaired intestinal function.

FIG. 2.—Roentgenogram of the chest, showing the outline of the thyroid tumor.

108 PROSPECT PARK WEST.

LOSS OF CONSCIOUSNESS AND AUTOMATISM IN INEBRIETY.

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DURING the past year in several instances where the question of responsibility was referred by the courts to medical men this question called for an answer: Can an inebriate or a person under the influence of alcohol lose consciousness of his surroundings and of the nature of his acts and go on automatically ,giving no impression of his real condition? In other words, is it possible for an inebriate, not intoxicated in the general sense, to be unconscious of the nature and consequences of his acts?

The answers given to this question were so uncertain and vague as to indicate a strange lack of knowledge. Thus in one case a man who had used spirits continuously while conducting his farm work and giving no evidence of defective consciousness by the nature and consequences of his acts shot a near friend who was crossing his farm. He was arrested, placed in jail, and a few hours later awoke claiming not to have any consciousness of his con-

duct from a point of time a day before the homicide, up to the time when he awoke in jail. The physicians treated this statement as fiction and declared it impossible; a third one thought that it might possibly be a pathological state, but could give no reason or explanation. The man was executed, but up to the last moment protested that he had no recollection of the crime or the events occurring during this period, and there was no reason or motive for this act. In the second case a carpenter who had been drinking steadily for several years, but never to intoxication, shot his wife at the dinner hour and went back to his work and later was arrested and taken to the station-house, and the next day woke up and when told what he had done exhibited profound astonishment. He claimed no recollection of the event or any consciousness of his acts for several days before the crime. He also claimed to have had blanks of memory in the past, during which he was unable to recall the events of the day. As he had worked regularly during these times and his conduct had been natural and reasonable there seemed to be doubts of this condition beyond his own statements. On the trial this defense of unconsciousness was treated with contempt, and the medical witnesses swore that it was impossible to lose all memory and consciousness, without making it manifest in conduct. In 1879 I published the first study of this peculiar condition, which was termed at that time cerebral trance.

In 1877 and 1878 Dr. Hughlings Jackson published in the West Ridings Hospital reports an account of similar cases following epileptic attacks. Dr. Carpenter of London had mentioned such cases and called attention to their responsibility, but these occurred in epilepsy. My study of these cases was the first that was made of this condition appearing in inebriates. In 1880 the late Dr. George L. Beard made a careful study of such cases with an explanation of the phenomenon and from that time to the present many startling examples have been published and the reality of this mental condition has been accepted. Notwithstanding this, the courts and many medical experts have regarded it as a doubtful state and a refinement of science, having for its purpose to increase the irresponsibility and excuse the punishment of criminals. Within the last year the subject has come into prominence again, and Dr. Sullivan, an English alienist, has taken up the matter, pointing out the physical conditions of persons in this state and showing that it was not only possible but a reality which may be demonstrated by facts that would admit of no other explanation.

The following recent cases bring out the facts more clearly than any attempted description of symptoms. A farmer, fifty years of age, with no history of hereditary condition, who had suffered from sunstroke when about thirty years of age, and had since that time complained of weakness and invalidism. Soon after the sunstroke he began to drink beer, and ten years later used spirits regularly every day. On several occasions he had been intoxicated, but recovered quickly and seemed more careful than ever to restrict the amount of spirits used to a minimum. He was arrested for placing obstructions on the railroad track for the purpose of wrecking a train. He was arrested four days after the act, taken to jail and claimed to have no recollection of what he had done and no idea of the purpose and object in doing this. On the trial it appeared that he had lived regularly and was quiet and retiring in his habits, drinking spirits regularly, and was considered a sensible man. His conduct to his family had been uniformly kind, consistent, and reasonable. During the last five years several eccentricities and unusual acts occurred. One of them was to stop work suddenly, go off suddenly to a neighboring pond, take a prolonged bath, then return to the barn and fall asleep on the haymow; a few hours later awakening, going on with his work without explanation or reference to what he had done. On two occasions during the winter preceding the crime he arose in the night, went out to his barn, drove out his cattle, cleaned the stables, put the cattle back, fed them and returned to the house, and the next morning did not seem to know that he had done this. When told, he attempted a childish explanation or reference and became more reserved than ever.

On the evening of the crime he went as usual to look after his stock, but did not return for several hours. Coming in exhausted he drank spirits and slept far into the next day. When asked where he had been he said "To the barn," but gave no explanation why he had remained so long away. The crime showed great cunning and judgment. The obstructions were placed on a curve in such a way that they could not be seen far away, and completed at a time just before the passing of an express train, and after the night watchman had inspected that part of the road. The obstruction appeared to be the work of more than one man, and particularly of someone very familiar with the conditions. The engine was wrecked and the engineer killed. The detectives found that he had gone to the place with his barn lantern, and had been seen by several persons going and coming, hence it was traced clearly to him. He stoutly denied all knowledge of the circumstances.

On the trial there could be no motives proven; he had never expressed any anger at the road, having seldom traveled from home and rarely on this road. The prosecution claimed that it was purely malicious and the defence of no recollection was absurd. In a more detailed study it appeared from his own statements, which were confirmed by those of his friends, that he had had blanks of memory during the last two years and that his statement of no recollection must be true from his conduct in many minor things.

It was noticed that at times he seemed to be deeply absorbed in reading the details of accidents and sensational crimes over and over again, never mentioning them afterward; at other times his reading was of a different character, principally novels and magazines. It was the opinion confirmed by the expert for the defense that during one of these blank periods he must have read of a similar effort to wreck a train in some part of the country, and this had so impressed itself on his mind that in this blank state he committed the same act. Probable the ingenuity and judgment displayed was merely following the details as given in the paper.

This was treated with doubt by the court and the

witnesses for the prosecution, and he was convicted, but died soon after being sentenced of some acute disease. Several physicians swore on the trial that the continuous use of alcohol would not impair the mind or break up the consciousness of his surroundings and acts, unless accompanied by symptoms of delusion, delirium, and other mental defects. They also swore that his conduct during this condition would of necessity give indications of his mental state and that had he suffered from blanks of memory he could not have acted consistently and sanely.

A second case in which a will was contested brought out the following facts: A man of middle life, actively engaged in manufacturing, died suddenly and left a strange will, which was contested on the ground of alcoholic blanks, or loss of consciousness of his conviction at the time the will was written. It appeared that he came from a neuralgic family, in which several members, both in the direct and indirect line of heredity, had been insane or paranoiac. He had lived a regular, temperate life up to forty years of age, when after the death of an only son he began to drink spirits. For the following fifteen years up to the time of his death he drank regularly, although never intoxicated or apparently unable to transact ordinary business. It was his custom to visit his agent in New York monthly and go over the accounts and arrange for the purchase of materials and the sale of the manufactured product. On all these occasions he showed judgment and clear discrimination of the conditions and the requirements necessary. At one of these periods, after finishing the business, he called in a lawyer and had an elaborate will drawn up, which contained details and disposition of his property, that seemed foreign to his usual thought and conduct. On several occasions, during the year this will was written he had persisted in manufacturing a greater quantity of a certain product than ever. This overproduction proved to be a loss; on another occasion it was a gain. He became interested in a mine, investing money in it, which was a very unusual thing for him. He had, while in New York, purchased expensive diamonds for his wife, and when chided about this claimed he had no recollection of it and seemed annoyed. The family physician had been frequently called to treat him for imaginary conditions, which seemed of an hysterical character. The next day when seen he did not remember to have asked advice from the physician. When advised to give up the use of spirits he promised to do so, signing the pledge and showing great interest to carry out the advice, but continued to use spirits as before, and claimed that he did not remember to have made any promises of total abstinence.

On the trial the medical testimony, as usual, differed widely, but the will was finally set aside. In both these cases the physician hesitated about the possibility of the paralyzing action of alcohol. The increased heart's action following its use was considered a stimulant and its injury to the mind thought impossible unless it was manifested in pronounced insane acts and thoughts.

The recent modern researches into the action of alcohol on the higher brain centers show that its continuous use, even in small doses, not only diminishes mental activity, but lowers the memory powers, and that its accumulative effect shows unconsciousness and memory of events with more or less certainty in all cases. We cannot tell how far this damage to the memory extends, but the frequent claims of amnesia and acts which show this condition really confirm it.

The central fact is of extraordinary interest, that normal consciousness and memory of events should be clearly obliterated for a time and then return again. It is a very common experience among moderate or excessive drinkers to have periods of amnesia or blanks of memory which later clear up, and the acts committed during this period are recalled. This occurs in the pronounced toxic states of alcohol, thus: a man who is intoxicated may not recall what he said or did just before and during the period of stupor and delirium. Some time afterward his memory returns and the acts which soon after were not recalled later become clear to him. In these conditions the blank period was associated with stupor, delirium, and strange conduct so that the real condition could not be mistaken. But in these particular cases that I am describing there was no marked unusual conduct or indications that the victim was not conscious of all the events of his surroundings and their relation to him.

In one of the cases which I reported, a traveling man, who drank steadily, ceased to remember after a certain point in his journey and awakened eight days later in a distant city. The interval to him seemed only as a single night or a few hours. During this time he had pursued his customary work, soliciting orders for goods, talking with customers in a rational way, and no doubt thinking with them, but his real condition was not apparent to anyone. He was literally acting automatically, doing accustomed work, but entirely unconscious of it, although writing letters daily to his firm and giving accounts of the business of the day. On recovery all this interval was a blank and only by memorandum on his daily notebook was he able to determine how long he had been thus, where he had been, and what he had done.

In a number of studies which I have made of this peculiar condition there appeared to be three groups or divisions, one in which the mind in this condition, acted along accustomed lines of thought and action; a second group in which the mind displayed unusual ranges of thought and acts quite different from the ordinary custom; third, a class of cases in which the criminal or homicidal impulse was prominent at this time.

Cases illustrating these different conditions have been studied. The first or third groups have come into greater prominence than the second. The first group includes persons who go about performing accustomed work and later seem to have no recollection of it.

A prominent case of this class was that of a railroad conductor, who drank at night before retiring and frequently had no recollection of waking up in the morning, taking his train to its destination and sometimes returning before he became conscious of what he was doing. He would then ask the brakeman what had happened and be unable to recall anything of the ordinary duties of his work. I have met a number of cases of this class who lost all recollection after a certain time, for indefinite

periods, during which they seemed conscious, but on awakening and being told what they did became greatly excited and were placed under my care for treatment.

The second class during this blank state do unusual things, talk and act in a manner which makes their friends suspicious of their natural condition, and yet no one suspects that they are not conscious and to a degree responsible for their conduct. Many of these cases after drinking display eccentricities of character, whether of a very emotional or depressed nature. One such man after drinking steadily for a few weeks will become intensely religious and visit clergymen, attend meetings, ask the prayers of his friends, show extraordinary anxiety for the world to come, and then he will suddenly change, go back to his old life, and seem not to have any recollection of what he has done.

Another man in this condition manifested great political anxiety about officers and politics. One day in his zeal he had a personal conflict with a doubter and immediately awoke and denied all recollection of having said anything and could not recall any purpose or plan in his conduct. A number of business and professional men, after a period of continuous drinking show great emotional changes and do strange things at the time, then later deny all recollections of the occurrences.

No medical study is made of these cases for the reason that the theory of vice and viciousness is so pronounced in the public mind that these conditions are explained as moral lapses.

The third class in which criminal acts and conduct resulting in loss and injury to others are prominent, but here the same medical theories prevail in the court room and the question of responsibility is treated on the old-time theory that inebriety is always voluntary and the use of alcohol as a beverage is always attended with consciousness and sane reasoning. Hence the commission of a crime under the influence of this drug is regarded as an aggravation and all question of responsibility is treated with doubt and suspicion. When such a claim is made both experts and non-experts attempt to answer the question of responsibility by comparing the history of the crime and prisoner with other types of insanity. The absence of delusion, allusion, and delirium or marked mental feebleness are regarded as evidence of mental soundness. The statement of the prisoner is always suspicious and regarded as an excuse, and where no effort is made to study the previous mental condition before the crime was committed, such as the facts of his surroundings and living, the expert accepts the teachings of the law concerning his condition without effort to understand the defects present.

The late Dr. Beard, in discussing the question of unconsciousness during this condition, said that there was a degree of consciousness present in all these cases, but that it was not fixed in the memory and hence quickly forgotten. "Consciousness is one thing; remembering past consciousness is quite another thing. There is a plane of consciousness below which it is unrememberable and above which it is more or less rememberable. This whole matter is one of degree, in which we forget much of our past life sooner or later."

The peculiarity of these cases is that events and surroundings are quickly forgotten; then later this blank state passes away. During this time the person may act rationally, but not recall events. There is one fact clear which should never be forgotten—that this automatic condition is found associated with some form of neurosis, either induced by alcohol or existing before alcohol was used. In all chronic conditions where alcohol is used either in large or small quantities it may be found, and the person may be aware of this condition and, if he is, conceals it; in others, it is only dimly recognized.

This particular form of automatism follows in persons who use spirits continuously or in the so-called moderate drinkers. Some instances have been studied, seen in the periodic drinkers, after an excessive attack of acute poisoning from alcohol, which resembles epilepsy and very likely is some obscure form of this disorder. For many years blanks of memory and consciousness have been noted following epileptic paroxysm, but usually this condition was characterized by symptoms indicating suspension of brain activity in certain directions. When this condition appears in the inebriates it is more obscure and requires careful study to determine.

There can be no question that, pathologically, certain areas of the brain are paralyzed. Functional activity is arrested and cut off. It probably occurs in a very large proportion of cases, but is of so slight a degree as not to attract attention. In some studies I have concluded that at least 7 per cent. of all drinkers have blanks of memory, some of which they were able to recall later; in others, the events occurring during this blank were never apparent after. The period of intoxication associated with stupor is always attended with loss of consciousness, particularly just before or after the stupor has passed off.

I think the following conclusions may be stated as confirmed by all careful clinical studies: First—Cerebral automatism and loss of consciousness particularly is a common symptom, especially in the later stages of persons who drink spirits to excess occasionally. During this period there appears to be general consciousness in the acts and conduct which is not remembered afterward. This period may last for a few hours to several days. Second—There must be pathologically as well as psychically some profound disturbance and palsies of certain brain centers, in which registration of events and impressions of the senses are absent and with this, of necessity, must be impaired judgment and lessened responsibility. Third—This condition is usually found associated with a neurosis and psychosis either induced or existing before alcohol was used. The first conclusion rests on the statement of the person supported by collateral facts. The second is apparent from the conduct and explanation supporting it. The third form of grouping of the histories of different relating events.

The following recent case brings out a class of facts that are known to many persons, but have not yet been understood. A lawyer of eminence whose ancestors and family had all died of consumption came under my care for alcoholic delusion and general exhaustion. He was a nervous, passionate man, wealthy, of brilliant talents, ambitious, and a politician of much prominence. From early life he had

been a gourmand. Ten years ago, after an attack of typhoid fever, he began to use whiskey at meals and continued its use, not only at the table, but at all times and places. He was never seen intoxicated, but was constantly exhilarated under the use of spirits. His life was more or less irregular and he complained of exhaustion and occasional insomnia. He was constantly employed as a campaign speaker and lecturer. On one occasion after a protracted period of speaking he went to a lawyer's office and wrote a will, had it properly signed, saying he was going to die, and asked the lawyer to send the will to his confidential banker. One month later in a distant part of the country he made another will, giving minute directions as to the disposition of his body and the funeral services. A few weeks later he became engaged in a mining scheme of great magnitude, drew up preliminary papers, arranged details and sent them to his banker. On all of these occasions he seemed perfectly calm and reasoned clearly about the wisdom of these events. Finally, through the advice of friends he went to the seashore to rest, and there consciousness returned, and he had no recollection of writing wills or forming a company. These and many other events were blanks. He had been speaking night after night for a week at a time in a political campaign without any recollection of where he had been or what was said; then he became exhausted and would go to some friend's house and remain in bed for several days and wake up and ask them where he had been and what had happened. This man recovered, but there was a period of nearly a year in which his memory was a partial blank. During the past summer he has lived a very quiet life in the mountains, but recently has gone on the stump and resumed his drinking. In all probability the same blanks or loss of memory will appear, and no doubt this case is one of many whose real condition is unknown. The startling cases of crime, without motive or purpose and undefinable by any rules of courts and experts, undoubtedly belong to this class.

Thus a man who suddenly commits a crime or shows extraordinary credulity in business or does some very unusual act entirely inexplicable on any theory of commonsense or judgment may be, and most assuredly is, in this automatic condition. There can be no doubt that many persons are arrested for crime and offence against society and a large part of the business of the court is in the punishment of these poor victims for acts of which they are utterly unconscious.

The following is a summary of some of the facts which I wish to make prominent: Automatism in inebriety with loss of consciousness is not an uncommon condition, particularly in continuous or periodic drinkers. It is also seen in periodic cases as well as in epileptics and is a distinct palsy of the brain. All unusual acts or crimes committed by inebriates or hard drinkers should be studied, particularly where there is a possibility of loss of consciousness with alleged amnesia. When this condition is established the person is both legally and practically irresponsible for his conduct during this period, and his mental condition is one of great gravity, requiring immediate care and attention. No theories of vice, wilfulness, and moral causation should be considered by the physicians. It is a great question of facts and their meanings. Cerebal automatism and loss of consciousness is a pathological condition which must be studied from a scientific point of view to be understood.

MEDICINE AND THE MOON: BELIEFS OF OTHER DAYS.

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From the remotest periods of antiquity, the idea has prevailed that the moon exercises a certain and well defined influence in the causation of disease, and plays a prominent part in the development of nations, and in determining the destinies of the human race. Among the ancients the moon was viewed as an object of superstitious regard. The Hebrews held the moon in great religious and superstitious veneration, considering lunar influence superior even to that of the sun; in fact, the moon was worshipped as a Deity. The new moons, or the first days of the month, were kept with great pomp and ceremony as national festivals. The people were obliged to abandon work on those days. The feast of new moons was a miniature of the feasts of the prophets. The Jews who were not acquainted with the phenomena of eclipses, whether of the sun or the moon, looked upon them as evidences of divine displeasure. The Greeks consulted the different phases of the moon before contracting marriage; and the full moon, or the conjunction of sun and moon, were considered the most favorable periods for celebrating the ceremony, in view of the belief that the reproductive functions were under lunar influence.

The very ancient doctrines that menstruation and pregnancy are under lunar influence has many advocates. It is, undoubtedly, difficult to explain the great laws of nature insofar as periodicity in the female species is concerned, but it may be safely stated that the moon plays no part therein. The opinions held by medical men on the doctrines of lunar influence in pregnancy and menstruation have been remarkably discordant. The sceptical are unphilosophical in their scepticism, and the believers credulous in their belief.

The connection of the moon with the measure of time brought the planet into relations with the religious rites of ancient nations, as the Egyptians and Jews; and, also, to have given origin to the mythological ideas of a lunar influence on marriage and pregnancy. Among the older nations the general idea was that the lunar influence varied according to the age of the moon. Bombastes, the Egyptian Diana, was not equally favorable to parturient females and their offspring in her different phases.

To-day in Greenland there exist many superstitious notions concerning the moon. The Greenlanders believe that the moon visits their wives at stated intervals; and, that staring long at the full moon will make a maid pregnant.

Among the Jews the full moon was believed to be lucky, and the other phases of ill omen. For instance, the ancient Jews believed the full moon propitious to the new born child; but if the child be born in the increase or wane, the horns of the

planet cause death; or, if it survive, it will commit some terrible crime.

The Greeks and Romans entertained ideas similar to the Hebrews respecting the lunar phases. The general opinion seems to have been that the moon was propitious in proportion as its luminous face was on the increase. The ancient Greeks considered the day of the full moon to be the best day for marriage. Euripides makes Agamemnon answer when asked on what day he intends to be married:

"Οταν σελήνης εὐτυχὴς ἔλθη κύκλος.

("When the blesséd season of full moon is come.")
Iphigenia, Act. V.

Hesiod declared that the fourth day of the moon was favorable, but the eighteenth was bad, especially to females. Aristotle maintained that the bodies of animals were cold in the decrease of the moon, and that the blood and humor are then put in motion, and that to those revolutions he ascribes the various derangements peculiar to women.

Lucilius, the Roman satirist, states that oysters and echini fatten during lunar increase, which also, according to Gellius, enlarges the eyes of cats; but that onions throw out their buds in decrease of the moon, and wither in its increase, which induced the people of Pelusium to avoid their use. Horace also noted the superiority of shellfish during the moon's increase.

Pliny was cognizant of the lunar influence on shellfish. He also adds that the streaks on the livers of rats answer to the days of the moon's age,* and that ants never work at the time of the lunar changes. Pliny also informs us that the fourth day of the moon determines the prevalent wind of the month, and confirms the opinion of Aristotle that earthquakes generally occur in the new moon. This same observer declares that the moon corrupts all dead carcasses exposed to its rays, and produces drowsiness and stupor in those who sleep under its beams.† Pliny further declares that the moon is nourished by rivers, as the sun is fed by the sea. Galen asserts that all animals who are born when the moon is falciform, or at the half quarter, are weak, feeble, and short-lived; whereas those who come into the world during the full moon are healthy, vigorous, and long-lived.

The Spartans also considered the moon to have great influence, and no motive could induce them to enter upon any expedition or march against the enemy until the full of the moon. The Greeks and the Romans believed that the moon presided over childbirth. The patricians of Rome wore the figure of a crescent upon their shoes to distinguish them from the lower classes. The crescent was called *lunula*. Herodotus records that when the Lacedæmonians visited Athens, after the battle of Marathon they waited until the moon had passed its full before they continued their march (Erato lxx). The ancient alchemists endeavored to localize planetary influences, maintaining that the *heart*, which represented, according to their physiological ideas, the vital spark, was under the special protection of the *sun;* that the *brain* was regulated and controlled by the *moon;* that *Jupiter* presided over the *lungs; Mars* over the *liver; Saturn* over the *spleen;* that *Venus* took the *kidneys* under her gracious wing, and that *Mercury* sat in judgment upon the *reproductive organs.*

Thus it will be seen that from the earliest periods in the history of the world, and even up to the present day, the idea of the phenomena of organic life being subject to planetic influence has held sway among the most enlightened and philosophical men. The following passage proves that the greatest of the Roman satirists was bitten by this belief:

"Ut mala quem scabies aut morbus regius urget
Aut fanaticus error, et iracunda Diana
Vesanum tetigisse timent fugiuntque poetam.
Qui sapiunt."

Horace, *Ars Poetica.*

It is now well established as a scientific fact that the moon has no influence on temperature, rainfall, or any other meteorological element, or on plant growth. Plant growth depends upon temperature, light, humidity, and plant food (both in the soil and in the air), and its availability. As regards light stimulus, the moon's influence on plant growth is absolutely *nil.*

The moon appears to have called forth the fire and sublimity of poetic genius in all ages, and in all climes. Most of the great dramatists and epic poets have embodied in their immortal creations a belief in the influence of the moon. The works of Shakespeare, Spenser, Beaumont, Fletcher, Ben Jonson, Byron and Shelley are replete with passages in relation to this subject. Shakespeare, whose intuitive insight into the subtle workings of the human heart and passions was most keen and intimate, has pointedly alluded to the moral influence of the moon on the human heart and intellect. In "Twelfth Night," Olivia, after apostrophizing Viola as a "most radiant, exquisite, and unmatchable beauty," exclaims: "I heard you were saucy at my gate, and allowed your approach rather to wonder at than to hear you. If you be not mad, be gone! If you have reason, be brief! *'Tis not that time of the moon with me to make one so slipping in dialogue.*"

Again, in the play of "Antony and Cleopatra," Enobarbus, after entering Cæsar's camp, thus appeals to the moon:

"Be witness to me, O thou blessed moon!
When men revolted shall upon record
Bear hateful memory, poor Enorbarbus did
Before thy face repent."

After which, he adds, previously to expressing his deep contrition for his revolt against Antony:

"*O sovercign mistress of true melancholy,*
The poisonous damp of night dispunge upon me;
That life, a very rebel to my will.
May hang no longer upon me."

In "Othello" after the death of Desdemona, when Emilia enters the chamber to announce the foul murder of Roderigo by the hand of Cassio, the Moor, crushed to the earth by an accumulation of miseries, exclaims in the agony of his soul and in the bitterness of wild despair:

"'Tis the very *error of the moon,*
She comes more near the earth than she was wont,
And makes men mad."

*Research work in a rodentological laboratory during a plague outbreak shows this observation to be untrue.

†An experience as ship surgeon in southern tropical seas, where crews frequently slept on deck during full moon, convinces the author that moon rays have no effect whatever on the human individual.

In "King Richard the Third," the Queen, after rushing, while in a state of profound distraction, into the presence of the Duchess of York, to announce the death of the King, passionately exclaims:

"Give me no help in lamentation;
I am not barren to bring forth laments;
All springs reduce their currents to mine eyes,
That I, being govern'd by the wat'ry moon,
May send forth plenteous tears to drown the world."

Milton frequently alludes, in "Paradise Lost," to the pernicious effects of the moon. He speaks of

"Demoniac frenzy, moping melancholy,
And *moonstruck madness.*"

In Ben Jonson's "Alchemist" Tribulation says:

"But how long time,
Sir, must the saints expect?"

To which Subtle responds—

"Let me see,
How's the moon now? Eight, nine, ten days hence,
She will be silver potate; then three days
Before to citronize,—some fifteen days."
Act III, Scene 1.

In the sixth chapter of Scott's "Fortunes of Nigel," David Ramsey gives utterance to the following prophecy upon the birth of the Duke of Buckingham:

"Full moon and high sea,
Great man shalt thou be;
Red dawning, stormy sky,
Bloody death shalt thou die."

The notion of planetic influence has not been confined alone to the fanciful creations of the poet. It has existed among barbarous, uncivilized, and unlearned peoples, who were profoundly ignorant of the views propounded by the ancient astrologers, or by the medical writers, who had somewhat engrafted the study upon that of astrology and astronomy. Medical science could not escape being involved in these beliefs. In referring to the alliance which formerly obtained between the two sciences, there can be no doubt that the application of astrology to medicine, though it was soon perverted and debased until it became a mere craft, originated in actual observation of the connection between disease and season. That these beliefs influenced medical thought can be easily seen by a reference to Matthew XVIII, verse 13, wherein is described a person as falling often into the fire, and often into the water as being affected (σεληνιάζεται) by the moon. Trallian, employing the same word, terms *cpileptics,* σεληνιακόι. Apuleius, a Latin author, also terms epileptics *lunatici.* For those suffering from colic it was the custom of Trallian to direct that a magical ring be worn on the seventeenth and twenty-first day of the moon.

Hippocrates imbibed so strong a belief regarding the effect of the celestial bodies upon the vital manifestations that he expressly recommends no physician to be entrusted with the treatment of disease who was ignorant of astronomical science; and he advised his son, Thessalus, to study the science of numbers and geometry, declaring that the "rising and setting of the stars have great effect upon the distempers." (Epist. ad Thessalum de aere, aquis, et locis.)

The critical days, or crises, as they were termed, were said to correspond with the interval between the moon's principal phases. The crises which Hippocrates describes by the words *imperfecte judica-* to which he applies the terms *perfecte judicabantur bantur* were the *intermediate lunar crises;* and those were *final inter lunar* crises. Galen also was an adherent of the Hippocratic idea. Hence the lunar periods were said by him to be connected with the exacerbation of particular diseases. In this connection it might be stated that the terms *luna-*tic that the moon exercises a decided influence on the and lucid are commonly based on the hypothesis insane.

Medicolegal Notes.

Statute to License Optometrists Held Invalid.—Appeal was made from a conviction of practising optometry without a license, in violation of the Illinois statute, Laws of 1915, p. 695, entitled "An act to regulate the practice of optometry in the State of Illinois, and fixing penalties for the violation thereof." The facts proved were as follows: The defendant was a graduate of McCormick Medical College and of the ophthalmic and optical department, but was not licensed to practise optometry in that State. A woman who was a licensed optometrist was sent by a member of the State board of optometry to the defendant's office to find out whether he would violate the statute. She asked to have her eyes tested for reading, and he put on her head a try frame, in which he could place different lenses to see whether she could read letters which he placed at a distance, and when he found lenses that suited her she contracted to pay him $12.50 for glasses, paid him a dollar, and took a receipt. The question at issue was whether the statute was valid. It provides for a State board of optometry, which may examine applicants and issue licenses, and exempts from examination any person who has practised optometry at any established place of business or practice for three years, who may be licensed on payment of $5.

The court said that while there is much uncertainty as to what acts are included in the practice of optometry, it would assume that what the defendant did was such practice. It held that if the changing of lenses until the customer was suited, or placing letters at a distance to be read, is measurement of the power of vision and the adaptation of lenses, it is no more than the measurements made by any person who undertakes to fit a person where the person himself decides what answers his purpose. Such measurements, if they are so called, have no relation to the public health, comfort, safety, or welfare, such as to require a course of previous study and an examination and payment of a license fee. The police power of the State may be exercised for the regulation of any trade, calling, or occupation for the purpose of securing the public health, safety, and welfare, but if an act has no reference to either, the personal liberty of the citizen to pursue any avocation cannot be limited or restricted. Here no reason was given by counsel how the comfort, health, welfare, or safety of society is to be promoted by requiring a license for such acts as were done by the defendant. A statute which singles out a particular class of persons and imposes burdens on them from which other similar classes are exempt violates their constitutional rights, and cannot be sustained. The court said: "We do not say that it is beyond the power of the General Assembly to enact a statute requiring a previous course of study and an examination of applicants to practice the calling or profession of examining the eye to ascertain if there are defects which can be remedied by the use of lenses, the determination of the accommodation and refraction states of the eye, the range and power of vision and abnormal conditions, and the adaptation of lenses to correct defects or to require a license to practice such calling or profession; but the act now in question, as construed by the parties and counsel, is not within the scope of the powers intrusted to the General Assembly." The act was therefore held invalid.—People v. Griffith, Illinois Supreme Court, 117 N. E. 195.

Military Medicine.

PNEUMONIA IN A CAMP OF FRENCH PRISONERS IN GERMANY.

MALLIÉ, a French army surgeon, improved the opportunity which befell him of reporting on 244 cases of pneumonia as they occurred in a prison camp in the earlier years of the war (*Journal de Médecine de Bordeaux*, October, 1917). The same number of Russian captives presented but 116 cases during the same interval. The picture of the disease was absolutely classical—men in full health complained of a severe pain in the side accompanied by a sudden rise of temperature (about 104° F.), dry cough, and rusty sputum, with the usual physical signs. As a rule, these cases ended in a sudden crisis, with defervescence and free sweating. The incidence of the disease was about 20 per 1000 soldiers. In peace times army morbidity is from 4 to 6 per 1000, while in soldiers in campaigns the infrequency of pneumonia is proverbial. Hence to explain so high an incidence as 20 per 1000 in the prisoners we must invoke the agency of special factors. The observation period may be divided into early and late. In the first 3 months of the war 50 cases developed, while in the last 4 cold months the number was 130. The increased incidence seemed to be due partly to the weather and partly to a restriction of the diet. With return of the warm weather the morbidity fell off notably. In regard to cardiac complications, these were as good as absent; while the gastrointestinal tract maintained its integrity in the great majority of cases. On the other hand, a septicemic factor was plainly in evidence, as shown by hyperpyrexia, involvement of the nervous system, coexisting lesions, low resistance, as shown by spread of the disease to the pleura and lung tissue, awakening of acute tuberculosis, etc. The involvement of the pleura appeared to determine a pleural localization of tuberculosis.

In France the average pneumonia patient is in good general condition when stricken, and when the disease attacks a victim of hardships and privations the prognosis should be unfavorably influenced; but the author lost but 10 of his 244 patients, or 4 per cent. Of 116 cases in 12,000 Russian prisoners, 11 ended fatally (10 per cent.). In order to account for this difference the author states that the French received aid from home during part of the observation period—additional clothing and food. The low French mortality from the disease will necessarily be increased at a later period from the secondary tuberculosis. The author treated his patients with cupping, milk diet, and the daily injection of camphor oil, from 30 to 40 c.c. in 3 injections. After defervescence, Fowler's solution was given. Respiratory gymnastics were begun 10 or 12 days after recovery, with thermometer control.

Care of Disabled Soldiers in France and Germany.—The question of how to deal with soldiers disabled in war, so as to render them so far as possible self-supporting, was first grappled with in France and Germany. In the new publication entitled *Recalled to Life*, the work which is being done for the disabled soldiers in these countries is dealt with exhaustively.

France.—With respect to restorative treatment in France, the work of the Military Medical Service (*Service de Sañté*) has been to set up centers for physical and mechanical treatment in connection with the principal military hospitals in all parts of the country. There is a tendency for centers to specialize in certain branches of treatment one center caring especially for the deaf, another for the needs of the one-armed, while special attention is paid to the treatment of the blind at Paris and Bordeaux.

In June last the Under Secretary of State published the broad outlines of a new scheme for securing closer cooperation between the physical and occupational and training centers. The functions of the centers under this new scheme will be: (1) To furnish a man with the most suitable apparatus. (2) To provide at one and the same time functional and technical training. (3) To establish or develop workshops in which surgical apparatus and artificial limbs may be manufactured, altered, or repaired, etc. At the present time, the Centers for Physical Training are under the control of the Military Medical Service, while the Occupational Training Centers are carried on by public authorities or private societies, and thus some difficulty in carrying out this program as regards existing institutions was anticipated. It is believed, however, that these difficulties are not insuperable, provided all concerned can be convinced of the absolute necessity for coordination.

So far the treatment of the deaf, the system known as a "reeducation auditive" has found some energetic advocates. It consists in stimulating the remaining sense of hearing by constant repetition of certain sounds. The method most in favor is to provide careful instruction in lip reading for those whose deafness is incurable. Since the spring of the present year a course for deaf soldiers has been carried on at the National Institute for Deaf Mutes in Paris. The men are boarded and lodged in the military hospitals, and attend the institution daily for instruction. The Military Governor of Paris has authorized a special course of training in voice production and speech for those who are dumb as a result of wounds, shock, etc.

The provision of suitable artificial limbs has been somewhat of a stumbling block in France as in all the countries at war. The ideal artificial limb should be not so much ingenious as serviceable. Dr. Bourreau of the Orthopedic Center at Tours has made a prolonged study of the best apparatus for enabling men who have lost an arm to resume work. He estimates that out of every hundred men who undergo amputation thirty-six lose an arm or hand and that there may well be, by the end of the war, 30,000 men in need of the kinds of apparatus on which he is working. His plan is to study in workshops, factories, etc., the part played by the left hand in the case of workmen engaged in various operations. He then designs an instrument capable of acting as substitute for the left hand. Men who have lost the right hand are, first of all, taught to accuston the left hand to perform the functions of the right hand. As a result of these studies and ex-

periments a great variety of mechanical aids, which are in effect tools adapted to various purposes, have been devised.

Dr. Jules Amar of the Conservatoire des Arts et Mètiere, has also worked out and applied special forms of treatment for men who have lost their limbs. Some years before the War Dr. Amar was asked by the French Government to make a scientific study of the relations between the physiological efforts involved in various forms of industrial work and the results produced. The conclusions drawn from these studies have been communicated by Dr. Amar from time to time to the Academy of Science. He claims that by retraining the nerves and muscles of the stump it is possible to increase the sense of touch and strengthen the muscles to a degree hitherto unsuspected. He recommends that every man who has lost a limb should undergo special physiological treatment and training. His experience has shown that such treatment not only improves the physical condition, but prevents nervous degeneration; at the same time that it enables the men in many cases to obtain extraordinary mastery of an artificial limb. This is of special importance where blindness is added to the loss of one or both hands, and even where a blind man is not otherwise injured, the reeducation of the sense of touch by means of apparatus designed by Dr. Amar has proved of incalculable service.

A very large proportion of the rank and file of the French army is drawn from those classes known as "cultivateurs," owners of land, tenant farmers, and agricultural laborers. It is considered that special efforts should be made, including training where necessary, to induce men to return to the land. Several schools have been provided for the purpose of such training, and it is interesting to note that many blinded soldiers, if not otherwise disabled, can take up agricultural work. In February, 1916, a special board, known as the "Service de Placement," was created by the Ministry of War: (1) To centralize the information available as to the number of disabled men seeking employment and to act with the local labor bureaus in finding employment; and (2) to study the best methods of utilizing the labor of the disabled in the interests of the economic life of the country.

The care of blinded soldiers has received careful attention in France since the earliest months of the war. The organization for their welfare has made more progress, perhaps, than that designed to help any other class. The state has caused to be set up fifteen institutions, one in Paris and the remainder in fourteen large provincial towns, mostly in connection with previously existing schools for the blind. There is accommodation in each of these institutions for about thirty men. As soon as his condition allows, a blinded soldier is sent to the school nearest his home or place of birth.

Germany.—Knowledge of what has been done for the care and rehabilitation of German soldiers disabled in war is necessarily not so accurate as that of similar doings in the Allied countries. All information in this direction has been procured from German sources and is based on articles which have appeared in German periodicals.

Regarding the provision of artificial limbs, the German military medical authorities have issued instructions that no mutilated man is to be discharged from the army until he has thoroughly mastered the use of the artificial limb supplied to him by the authorities. Many artificial limbs have been devised, but none seems to have acted as a really efficient substitute.

Men are instructed in the German hospitals and convalescent homes. In a large number of hospitals the military authorities have themselves provided workshops, in which men work under medical supervision, it having been found that the exercise thus secured is more beneficial than mere remedial movements. It has been also found that iron and wood workshops can be run on a self-supporting basis in nearly all hospitals, so that the work done by the men has generally an economic value. In addition to workshops, which serve the double purpose of exercise and training, the military medical authorities afford facilities for any other kind of instruction which may be offered by educational or welfare societies.

No information is available as to the actual number of German hospitals and training schools, but detailed descriptions are given of the efforts made in particular towns and districts. In Frankfort, Charlottenburg, Munich, Saarbrüchen, Berlin, and several large towns of Würtemburg arrangements have been made for giving technical instruction in various branches. At Saarbrüchen, in addition to workshops in the hospitals, outside establishments have been set up. A trussmaker has placed a large and well-fitted workshop at the disposal of the disabled, in which the use of machinery, tools, and apparatus can be learned and practised. The owner of the business himself directs the work, and shows men how to construct for themselves suitable artificial limbs and tools.

Of the Würtemburg towns, the largest hospital school is that at Stuttgart, in which instruction is given to wounded as well as disabled soldiers; there were in November last about 5000 pupils in this school, 60 per cent. of these were still in hospital, 30 per cent. had returned to barracks but still attended classes, while 10 per cent. had been discharged from the army, but remained under training.

At the Electric Accumulator Factory in Oberschöneweide, near Berlin, disabled men who have worked in wood and metal trades are given an opportunity, while still under hospital treatment, of regaining efficiency in their former branch of industry. The disabled work with sound workmen, but the nature and extent of their work vary according to their physical capacity as appraised by the medical supervisor. This arrangement is said to have achieved excellent results.

Agricultural training of disabled men has not been overlooked in Germany. Bavaria started an agricultural training school at Landsberg am Lech in the autumn of 1915; since which time 250 or 300 war invalids at a time have been under instruction. The Prussian Government has emphasized in every ministerial circular the importance of providing training in agricultural work for disabled men. Schools for this kind of training have been established in various parts of Germany and Prussia. Many plans have been formulated with

the view of settling disabled soldiers on the land.

The advice is given that disabled men should return as far as possible to work they did before the war; where this is impossible they should be given some other work upon which they can be employed with safety to themselves and their fellow workers.

Considerable progress appears to have been made in employing war blinded men in munition factories. About 50 per cent. of the men blinded in the war are now said to be employed in this way in Spandau, Dresden, Danzig, Cassel, Nuremberg, Düsseldorf, Erfurt, Munich, and other towns.

Disabled officers who have been obliged to leave the army receive from the State (a) a pension corresponding to their peace time income; (b) a war supplement of 720 to 1,200 marks, and in certain circumstances (loss of limb, etc.) a disablement allowance of 900 marks. In addition, a number of public appointments are reserved for them, on State Railways, in the Excise Service, in the Postal Service, Governorships of Prisons, and as Taxing, Stamp Duty, and Death Duty officials. Salaries in these posts vary from 1,800 to 4,500 marks a year.

Bone Grafting.—In the *British Journal for Surgery* for November, 1917, Mr. Ernest W. Hey Groves gives a description of old and new methods of transplantation of bone in the repair of defects caused by injury or disease. The following is a summary of the results of experiments in this direction carried out by himself: (1) The most ideal graft is a piece of living bone used in its entire thickness. (2) Any kind of bone-graft gives better results when used whole than when broken up into small fragments. (3) Fragments of living bone, unless closely in contact with vascular tissue, act as indolent and passive structures, and display no osteogenesis. (4) Dust formed from the living bone does not maintain its vitality. (5) Cortical grafts are far better than intramedullary. (6) An intramedullary graft, if small and loose, takes no part in repair, neither does it act as a splint. If it fits the narrow cavities of the fragments tightly, it hinders osteogenesis and is frequently subject to fracture. (7) The success of a living graft depends very largely upon: (*a*) The extent of its contact with living bone; (*b*) The accuracy of its apposition; (*c*) The firmness of its fixation. (8) Firmness of fixation is of paramount importance in the repair of defects in long bones by grafting. (9) A graft of dead bone (boiled) properly fixed by metal sutures, will give a better result than a living autogenous graft fixed by catgut alone. (10) Metal sutures and pins are useful in the fixation of many grafts. When properly applied they secure the necessary fixation, and there is no evidence that they hinder osteogenesis. (11) For use as pegs or nails there is no advantage in using living over dead bone. (12) Domogenous grafts under favorable circumstances, act just as well as autogenous. (13) Dead bone-grafts are certainly inferior to living when used to fill defects in the long bones, but under favorable circumstances they become strongly incorporated into the living skeleton. (14) Provided that secure fixation of the graft in its bed is not disturbed, mobility of the limb favors osteogenesis, whilst immobilization hinders it.

Gunshot Wounds of the Chest.—A good deal has been written since the outset of the war on gunshot wounds of the chest. It seems to have been demonstrated clearly enough that the mortality, on the whole, from such wounds has not been large. It is true that French medical publications attribute to gunshot wounds of the chest a considerably higher death rate than the records of British surgeons show. However, the higher death rate among French soldiers from this cause is probably largely due to the tendency of French surgeons to operative, while British surgeons pursue more conservative methods. Colonel R. D. Rudolf, writing in the *Lancet*, Nov. 16, 1917, on the subject, concludes as follows: (1) Evidence is lacking that small fragments of shell and shrapnel and likewise rifle bullets and shrapnel balls retained in the lung commonly give rise to any serious trouble. (2) The mortality of gunshot wounds of the chest in patients that have survived the early days of their invalidism and been sent to England with retained missiles in the chest is practically nil if these bodies be left alone. (3) Hence, when it has not been considered necessary by the surgeons at the front to operate immediately, it should not later on be done, unless, indeed, some very definite indication, such as an abscess, exists.

Moving Pictures for the Army Medical Museum.—An important educational innovation, just announced, is the establishment of a new subdivision of the surgeon general's office in conjunction with the Library and Army Medical Museum, to furnish moving pictures or slides of camp activities relating to the conduct of work in the medical department. A suitable repository will be established for the accommodation of positives or negatives of all important military-medical films or slides, which are to be available for instruction purposes, to supplement the courses given under the direction of the medical department in officers' training camps, as well as in the National Guard and National Army camps. They will also be loaned to medical schools for use in lectures and other courses of study. As it has been repeatedly demonstrated that students attain a much higher percentage where courses are supplemented pictorially, this innovation will be appreciated as of immense value. The surgeon general's office seeks the cooperation of the medical profession in securing access to negatives of unusual cases in every branch of surgery not now possessed by the library of moving pictures of the surgeon general's office, and would appreciate the donation of positives where possible. The new branch is under the direction of Col. William O. Owens, curator of the Surgeon General's Library and Army Medical Museum, Seventh and B Streets, S. W., Washington, D. C., to whom correspondence may be addressed.

Health Conditions in National Guard and National Army Camps.—According to the *Official Bulletin* of December 6, the sick rates of the National Guard have improved during the week in some divisions, have remained practically unchanged in others, have slightly increased in the Forty-first, Twenty-eighth, Thirty-fifth, Thirty-eighth, and have considerably increased in the Twenty-seventh Division. Conditions in the National Army have, on the whole, improved during the week. In only two divisions was there an increase in the number of cases of measles re-

ported over that of the preceding week. Reports from all the divisions in which pneumonia has been prevalent show a decrease in the number of new cases, with the exception of the Thirty-sixth Division; the number of cases of pneumonia reported from this division was 454, as compared with 1038 for the preceding week. The total number of deaths in the National Guard for the week ending November 30 was 164, of which 143 were due to pneumonia; the total number of deaths for the preceding week was 171. The total strength of the National Guard is 374,762. The total number of deaths in the National Army for the week ending November 30 was 79, 39 of which were due to pneumonia. The total deaths for the preceding week numbered 60. The strength of the National Army is 426,310.

Surgeon General Appeals for Nurses.—Surgeon-General Gorgas has sent out an appeal to the superintendents of training schools for nurses, to the presidents of alumnæ associations of the same schools, and to the presidents of the State nurses' associations, and State examining boards for registered nurses. The appeal states that the need for nurses is growing daily and to meet it it will be necessary for the Surgeon General's Office to have on file the names of thousands of nurses who can respond to a call on short notice. It is estimated that at least 20,000 nurses will be required in the army hospitals at home and abroad in case the war continues, therefore the applications of all graduate nurses who are professionally, physically, and morally qualified will be given consideration. Nurses will be appointed for three years, if they so desire, or else for the period of the emergency.

Another Medical General.—Our own General Leonard Wood is not the only army commander who began his life work as a physician. General Boriani, who for six weeks has led the brave Italian troops on the Asiago plateau, which, outgunned and outnumbered, have successfully resisted this modern irruption of the northern barbarians, was educated as a physician, and for many years successfully practised gynecology.

Doctors Give Free Treatment to Soldiers' Families.—The American Medical Military Aid Association announces its intention to enlist at least 2000 physicians in New York for the care of the families of soldiers in their neighborhoods. The volunteer physicians are asked to give at least one hour a day to this work and to give it in the same spirit in which the soldiers have volunteered. In order to help defray the expenses of the association an entertainment, which will include an inter-city fencing competition, will be given at the Ritz-Carlton Hotel on December 18. Dr. Ramon Guiteras is president of this organization. Those wishing to volunteer their services are requested to address Dr. John Ernest Gignoux, 616 Madison Avenue, New York.

New York Leads in War Work.—This city has contributed more physicians, surgeons, and Red Cross nurses for service in France than any other American city. It has at present four base hospital units—Roosevelt, New York, Post-Graduate, and Presbyterian—serving "Somewhere in France." The Kings County Base Hospital Unit, No. 37, has been ordered by Surgeon General Gorgas to active service in France soon after the first of the year. When the New York base hospital units now prepared are actually in service the city will have given more than 200 physicians and surgeons and more than 500 nurses as its quota.

Poets' Committee Continues to Send Ambulances.—The Poets' Ambulance Fund reports that it has purchased one hundred ambulances for service in Italy and that seventy-six of these are already in commission. The committee has thus far cabled to Italy over $141,000 for the purchase of ambulances.

Army Needs Surgical Instrument Repairers.—The Medical Department of the United States Army has issued a call for ten men for overseas duty as surgical instrument repairers. Applications from men willing to enlist may be made to Colonel Frederick M. Hartsock, at No. 628 Greenwich Street, New York.

Ex-President Taft Urges Exemption of Medical Students.—At the annual convention of the American Society of Mechanical Engineers, recently held in New York, ex-President William Howard Taft made an address in which he urged that Congress be warned of the danger of making the same mistake that England had made in sending her doctors and engineers into the trenches. He expressed the opinion that Congress had been very remiss in acting in this matter and that it should require these two classes of men to complete their professional training so that they would be fitted for special duty whenever they might be needed.

Estate Offered for Hospital.—The heirs of the large country estate of the late Grant B. Schley have offered this property, comprising 5000 acres of land, to the Government to be used as a convalescent hospital for American soldiers. They have filed a complete description of the estate and of the house, together with its equipment, with the Government.

Large Gifts to Relief Work.—William K. Vanderbilt has contributed $200,000 to relief work among the Italian wounded and needy through Major G. M. P. Murphy, head of the American Red Cross Commission to Europe. The Rockefeller Foundation has made a contribution of $100,000 to the Jewish War Relief Fund which brings that fund up to about $2,150,000.

Business Men Enter Red Cross Service.—In response to a request from Major Murphy, ten more American business men have volunteered for American Red Cross service in France. They will serve without pay and pay their own expenses in connection with their work. They are Mark S. Willing, Chicago; William Prescott Walcott, Readville, Mass.; Credo Harris and Attila Cox, Jr., Louisville; S. A. Barden, Kenosha, Wis.; Louis A. Davis, Philadelphia; John P. Carey, Colorado Springs; Jacob France and Stuart Oliver, Baltimore, and James Mori, Burlington, Iowa.

Salvation Army Plans Work Among Soldiers.—The Salvation Army recently held a meeting at its headquarters in New York City at which plans were outlined for raising a fund of $1,000,000 for work among American soldiers in France. Each State will be asked to raise its proper quota of this fund.

MEDICAL RECORD.

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OUR PRESENT KNOWLEDGE OF WEIL'S DISEASE.

INFECTIOUS jaundice, or Weil's disease as it is more commonly called, has recently been the subject of considerable interest and study owing to its existence among the troops in Europe, and more particularly on account of the information which we now possess in regard to the etiology and probable means of dissemination. In 1914 two Japanese physicians, Inada and Ito, discovered the cause of the infection in the form of a spirochete circulating in the blood. It was not until March, 1916, that the first report of their work was recorded in English in the *Journal of Experimental Medicine*. Since this paper was published, several others have appeared which corroborate the work of the Japanese investigators in practically every essential detail. The disease has prevailed epidemically in Japan for a number of years, resulting in a mortality as high as 38 per cent. Epidemics have occurred in the United States and Europe at various times during the past 100 years, but in these countries the disease has been much milder in type than in the Far East. Inada and Ito were led to the discovery of the cause from the fact that they were able to infect guinea-pigs by intraperitoneal injections of blood taken from patients acutely ill in the early stage of the disease. Subsequently they demonstrated the spirochete in stained spreads of the blood. They adopted the binomial nomenclature of *Spirochæta icterohæmorrhagia* for the organism, so that in accordance with the tendency of the times to label diseases biologically when possible to do so, the malady is now alluded to in the literature as spirochætosis icterohæmorrhagica. This designation, albeit somewhat unwieldy, gives expression to two of the most important objective symptoms of the infection, viz., icterus and hemorrhages. The spirochete is of inconstant shape and has no fixed undulations. The thickness is about that of *Spirochæta pallida* or slightly less, and the length varies considerably, being about the length of *Sp. pallida*, showing twelve or fourteen turns. The organism has been cultivated outside of the animal body.

Clinically, three stages of the disease are recognized, viz., the first or febrile stage, the second or icteric stage, and the third or convalescent stage. The incubation period is from six to eight days. The onset in typical cases is usually sudden, with chills and fever, headache, vomiting, muscular pains, congestion of the bulbar conjunctivæ, and albuminuria. The first stage lasts about one week and is followed by jaundice, hemorrhages from the mucous membranes, petechiæ, nervous symptoms, marked prostration, and cardiac weakness. This stage also lasts approximately a week and is the period of greatest mortality. The final stage is characterized by a gradual disappearance of the jaundice, progressive emaciation, and occasionally by the recurrence of fever, remittent in type, and called by the Japanese "after fever." This stage may last from four to twenty days or even longer. The spirochetes are found in the blood in the first stage and toward the fifth or sixth day they begin to appear in the urine. During the second stage the spirochetes disappear from the blood and are found abundantly in the urine, where they can be demonstrated by the India ink method. They continue to be excreted by the kidneys throughout the third stage. Histologically the spirochetes exhibit a wide distribution, being present in most of the organs and tissues, particularly in the liver and kidneys. Fortunately the majority of cases which have occurred among the troops in the present conflict are of a milder form than detailed above. The mortality to date has been comparatively low, probably not exceeding 6 per cent. Cases have been reported with very little or no jaundice, a point of some importance when approaching the diagnosis.

As regards the route of infection, most students of the disease are inclined to the belief that it occurs through the alimentary tract, with also the possibility of infection through the skin. This latter route is suggested by the high incidence of the infection in the coal miners of Japan who go barefoot. That the spirochete is carried by rats is now an established fact. Noguchi found the spirochete in rats in New York City. In Europe and Japan a fairly large percentage of the rats harbor the organism. Rosenau is of the opinion that the disease was originally epizootic among certain rodents, especially wild rats, and after a long sojourn in this species of host its virulence for these animals has been reduced to such an extent as to cause the latter no inconvenience, or at least a state of tolerance for the spirochete has developed. Therefore Weil's disease is probably a primary infection in rats and secondarily transmitted to man. It seems reasonable to assume that the Japanese strain has acquired a marked increase in virulence owing probably to a more frequent passage from man to man. It is believed that the infection is seldom transmitted by the bite of a rat. The rat, like man, excretes the spirochetes in the urine and by this means the soil becomes contaminated with the organism. It has been shown that moist soil is particularly favorable to the proliferation of the spirochetes. Hence measures for the destruction of rats

in camps and trenches are of the utmost importance in the prophylaxis of the disease.

Treatment is largely symptomatic. The Japanese have developed a serum made by immunizing horses. It is administered subcutaneously and intravenously. They report that the ultimate results of the serum treatment on symptoms and final outcome have still to be determined. The serum does seem to cause a decrease in the number of spirochetes in the blood. If the serum is to be of any benefit it should be given early in the disease. Whether serum therapy or some form of chemotherapy will be the most effectual means of combating the infection is a subject for further investigation. The pathogenesis of the "after fever" is another point requiring elucidation.

POSOLOGY AND MODE OF ADMINISTRATION OF ADRENAL EXTRACT.

THE therapeutic indications for suprarenal medication are as numerous as varied. Like thyroid substance, the extracts have substitutive and dynamogenic properties. One may do great things with adrenal extract if he knows how to handle it and is familiar with its indications and contraindications. Practitioners at present seem to know only the theories of adrenal activity. At least this is the opinion of Sergent in the *Journal de médecine et de chirurgie pratiques* for October 10, who adds that they follow a false set of rules in the exhibition of suprarenal preparations. There is too great a fear of large doses, and this is responsible for many failures, for the small dose has a transitory effect. To obtain the desired action it is necessary to give good-sized doses, but they must be given in fractions. The result will be that the patient comes under the influence of the drug, and a sort of equilibrium is maintained. We should reckon always in daily doses in order to get an optimum therapeutic effect.

The case is cited of an attempted suicide in which a drug clerk swallowed 20 c.c. of a 1 to 1000 solution of adrenalin hydrochlorate. A quarter hour later, nothing having transpired, he took 15 c.c. more. Not until after two hours did he develop severe headache, stiff neck, and nose bleed. He decided to live, and at the hospital was bled 75 c.c. by reason of the high blood pressure (no attempt was made to register it). After the venesection he received emetics and inhalations of nitrite of amyl. Still able to walk, he went to bed and waked in his usual health, save that he showed some bloody expectoration. The would-be suicide was tuberculous. Another case showed analogous behavior, and it does not seem likely that any amount of the drug would prove a violent poison, for the very good reason that the greater the dose the greater the degree of vasoconstriction from the local action of the drug on the mucosa. As this condition wears off absorption slowly sets in. The rhinologist knows this fact, and is not afraid of unlimited local application of the drug.

Like numerous other clinicians, Sergent administers the drug *per os*. Thus given, the doses seem to vary much according to the practitioner, but are always relatively small. No account is taken of the fact that adrenal extract is rapidly attacked by the digestive juices. Sergent, however, after a good deal of experience, decided that a special hypodermic method could be devised to replace exhibition by the mouth. The instability of the drug in the stomach, along with its power of preventing its own absorption, seemed to subvert entirely any prospect of a successful use of the mouth. In the hypodermic use there is also vasoconstriction, but it only slightly delays absorption.

What has been said thus far does not apply to the steady use of suprarenal substance in suprarenal insufficiency, which is a different therapeutic proposition. But these patients often suffer from persistent vomiting or gastric intolerance, and then only the hypodermic route will serve. This is necessarily the case in "acute suprarenal insufficiency," as it is seen in the course of acute infectious diseases. It is precisely in acute insufficiency that a large hypodermic dose is indicated. Here the author gives six, and at times as high as eight, milligrams of pure drug in 24 hours. In ordinary internal exhibition, suprarenal extract is usually associated with some other endocrinic principle in capsules, and the author has combined buccal with hypodermic medication in certain cases. When we consider that adrenal extract may be a synergist in the treatment of many maladies it becomes apparent that it demands intensive study.

PREMEDICAL TRAINING IN CHEMISTRY.

THE importance of a fair knowledge of chemistry to the medical practitioner is too patent to require much elaboration. In fact, a comprehensive and accurate knowledge of the chemistry of the human body is of the greatest service to practising physicians. Now, without preliminary preparation in this science, that is, a study of the elements of the chemistry of the human body before the student enters upon his medical curriculum, the student is considerably hampered. He must have the foundation laid before he begins the professional courses. After he has begun, he will not have the opportunity to master the outlines of the chemistry of the body.

Dr. Frederick S. Hammett, of the Harvard Medical School, read before the Fifty-fifth Annual Meeting of the American Chemical Society in September last a paper (published in the *Journal of Industrial and Engineering Chemistry*) in which he dwelt upon the necessity for medical students to know something of the chemistry of the body before they commenced their medical studies, and emphasized the importance of the possession of such knowledge. Nowadays it is well known that the science is fundamental to a rational understanding of the mechanism of the human body. It is claimed that

many diseases have a chemical origin, or, at least, that chemical processes play a vital rôle in the maintenance of health. Thus it is manifestly essential that a physician cannot treat a patient in the most effective manner unless he is able to apply a knowledge of chemical basic principles to the body reactions.

It is plain then that the boy who intends to enter the medical profession should acquire and assimilate a certain amount of chemical knowledge. As Hammett points out, this premedical training in chemistry is essentially a question of what instead of how much. It would be futile to waste the time of the premedical student in learning chemistry which could not be applied to the treatment of the diseases and affections of man. The part of the science of which he should learn the elements during his premedical student days is that which deals with the chemistry of the human body. But of course he should gain a thorough acquaintance with the fundamental principles common to all chemical reaction, and should obtain a broad view of these fundamental principles, rather than spend his time on unessential details. The elements of biological chemistry are not difficult to acquire at school but are very difficult and often impossible to acquire after entrance into a medical school.

Seeing that a knowledge of biological chemistry is essential to the thoroughly efficient practice of medicine, it might seem to be advisable for the medical schools to insist upon preliminary requirements as regards the chemistry of the body. If this were done, the schools and colleges would be compelled to teach the fundamental principles of biological chemistry to those of their students whose intention it was to become practitioners of medicine.

INHUMAN TREATMENT OF FRENCH PRISONERS BY GERMAN PHYSICIANS.

Dr. Christmas recently published a work on this subject, to which Professor Letulle has contributed a preface, a notice of the publication appearing in the Bulletin of *Le Progrès Médical* for October 13. Information was obtained from prisoners exchanged in Switzerland as no longer able to make war. The author is a neutral Danish physician who was asked to carry on the investigation by the French Minister of Foreign Affairs, and his work was done in Switzerland. By a strange coincidence he died suddenly on the day in which his accusing document was presented to the world. He began his undertaking with the conviction that the prevalent beliefs about the ill treatment of the men were gross exaggerations. Imbued with the traditions of German university life, such conduct had been to him simply inconceivable. He was unable to grasp the idea that German sanitarians, with their *esprit de corps*, could have fled from the typhus infested prison camps. It was even said that they had made no effort to rid the prisoners and their belongings of vermin, and thus prevent the epidemics which occurred in at least three camps. Could they have contrived this spread of disease? They at least made no effort to isolate the Russians who had already suffered from it. The result was thousands of deaths among the prisoners and the flight of the German doctors. Some one saw to it that nourishment was not withheld—it was passed in through wickets; but all credit for medical service was due to the French and Russian physician prisoners. The German medical staff eventually realized that the principles of humanity had been violated, and the omission was in part repaired. To-day, in the prison camps, all prisoners are disinfected on admission, and there have been no epidemics of typhus for more than two years. The breakdown in the German sanitary service occurred in January, 1915, and can absolutely not be excused on account of unsettled conditions.

The other subject for discussion cited in the review is tuberculosis. The prisoners, in a condition which attracted infection, and with numerous infections already established, received no more hygienic ministrations than the first group. There were no cuspidors, no separate laundries, no isolation for the already infected. Many men already in the incipient stages were made to work in the mines and factories. In Letulle's opinion it was only too evident that when peace came thousands on thousands of germ carriers would be sent home to France with the attest that they had been "able to work." If such mass infection was deliberately planned or fostered, there was no necessity for deliberate inoculation, as has been charged, for the German authorities knew their method was equally efficacious, and less troublesome for them.

The Prognostic and Symptomatic Value of "Marbled Nails."

Knowledge of the petty symptoms of disease is not now cultivated with the acumen of prescientific days. What practitioner nowadays gives any heed to leuconychia—the white spots on the nails? These details are abandoned to the laity and the pseudologists. Sabouraud, however, insists (*La Presse Médicale*, Sept. 27) that these white spots have both diagnostic and prognostic value. He has often seen them in the following associations: pretuberculosis in the young, neurasthenia of the phobic type, and chronic alopecia—all in the male sex. In females they are much more common than in males, and appear to occur by preference in neurasthenics; for example, in young girls who are mentally depressed and who talk much of suicide and have one or another phobia, such as the presence of down on the upper lip which they fancy makes them repulsive to others. Or perhaps their fear that their hair or eyebrows are falling out. These attitudes are the cause or result of mental depression. Leuconychia is common among young women with skin diseases of various kinds independent of site. It is not believed to be due to the toxin of tuberculosis when seen in candidates for consumption, but to inferior nutrition; for it is equally encountered in hereditary syphilis. The woman who is always tired without

sufficient cause is very apt to exhibit these spots. Sabouraud has seen them excessively developed in simple goiter and Graves' disease. As stated before there is some connection between them and alopecia of long duration and this form may be associated with other anomalies of the nails. To sum up, Sabouraud believes it is a bad symptom, but not a grave one. It does not foretell death, but it is never seen in a healthy subject. We see it in arterial hypotension and mental depression. It is never present by mere chance and whenever present is a sort of vague menace of poor mental or physical health.

News of the Week.

New York Academy of Medicine Remits Dues of Members in Service.—At a stated meeting of the New York Academy of Medicine, held on December 6, amendments to the constitution and by-laws were adopted which provided that the number of Fellows residing in the Greater City of New York and paying dues should be limited to thirteen (instead of twelve) hundred, and the number not residing in the city and paying dues to two hundred and fifty. Another amendment empowered the Academy during the continuance of the war to remit, wholly or in part, or permit the postponement of the payment of the dues of any Fellow while in active service, or to transfer such Fellows from resident to non-resident membership. The annual election was also held this evening. The term of the president, Dr. Walter B. James, does not expire until January 1, 1919. The officers elected were: *Vice-President,* Dr. John Hartwell; *Corresponding Secretary,* Dr. D. Bryson Delavan; *Treasurer,* Dr. Seth M. Milliken; *Trustee,* Dr. L. Emmett Holt; *Member of Committee on Admission,* Dr. Godfrey R. Pisek; *Member of Committee on Library,* Dr. Herbert S. Carter.

Dr. Charles W. Stiles of the United States Public Health Service has been given jurisdiction over sanitary affairs in the zone about Camp Hancock, near Augusta, Ga., and will work in cooperation with the health forces already in operation there.

Pneumonia Slightly on Decrease in New York.—The records of the Department of Health from December 1 to 8 show a decrease in the number of deaths from pneumonia as compared with the previous week, there being 220 deaths from this cause reported, as against 251 for the preceding week.

New York Hospitals in Need of Funds.—Figures from forty-six of the principal hospitals of New York show an average increase in expenses since the United States entered the war of at least 40 per cent. The hospitals find the cost of maintenance greatly augmented by the increase in the cost of surgical dressings and drugs. It is stated that the cost of gauze has increased 450 per cent., and that of atropine and some other drugs has increased 1000 per cent. Private hospitals which accept "city" patients have increased their per capita allowance from ten to twenty-five cents per day. According to the figures compiled by the New York Hospital, ward patients cost $2.88 per day, which is an increase of from 32 to 38 per cent. per capita. The situation is doubly serious for the hospitals, inasmuch as want and worry, due to the absence of the bread winner and the high cost of the necessities of life, have greatly increased the demands made on the hospitals. The Babies' Welfare Association of New York City also issues an urgent appeal for financial aid. This organization acts as a clearing house of 130 charitable institutions in the city, and has provided means of caring for 12,000 babies this year, an increase of one-third over any previous year in its history. The probability, in view of the conditions imposed upon the poor by the war, is that the demands made on the association will be greater in the future than in the past.

Red Cross Relief for Halifax.—On receipt of news of the Halifax disaster the American Red Cross immediately sent out from its headquarters in Washington one hundred physicians and surgeons and one hundred and fifty nurses, as well as other helpers. A second contingent was sent from New England, which included ninety-four physicians and surgeons and one hundred and nineteen nurses. St. Luke's, Mount Sinai, and Bellevue hospitals of New York have volunteered to send units, but as the need for physicians and nurses seems to be provided for, their services have not been accepted.

Charitable Bequests.—The Post-Graduate Hospital, New York, has received a bequest of $5,000 to endow a bed in the children's ward, under the will of Cora V. R. Catlin.

The Alumni Association of Jefferson Medical College is the recipient of a residuary bequest of $10,000 by the will of Dr. Joseph Mark Malatesta of Philadelphia, as a memorial to his widow and his mother. His medical library is bequeathed to the Atlantic City Medical Library.

The Clinical Association of American Peroral Endoscopists was organized in Philadelphia on November 1. The purpose of this new society is, as stated in its constitution, "The study of diseases and accidents occurring in the respiratory and upper digestive tracts, of borderline conditions and their treatment, medical and surgical, by direct inspection." The object of the association is also to impress on the internist and general practitioner the value of bronchoscopy and esophagoscopy as diagnostic methods of precision, and so to make possible the accurate ocular study, in the living subject, of pathological conditions of the esophagus and lungs. The association has elected the following officers: *President,* Dr. Chevalier Jackson of Philadelphia; *Vice-President,* Dr. Hubert Arrowsmith of Brooklyn; *Secretary-Treasurer,* Dr. Henry L. Lynah of New York; *Members of the Executive Committee,* Dr. Wolff Freudenthal of New York and Dr. Samuel Iglauer of Cincinnati.

Sweden Reports Low Death Rate.—According to the Swedish government reports recently received in this country, the health of that nation is better than ever before. The Stockholm death rate has fallen to 12.6 per 1,000 population, as against an average of 15.7. The statistics furnish additional evidence that a considerable restriction in the food supply is beneficial rather than detrimental to health.

Clinics for the Treatment of Syphilis.—In compliance with a resolution recently adopted by the Morris County Medical Society that "if possible, at least three hospitals in the county establish a clinic for the treatment of syphilis or specific blood

disorders," the board of managers of the New Jersey State Hospital at Morris Plains, at its recent annual meeting, authorized the establishment of such a clinic at this hospital. Through the liberality of certain drug concerns the necessary drugs are to be provided without expense to the hospital or State. Prior to this there has been no way by which those unable to pay could receive such necessary treatment.

Dr. Eugene H. Porter, formerly New York State Commissioner of Health, has been nominated Commissioner of Foods and Markets to succeed Mr. John Dillon.

Regulation of Dispensary Treatment of Tuberculosis.—The New York City Department of Health has adopted an amendment to the sanitary code which provides that "no public dispensary where communicable diseases are treated or diagnosed shall be conducted otherwise than in accordance with the regulations adopted, which are to take effect at once." These regulations require that examination and treatment of persons affected with tuberculosis shall be conducted in a special dispensary or department maintained solely for such purpose; that every dispensary be provided with adequate facilities for making microscopic examinations of sputum; that the number of patients examined by one physician shall not exceed five per hour; that every dispensary shall be open at least one day each week for the reception and proper care of patients, and the necessary medical and nursing staff shall be on duty on all the days set apart for the reception of patients; that an adequate follow-up system be maintained; that circulars of instruction and advice be furnished patient; that every dispensary shall examine, and, if necessary, treat at the time of their first visit, all applicants, irrespective of their place of residence; that a complete and adequate record be kept of every case, and that such records shall not be open to inspection by the public or to any person other than the representatives of the Department of Health and such persons as may be authorized by law to inspect such records; that every dispensary in which persons are treated for tuberculosis shall be provided with and employ proper facilities for the examination and treatment of the nose and throat of such patients.

New Tuberculosis Day Camp Opened.—The Boat Committee of the Society for the Prevention and Relief of Tuberculosis formally opened a new day camp, "Manhattan," at the foot of East Ninetieth Street on December 6. Addresses were made by Dr. Haven Emerson, Dr. Herman Biggs, and Dr. Louis I. Harris.

Obituary Notes.—Dr. ANSEEL MCKINSTRY WHITBECK, a retired physician, formerly of Albany, N. Y., and at one time examining physician for the United States Army, died at the home of his daughter, in Brooklyn, on December 5, aged 81 years.

Dr. JOHN H. SLOAN of Santa Fe, N. M., a graduate of the Cincinnati College of Medicine and Surgery, died suddenly in Kansas City, on November 15, aged 65 years. He was several times Mayor of Santa Fe.

Dr. OLAF T. MELDE of Spokane, Wash., a graduate of the Physico-Medical College of Indiana in 1890, died in the Chicago Eye and Ear Hospital on November 16, aged 48 years.

Dr. JAMES MILLS of Janesville, Wis., a graduate of the Northwestern University Medical College, Chicago, in 1883, died on November 18, aged 65 years.

Dr. IRA H. GOSE of Eureka, Utah, died of injuries sustained in an automobile accident on November 12, at the age of 46 years. He was a graduate of the College of Physicians and Surgeons, Baltimore, in 1896, and formerly practiced in Danville, Va.

Dr. JACOB CULLEN BARR, retired, formerly of Lawrenceville, Ill., one of the oldest graduates of the University of Cincinnati, and a former surgeon of the First Ohio Infantry, died at Keokuk, Iowa, on November 14.

Dr. WILL ALDER SMITH of Galena, Ill., died on November 17, 1917, aged 45 years. He was a graduate of Northwestern Medical University, Chicago, in the class of 1897.

Dr. MARY E. BALDWIN of Newport, R. I., died in a Brooklyn hospital on November 21, aged 70 years. She was a graduate of the New York Infirmary for Women and Children in 1874, State secretary for the committee of public health education among women of the American Medical Association, and was actively interested in many health reform movements.

Dr. JAMES LOUIS BEYEA, a graduate of the Homeopathic Medical College of New York, and a Civil War veteran, died in the Flower Hospital, New York, at the age of 85 years.

Dr. ISRAEL C. JONES died at his home in New York City on December 6, aged 66 years. He was a graduate of the Miami Medical College, Cincinnati, in 1874, and Medical Superintendent of the Home for Incurables, New York, since 1876. He was a member of the New York Academy of Medicine, the County Medical Society, the Bronx Medical Society, and the Hospital Superintendents' Association.

Dr. EDWARD A. AYRES of Branchville, N. J., died of pleuropneumonia in the Franklin Hospital on December 7, aged 62 years. He was a graduate of New York University Medical School in 1880, professor of obstetrics in the New York Polyclinic Medical School for twenty years, and the founder of the Mothers' and Babies' Hospital, New York. Dr. Ayres was the author of "The Mosquito as a Sanitary Problem," which won the Carpenter prize at the New York Academy of Medicine, and was published in M. G. Fulton's "Expository Writing" as one of the fifteen best examples of the English language.

Dr. JOSEPH MARK MALATESTA of Philadelphia, a graduate of Jefferson Medical College in 1886, died on November 21 at the age of 58 years.

Dr. JOHN JACOB OTT, a graduate of the Medical Department of the University of Pennsylvania in 1874, died at his home in Pleasant Valley, Pa., on November 22, aged 66 years.

Dr. WILLIAM ALEXANDER ARMSTRONG died at his home in Philadelphia on November 22, aged 77 years. He was graduated from the Philadelphia University of Medicine and Surgery in 1861.

Dr. WILLIAM H. KEIM of Philadelphia died on November 23, at the age of 75 years. He was a graduate of the Hahnemann Medical College and Hospital of Pennsylvania in 1871, for twenty-eight years demonstrator of surgery in his alma mater,

one of the founders of St. Luke's Homeopathic Hospital, and at one time president of the Philadelphia Homeopathic Society and of the Pennsylvania State Homeopathic Medical Society.

Dr. ALBERT A. NORRIS died of nephritis at his home in Philadelphia on November 24, aged 64 years. He was a graduate of Hahnemann Medical College and Hospital of Pennsylvania, in 1887, and for nineteen years chief clerk in the United States mint in Philadelphia.

Dr. QUINTUS L. ADAMS, a graduate of Jefferson Medical College, in 1888, died of pneumonia at his home in Philadelphia, on November 27, aged 51 years.

Dr. DANIEL P. GERBERICH of Lebanon, Pa., a graduate of Hahnemann Medical College and Hospital of Pennsylvania, in 1881, died on November 29, aged 62 years. He was a member of the Senate of Pennsylvania.

Dr. EDMUND W. MEISENHELDER died at his home in York, Pa., on December 1, aged 75 years. He was a graduate of Jefferson Medical College in 1868, a member of the Medical Society of the State of Pennsylvania, and a Fellow of the American Medical Association.

Dr. JOHN TAYLOR JONES of Grass Valley, Cal., a graduate of Cooper Medical College, San Francisco, died on November 20, aged 42 years.

Dr. GEORGE A. CAMPBELL, a graduate of the Boston University Medical School, and formerly a practitioner of medicine in Manchester, N. H., died on December 3, aged 60 years.

Dr. WILLIAM GIBSON MCGLUMPHY, a graduate of Starling Medical College, Columbus, Ohio, in 1882, died at his home in Moundsville, W. Va., on November 26, aged 67 years.

Dr. SAMUEL PARKER COTTRELL, formerly of Boston, and at the time of his death a member of the Newport, R. I., Board of Health, died in the latter city on December 3, aged 57 years. He was a graduate of Jefferson Medical College in 1882, and was successively professor of diseases of children in St. Paul's Medical College, assistant surgeon at the Massachusetts Women's Hospital, lecturer at Tufts Medical College, chief surgeon at the Boston Emergency Hospital. He served as surgeon in the army during the Spanish-American War.

Dr. OSCAR M. LEISER of New York died suddenly on November 8, aged 43 years. He was a graduate of the College of Physicians and Surgeons, New York, in 1896, a member of the American Association for the Control of Cancer, the New York Academy of Medicine, the American Medical Association, and the Medical Society of the County of New York. He was an official of the New York City Health Department and a captain in the Medical Reserve Corps of the U. S. Army.

Dr. ROBERT E. CATO of Americus, Ga., a graduate of Jefferson Medical College in 1886, died suddenly of heart disease on November 26.

Dr. EDWARD W. KARRMANN of Cheshire, Conn., a graduate of New York University Medical College, in 1884, was killed in a collision between his automobile and a trolley car on November 28, aged 65 years.

Dr. ALBERT H. STEINBRECHER died of heart disease at his home in Detroit, Mich., on November 25, aged 59 years. He was a graduate of the Detroit Medical College in 1881, professor of medicine in the Detroit Medical College, and physician to St. Mary's Hospital and the Woman's Hospital and Infants' Home, Detroit.

Dr. JAMES WILLIAM KOONTZ, a graduate of the Kentucky School of Medicine, Louisville, in 1894, for many years a practitioner of Greenville, Ky., and surgeon for the Illinois Central Railroad Company, died in Charleston, W. Va., on November 20, aged 47 years.

Dr. ISAAC R. MAJORS, a graduate of the Memphis Hospital Medical College, in 1890, died at his home in Searcy, Ark., on November 24, aged 49 years.

Dr. HORACE B. HILL, formerly assistant superintendent of the Maine Insane Hospital, Augusta, Me., and a graduate of Long Island College Hospital Medical College, in 1880, died on November 22.

Dr. JOSEPH C. DE VARONA of New York City, a graduate of Bellevue Hospital Medical College in 1865, died at the home of his brother in that city on November 30.

Dr. ANDREW TAYLOR STILL, the founder of osteopathy, died at his home in Kirkville, Mo., on December 12. He was born in Lee County, Va., and studied medicine in a Missouri college. He served as surgeon with the Union Army during the Civil War and at its close settled in Kirksville. In 1874 he began the practice of osteopathy and in 1882 founded the first school for instruction in that method.

Progress of Medical Science.

Boston Medical and Surgical Journal.

November 29, 1917.

1. The Method of Electrocardiography and the Electrocardiogram in Health. Horatio B. Williams.
2. The Significance of Arrhythmias and Systolic Murmurs in Relation to Cardiac Efficiency. Henry A. Christian.
3. The Basis of Certain Changes in the Electrocardiogram. Alfred E. Cohn.
4. Acute Carditis. Frank Taylor Fulton.
5. Treatment of Pernicious Anemia—Especially by Transfusion and Splenectomy. George R. Minot and Roger I. Lee.

5. Treatment of Pernicious Anemia—Especially by Transfusion and Splenectomy.—George R. Minot and Roger I. Lee offer the results of their study and work on this condition in stating that there is no known treatment that cures pernicious anemia. From a study of 96 cases and the literature, the treatment of this disease, especially by transfusion and splenectomy, has been considered. Forty of the 96 cases were not transfused or splenectomized. The first essential for treatment is a correct diagnosis. The diagnosis is not to be made on the blood smear alone and, unfortunately, is seldom made early. A careful, detailed study of the activity of the bone marrow and red cell destruction is important for prognosis and therapy. Not only one but all of the three chief elements of the marrow must be studied: the polymorphonuclear neutrophiles, red cells, especially young red cells, and platelets. Observations on the latter are important. Certain elements, often taken to indicate stimulation of the marrow, do not always indicate this, or at least are not always associated with a favorable prognosis. Such elements at times are of bad omen. It has been pointed out that certain types of pernicious anemia are to be recognized. Those types of cases that do the best spontaneously usually, but not always, receive the most benefit from treatment. Older patients are more apt to have a less relapsing and less hemolytic type of the disease than younger individuals. Cases with enlarged spleens, together with somewhat enlarged livers, when these enlargements are associated with and probably due to hemolytic activity, are apt either to have, or to have had, a more favorable course of the disease than those

cases without such enlargements. It is important that all cases should have proper general treatment. Transfusion and splenectomy offer the best means for inducing remissions, though a remission can occur spontaneously as marked as those inaugurated by these procedures. No case is too sick for transfusion. Transfusion can give rapidly symptomatic benefit. It may also, either directly or indirectly, rapidly or slowly, cause stimulation of the marrow or allow increased activity of the marrow, so that a remission is inaugurated. The amount of blood to be transfused has not yet been definitely settled. Their cases usually received about 600 c.c., although they have obtained definite results from 150 and 1500 c.c. In cases with a very low hemoglobin massive transfusions are often necessary; likewise when a transfusion is done to check hemorrhage associated with marked diminution of the platelets an amount sufficient to contain enough platelets to check the hemorrhage is necessary. Transfusions may be employed either repeatedly every 3 to 7 days, or they may be given one to three times some 7 to 14 days apart, with particularly the idea of inducing a stimulation of the marrow. The donor, of course, should be healthy and with a negative Wassermann reaction, and one whose red cells are not agglutinated by the patient's serum, and preferably one whose serum does not agglutinate the patient's cells, so that both donor and patient belong to the same isoagglutination group. Isohemolytic reactions will not occur with properly selected donors. Other reactions of unknown nature, usually much less severe, cannot at present be avoided. It is suggested that some reactions following transfusion may be dependent upon the fact that the patient has previously received transfusions of blood. Such reactions are, perhaps, associated with a rapid and excessive accumulation of blood pigment in the body. Splenectomy for pernicious anemia is a palliative operation. It checks the red cell destruction and increases the activity of the marrow. Good remissions follow splenectomy more consistently and uniformly than after other forms of treatment. Splenectomy is reserved for only selected cases in certain stages of the disease. It is a serious procedure, is not to be urged, but at times may be advised, provided the patient understands that its effect is only temporary. The cases of pernicious anemia that approach the disease hemolytic jaundice are the most suitable ones for splenectomy. By means of transfusion and splenectomy they believe that patients do better and can be made more comfortable while they live, and that in certain instances they may perhaps live longer than without such treatment. Probably when transfusions are begun relatively early, so that the patients never remain very anemic for long periods, the best ultimate results will be seen. Roentgen-ray exposures of the spleen have at present shown no definite beneficial effect.

New York Medical Journal.

December 1, 1917.

1. Surgical Treatment of Wounded Men at Advanced Units. H. M. W. Gray.
2. Manual Training of the Cervical Sympathetic. Edgar F. Cyriax.
3. An Interesting Pontine Syndrome. Michael Osnato.
4. The Effect of the Accidental Installation of a Stock Solution of Corrosive Sublimate into the Conjunctival Sac Aaron Brav.
5. Death in Tabes Dorsalis. Morris Grossman.
6. Wassermann Complement Fixation Test for Syphilis. J. Wheeler Smith.
7. A Prompt Emergency Hypnotic. C. J. Douglas.
8. Physical Training and Hygiene for Busy People. Leonhard Felix Fuld.

7. A Prompt Emergency Hypnotic.—C. J. Douglas has for several years used a combination of hyoscine and apomorphine which has proved a desirable emergency hypnotic. There is here a combination of two remedies that are entirely unlike, each attacking the problem from a different angle, each supplying the other's deficiencies, and each correcting the other's faults. When quick action is desired, accompanied by entire safety, Douglas has found this combination most dependable. Also in the treatment of the excited stage of alcoholism and other mental ailments it is especially valuable. The two drugs are mixed and administered hypodermically in the one injection as follows: Hyoscine 0.005 grain, and under no circumstances should 0.01 grain be exceeded, with the average dose as 1/150 grain; apomorphine 0.025 to 0.02 grain is usually sufficient. The synchronous action of these drugs is: In the first hour hyoscine produces delirium, while apomorphine brings on sleep; in the subsequent hours hyoscine produces sleep. Thus, while the action of the apomorphine is more or less transient, it overcomes the delirium produced by hyoscine, the hypnotic effect of which lasts for several hours.

Journal of the American Medical Association.

December 1, 1917.

1. The Clinical Course and the Diagnosis of Trachoma. M. H. Foster.
2. Cesarean Section Scars: A Histologic Study of Four Specimens. Alfred Baker Spalding.
3. The Colloidal Gold Test: The Preparation of the Colloidal Gold Solution and Its Application to Diseases of the Central Nervous System. J. H. Black, Louis Rosenberg, and R. B. McBride.
4. Vegetable Foods for the Diabetic. Ruth A. Wardall.
5. Prolapsus Uteri and Its Treatment. A. J. Rongy.
6. The Intravenous Phloridzin Test. Martin Krotoszyner and William E. Stevens.
7. Facial Paralysis Following Pasteur Antirabic Treatment: Report of a Case of Facial Diplegia with Onset Seventy-Three Days After the Beginning of Prophylactic Inoculations. Robert L. Levy.

1. Clinical Course and the Diagnosis of Trachoma.—M. H. Foster, Surgeon, U. S. Public Health Service, describes trachoma as a specific, transmissible, destructive inflammation of the conjunctiva, characterized by the formation of the so-called trachoma granulations, which may be either papillary or follicular; the ultimate formation of scar tissue; marked chronicity, and intractability to all forms of local treatment. Clinically it presents itself in two forms: (1) fulminating trachoma, and (2) slow trachoma. The first is characterized by a very acute inflammation, coming on suddenly with usual symptoms of a severe infection of the conjunctiva. This type is rare, "slow trachoma" typifying the ordinary forms of the disease. With reference to the time of cure, Foster states that there is a diversity of opinion. Patients attending clinics are often discharged as cured when acute inflammatory symptoms have subsided and there is no discharge. Such cases, however, almost invariably relapse sooner or later, and the mere cessation of secretion and the acute subjective symptoms should not be taken as proof of recovery from the disease. When an eye has become infected with the trachoma virus it is liable to a recurrence as long as any normal conjunctiva, or any lymphoid tissue in the conjunctiva remains. The infection lingers in the granulations apparently indefinitely, and some trifling local irritation or constitutional disorder may cause it to spring into renewed activity at any time, and thus produce an acute exacerbation of the disease. A case can never be said to be certainly cured until all the conjunctiva of the upper lids has become completely replaced by smooth, white, avascular, fibrous scar tissue, and the lower lids are free from any evidences of the disease. Avascular scar tissue cannot be infected by the virus of trachoma. In treating trachoma with silver nitrate, copper sulphate, grattage, expression, etc., the cicatricial process is simply hastened by chemical and mechanical destruction of the normal and abnormal tissue of the lids and the irritation resulting from these various measures.

2. Cesarean Section Scars: A Histologic Study of Four Specimens.—Alfred Baker Spalding. See MEDICAL RECORD, June 9, 1917, page 1016.

5. Prolapsus Uteri and Its Treatment.—A. J. Rongy. See MEDICAL RECORD, June 16, 1917, page 1063.

The Lancet.

November 10, 1917.

1. Bradshaw Lecture on the Causes of Disease. Ernest S Reynolds.
2. The Later History of Cases of Gunshot Wounds of the Chest, with Retained Missiles. Robert Dawson Rudolf.
3. Abnormal Median and Ulnar Nerve-Supply in the Hand. Wilfred Harris.

4. Cerebrospinal Fever: The Mode of Invasion by the Meningococcus. C. Worster-Drought and Alex. Mills Kennedy.
5. On the Action of Spinal Fluid in Stimulating the Growth of the Meningococcus. Cresswell Shearer.
6. The Digestibility of Bread Made from Two Parts of Wheat and One Part of Oats, Barley, Maize, or Rice. E. 1. Spriggs and A. B. Weir.

1. Bradshaw Lecture on the Causes of Disease.—Ernest S. Reynolds, in his thesis on this subject, delivered before the Royal College of Physicians of London on November 8, 1917, gives as a basis for discussion the definition of disease as that condition of an individual in which there is, apart from normal age changes, a harmful change of the structures, or functions, or sensations usually found in the average man of any particular race. This definition includes neurasthenia and hysteria among diseases, but not malingering. For a definition of cause he turns to Mercier's: "A cause is the action or cessation of action connected with a sequent change or accompanying unchange in the thing acted on." With Mercier he shows the difference between *cause* and *condition* with relation to disease. Conditions such as climate, age, etc., are not primarily causes of disease, but contributing factors, back of which is the real but perhaps unknown cause. In order to simplify the means of reaching true causes he takes as an example a healthy community containing 1,000 healthy men and 1,000 healthy women, each aged 20 years, free to marry, with no hereditary taint, and put to live in a perfectly healthy island with sufficient flora and fauna to maintain life, and not under a fantastic communistic government, and then uses his imagination as to what diseases they would suffer from and from what they would die. Theoretically none of these people would have any disease, and would all die at 100 years of age from the natural processes of age. But since, as physicians, we know that no two human beings are exactly alike in physical and mental processes, and react differently to environment, various affections would occur and ages of death would vary accordingly. He carries his illustration further by including the next two or three generations, without any admixture with the outside world. As a result he finds ten different causes for disease among his inhabitants as follows: Injury, food and feeding bringing on poisoning, poisons, occupation, stress, abnormal metabolism, abnormal age changes, neoplasms, parasites, and heredity. Naturally, the percentage of deaths would be higher from natural changes due to age than is now prevalent in England today. He then allows unrestricted immigration into the island, but finds no new cause of disease, but only an intensification of three of the causes, namely, stress from increased competition, parasites, and heredity. The parasitic affections would especially act as causative agents which are of fixed types, such as syphilis, tubercle, the exanthemata, etc., and he further points out the important factor the parasite is in the production of disease. Heredity, of course, does not explain the cause of a disease; it is only a condition, and some of the other nine classes of causes have to be brought in as factors before an effect is produced. But the importance of heredity in determining the future of a race is so great that it merits a place on this list. He gives eight groups under which hereditary diseases may be placed, among which are direct infection, of which syphilis is the one example; possible results of extrinsic poisoning in the parents by such agents as alcohol or lead; structural changes; altered metabolism such as gout, diabetes, and obesity; tendency to germ infection, illustrated by acute rheumatic fever. Reynolds emphasizes the enormous influence of heredity on this condition, which he considers is of equal importance as regards ultimate human suffering as tuberculosis. Among the groups he also gives nervous irritability or instability, and tendency to abnormal age changes. In order to show the variance in the causations of morbid conditions, he uses the English mortality tables for 1913 (in order to exclude the war), and finds a total of 500,000 deaths. Of these 134,000, or one-fourth, were due to infectious diseases directly, and of this number 50,000 (one-tenth of the whole death rate) were due to tuberculosis in some form, 37,000 to pneumonia, 10,000 to measles, 6,000 to influenza, and 5,000 to whooping cough. Thirty-nine thousand were due to some form of malignant disease, 38,000 to blood-vessel condition, 15,000 to Bright's disease. There were 18,000 premature deaths, while old age was accredited with 30,000 deaths, or one-seventeenth of the whole. While these figures give some hint of disease conditions, they give little of prime causes. For instance, three most important causes have very low figures—venereal diseases 2,000, alcoholism 1,900, and rheumatic fever 1,770. A comparison of his list of causes with this given list leads one to wonder how many of the 38,000 deaths from disease of the blood-vessels were due to abnormal old age or to stress and how many to syphilis, what proportion of the 30,000 ascribed to the digestive system was due to food and feeding, and what proportion of nervous diseases was to be attributed to germs, to abnormal old age, or to heredity. He makes especial mention of disseminated sclerosis, of which he has made particular study for years, and calls attention to one symptom so commonly overlooked, that of the optic nerve. He considers that this disease may be caused by a poison acting on certain special nerve tissues. If it is an intrinsic poison, it may be either a perverted internal secretion or a poison derived from the alimentary canal, possibly as the result of constipation. He offers his grouping of the causes of disease as a convenient one which may be of assistance in reaching the haven of real cause, and then after reaching it the performance of the next highest duty, that of real prevention.

British Medical Journal.

November 10, 1917.

1. The Bradshaw Lecture on Misplaced Organs. John Bland-Sutton.
2. The Microscopic Examination of the Brains of Two Men Dead of Commotio Cerebri (Shell Shock) without Visible External Injury. F. W. Mott.
3. Preliminary Report on the Pathological Findings in Nerves following War Injuries. Sydney M. Cone.
4. Three Cases of Melena Neonatorum Successfully Treated by the Injection of Whole Blood or Blood Serum. Robert Hutchison.

1. The Bradshaw Lecture on Misplaced Organs.—John Bland-Sutton, in this lecture before the Royal College of Surgeons of England, November 8, 1917, refers to the migration of many mammalian organs during embryonic and fetal life and to some of the changes then occurring. There is nothing quite so fascinating, he says, as watching the pulsating embryonic heart of a chick lying clear of the body cavity, then to trace its gradual enclosure, translation, and final imprisonment by the completion of the walls of the body cavity. Occasionally it fails to reach its normal place, and is detained in the neck, an embryonical accident not uncommon in calves. In considering the undescended cecum he states that in a large number of mammals the whole intestinal tract from the middle of the duodenum to the end of the colon is slung on a common mesentery. This is the arrangement found in the human embryo and which occasionally persists in adults, leading to some remarkable displacements of the cecum that cause a very fatal form of intestinal obstruction. In the early embryo the cecum does not exceed in circumference a contiguous coil of ileum, and even at this stage it is defined by the vermiform appendix and lies in contact with the under surface of the liver, gradually enlarging, it descends to the normal position in the right iliac fossa. It is a common condition to find the cecum completely invested with peritoneum, and almost as mobile as a small ovarian cyst. Occasionally the cecum is retained in the fetal position, immediately under the liver. The alarming frequency of septic disease of the vermiform appendix leads surgeons to study carefully variations in the positions of the cecum and anomalies connected with its descent, for these determine the final position of the appendix. Experience in the operating theater has taught these men that the vermiform appendix may lie in any position between the under surface of the liver and the floor of the pelvis. Bland-Sutton, on several occasions, has found its tip touching the gall bladder. When the appendix is retrocecal, it often lies in contact with the kidney. After careful study of the retrocecal appendix, not only on account of the

difficulty that sometimes attends the diagnosis of appendicitis when it lies behind the cecum, but also to ascertain the causes for this unusual position, his explanation for the unusual situation of this organ is that in many cases in which the appendix lies vertically behind the cecum its tip is firmly fixed near the liver. Thus it happens, if the tip of the fetal appendix is anchored, it cannot descend with the cecum into the iliac fossa, but the descending cecum gradually lengthens the appendix. This will explain the fact, familiar to surgeons, that a retrocecal appendix is often abnormally long, straight, and lacks a mesentery. Occasionally Bland-Sutton has found the tip of a retrocecal appendix so firmly fixed to the peritoneum in the loin that the cecum, though it has descended into the iliac fossa, has had its blind end turned upwards to the liver. In such a case the cecum is suspended by the appendix. The mechanism by which the cecum migrates is associated with that determining the descent of the testes and ovaries. Nondescent of the sexual glands is often associated with an undescended cecum, and those ill-understood movements, or readjustments, of the peritoneum that occur at a late period of fetal life. He further states that some of the changes in the position of abdominal viscera are almost romantic. It is not generally appreciated that the kidneys undergo a marked translation during fetal life. He has found a kidney in the hollow of the sacrum in both a man and a woman. In the case of the latter it was mistaken before operation for a distended fallopian tube. When the pelvic organs were exposed in the course of the operation a curious set of anomalies appeared. The uterus was of the unicorn variety, and had a right ovary, tube, and broad ligament, while the right kidney was in normal position. This woman conceived after the operation and was delivered without difficulty, in spite of the other kidney in the hollow of the sacrum. A pelvic kidney may become hydronephrotic, and it has happened that a gynecologist, unaware of this anomaly, removed such an organ under the impression that it was an ovarian cyst. The position of the kidney in the human embryo is influenced by the size of the adrenal. During intrauterine life the adrenals are large and conspicuous. In the first half of the second month the adrenal is double the size of the kidney, and the two organs are widely separated. Then the kidney grows faster than the adrenal, and at the end of the second month they are equal in size, while later the kidney is the more conspicuous organ. The relationship of the kidney to the iliac arteries in the embryo explains the occasional occurrence of a pelvic kidney in, or near, the pelvis. The large size of the adrenal in the human embryo is due to the preponderance of the cortex over the medullary portion, and this in some subtle way is correlated with the development of the cerebrum. The hypertrophy of the adrenal cortex in embryonic life is a feature peculiar to human fetuses, and if the cerebrum fails to develop, as in anencephalous human fetuses, the proportions of cortex and medulla are like those of other animals. As far as can be known pelvic kidneys have not been found in other mammals. This may be used as an additional evidence tht the caudal displacement of the kidney in the human embryo is due to the predominance of the adrenal cortex.

Le Presse Médicale.

October 8, 1917.

Infundibular Syndrome in a Tumor of the Third Ventricle.—Salmon refers to a case recently described by Claude and Lhermitte of tumor of the third ventricle. In addition to certain other symptoms, there was a special syndrome which comprised tachycardia and arrhythmia, hypersomnia, and polyuria with polydipsia, and which would be termed by many authors a pituitary syndrome. At autopsy the hypophysis was found to be quite normal, but the infundibulum was involved in the growth, and hence the term infundibular syndrome was used in this connection. Numerous arguments are given in justification of this term. The syndrome differs from the hypophysis syndrome in several ways, for in the latter there are no circulatory symptoms—at least no tachycardia and arrhythmia. Nor does disease of the hypophysis proper cause narcoliptic crises which usually are associated with the midbrain. Certain authorities even associate polyuria with the infundibulum. The author takes exception to this conception of the infundibular syndrome, especially as he has already published some work on the hypophysis and sleep. In his monograph on the latter he gives data which accuse the hypophysis as an organ concerned in crises of somnolence. Narcolepsy has disappeared after ablation of the hypophysis, and even after the use of *x*-rays for pituitary growths. Even the internal administration of hypophysis extract has removed narcolepsy. Moreover, hypersomnia accompanies other types of endocrine insufficiency (myxedema, etc.), and disease of the nasopharynx. So-called adenoid hypersomnia has been benefited by hypophysis extract. In brief, what Claude and Lhermitte call the infundibular syndrome agrees with Salmon's hypophysis syndrome so that the two views may be harmonized by a hybrid term—hypophysis-infundibular.

Auscultatory Sphygmomanometry.—Cottet states that while this diagnostic resource was first proposed in 1905 we hear very little of it today. The principle underlying it was discovered by Marey, and consists of the production of a certain noise by the passage of the blood through an artificially compressed artery. This forms an auditive equivalent to the arterial oscillations. In cylindrical compression of a limb by a pneumatic cuff the systolic pressure is gradually overcome so that the artery beyond the region of compression is empty of blood, although maintaining its caliber. When this compression is released the blood rushes into the empty vessel, causing a special pulsation, which disappears when the circulation has been reestablished. At the moment of the "decollapse" of the vessel a special sound should be audible. The variation in the sounds corresponds to the variations recorded by the sphygmomanometer, *i.e.* the diastolic, or fundamental pressure, and the systolic, or special pressure, and serves as a control.

Lo Sperimentale.

October 15, 1917.

Anticholera Vaccination.—Castelli states that in June, 1916, ninety individuals, between 21 and 35 years of age, were vaccinated against cholera—45 with nucleoproteids, and 45 with bacterial vaccines. Neither substance produced any local reaction, and the general reaction was invariably mild, consisting in fever which only exceptionally exceeded 38, occasional headache, and, rarely, diarrhea. Reactions were of more frequent occurrence after bacterial vaccination (37 per cent. after the first and 64 per cent. after the second vaccination); while corresponding figures after vaccination with nucleoproteids were 22 and 24 per cent. In the serum of subjects vaccinated with nucleoproteids there was always absence of agglutinating power, while after vaccination with bacterial vaccines agglutination was present in dilutions varying from 1:25 to 1:250, the latter being higher and more constant in serum taken 30 days after vaccination. All the sera showed a bacteriolytic property, demonstrable in dilutions of from 1:25 to 1:500. Sera after bacterial vaccination acquired a maximum of bacteriolytic power more rapidly (in 30 days, as against 40 days after nucleoproteid vaccination), but nucleoproteid sera were more potent *per se*, and over longer intervals, doubtless because of their want of agglutinative power.

Causes of Camp Icterus.—Zirone and Capone publish the following conclusions: in 200 cases of icterus submitted to study by the authors an infectious factor was present in a large proportion. Only in 18 per cent. were the cases of toxic nature. Examinations of the blood picture failed to show any difference between toxic and infectious types. The great majority showed lymphocytosis with or without mononucleosis. Eosinophilia was often present. Serodiagnostic tests showed positive results for typhoid and paratyphoid in 45 per cent. of subjects who had been vaccinated. In 3 per cent. of all cases the *Spirochæta icterohæmorrhagica* was present. Much care must be taken in the diagnosis of these cases because other spirilla may be pres-

ent in the blood. In urinary tests the spirochete in question was found with a frequency comparable with that for the blood. Injection of spirochetous matter into guinea pigs caused a mild degree of the disease—spirochetic sepsis without icterus, and in some cases no result at all. Wassermann and other complement deviation tests were negative. The authors believe that spirochetosis was more frequently present than was apparent.

Correspondenz-Blatt für Schweizer Aerzte.

October 6, 1917.

Dangers and Treatment of Placenta Previa.—Labhardt gives figures from the Basle clinic for the period 1906-1915 as follows: number of labors, 16,596; cases of placenta previa, 123, with 12 maternal deaths = 10 per cent. Of this number 5 died of hemorrhage, 4 of sepsis, and 3 of air embolism. The relative child mortality was 58.6 per cent. (including prematures and macerated, 62.6 per cent.). The causes of hemorrhage are intimately associated with low insertion of the placenta, where the musculature is thin, and moreover, invaded by chorionic villi. The lower segment of the uterus is naturally dilated by the fetal head to its fullest tolerance. If the placenta is inserted into this segment it is detached during dilatation. Detachment occurs under two different mechanisms, equatorial and meridianal, according to the direction of the muscular bundles. During expulsion the fetus mechanically distends the lower segment, and to this is added retraction in the longitudinal direction, which causes further detachment. The hemorrhage which follows varies directly with the area of surface detached. Similarly the greater the area of insertion the greater the likelihood of early loss of blood. Mere hemorrhage is seldom the cause of death, but the patient is greatly weakened and predisposed to certain accidents. Further hemorrhage may occur during the third stage of labor and afterwards. Normal contraction of the uterus can hardly take place in the insufficient lower segment. This seems to be the greatest source of danger to the patient. Deaths from hemorrhage usually occur during the placental period or shortly after. We have to reckon with the fact that in placenta previa there may occur abnormal adhesiveness of the placenta. The relations of previa to sepsis and air embolism are too well known to require discussion. How may we circumvent all of these dangers or reduce them to a minimum? Diagnosis should be easy and premature separation of the placenta readily excluded. Hemorrhage in the absence of symptoms of this affection means a previa in the vast majority of cases. Therefore patient may usually be spared an internal examination. This also applies to the tamponade. Figures have shown that fever, infection and death occur more frequently in tampon cases. Even the so-called prophylactic tamponade before transport to the clinic should be foregone. So much for guarding against sepsis. In preventing fatal hemorrhage and high fetal mortality the problem is more or less a desperate one. Like his colleagues, the author is sorely tempted to advocate cesarean section to give the child his chance. With fetal mortality zero many children saved would offset an occasional maternal death (the author does not so express himself but this is the real crux of the matter).

Hygiea.

August 31, 1917.

Case of Myeloid Leucemia with Bilateral Growths the Motor Nervous System.—Agduhr selected one-half of the members of four litters of kittens 4 to 6 weeks old and subjected them to training in the form of gradually increased climbing movements. The controls were kept in cages so small that hardly any opportunity was permitted for movements of any sort. The training was kept up for seven months. During the last two months each kitten climbed up a suspended piece of sacking 3 meters long at least 100 times daily. The nervous system was investigated both experimentally and morphologically in both trained animals and controls, and comparisons made between members of the same litters. The results were such as to warrant, in the author's opinion, the following conclusions: (a) Effects of training on growing animals are expressed by hypertrophy of most of the elements of the peripheral nervous system, especially in such regions as are most associated with the apparatus for active movements; (b) relative increase in the number of plurisegmentally innervated muscle fibers; (c) increase in the number of neurites in both dorsal and ventral roots; (d) local enlargement of the medulla spinalis wherever the active motor apparatus was involved in the training—an enlargement which as far as could be determined was due to an increase in the number of conduction paths; (e) increase in the number of root cells; (f) enlargement of the brain in mediolateral direction, nasal from the fissure of Sylvius; (g) at least relative enlargement of the central convolutions with the therewith involved increase in the mediolateral depth of the fissura cruciata; (h) increase in the Betz giant pyramid cells; (i) relative increase of the medullary portion at least at the level of the central convolutions.

Finska Läkaresällskapets Handlinger.

July, 1917.

Histogenesis of the Papilla or the Serous Ovarian Cystoma.—Jännes of Professor Engström's clinic has studied a large number of ovarian cysts of the papillary serous type in order to ascertain whether certain formations discovered by Wichmann in parovarian cysts were present. The entire material was studied macroscopically, and 18 cases chosen for histological examination. Wichmann had discovered the presence of formations which resembled hydatids in the terminal ramifications of the papillæ. The author found this feature in ovarian cysts and was unable to see any evidences of retrograde change. The tissues seemed sound, wtih the exception of edema in the very lax connective tissue. In papillæ with firm connective tissue there was seen at the base active proliferation of both connective tissue and epithelium. But where the stroma was lax with suggestion of adenoma papillæ the proliferation of the connective tissue was more or less inconspicuous in comparison with the rapid growth of epithelium and the abundant vascularization of the subepithelial tissue with dilated, thin-walled blood vessels. In regard to histogenesis the author believes it to be analogous to that described by Wichmann for parovarian cysts. The subepithelial connective tissue layer, rich in nuclei, becomes edematous from whatever cause. With the epithelium it proliferates rapidly, and as a result on elevation the future papilla appears with eventual formation of the hydatiform vesicles. The connective tissue proliferation at the base of the papillae becomes organized.

Pulmonary Consumption in the Workmen of Certain Finnish Towns.—Therman reports on the result of an investigation conducted by him in 1915 into the health of certain workmen examined in an earlier survey. These individuals, employed in a paper mill, were found to have tuberculosis in 1914. The survey extended to the families of the workingmen, and also included suspects. The author discovered new cases of the disease. Both surveys are illustrated by graphics to bring out the progress of the disease, and of the antituberculous propaganda, with special reference, for example, to improved housing.

Case of Myeloid Leukemia with Bilateral Growths in the Orbit Causing Exophthalmus.—Jansson emphasizes the fact that the reported cases of leucemic orbital tumors belong under lymphatic leucemia. He then describes a case of myeloid leucemia in which the same type of growth was present. The patient was a peasant girl of 16, who was at first said to have Graves's disease, with exophthalmus, largely because of normal liver and spleen finds. Sudden increase of exophthalmus, with appearance of cervical lymphnode swellings, and a blood count (myelogenous cells 85 per cent.) made the correct diagnosis. Tumors were palpable behind the projecting eyeballs; they had a cartilaginous feel, and seemed to be adherent to the orbit. The treatment consisted of injections of arsenic, and at first there was marked improvement in the exophthalmus. But this benefit was transitory and death resulted in four months.

Book Reviews.

A Reference Handbook of the Medical Sciences. Embracing the Entire Range of Scientific and Practical Medicine and Allied Science. By Various Writers. Third Edition, Completely Revised and Rewritten. Edited by Thomas Lathrop Stedman, A.M., M.D. Complete in Eight Volumes. Volume Eight. Illustrated by Numerous Chromo-lithographs and Three Hundred and Thirty-seven Half Tone and Wood Engravings. Price, $56.00 per set. New York: William Wood & Company, 1917.

Most of those who are fortunate enough to be owners of the new edition of the Reference Handbook have probably awaited the publication of the final volume with a feeling akin to that of one who awaits the completion of a new home. A preliminary examination of its pages reveals at once a wealth of new material. The student of medical history will be attracted by the fascinating exposition of the history of surgery by Stephen Smith, whose life has been contemporaneous with the entire era of modern surgical revolution. The latest word in neurology is typified in the articles on the Sympathetic Nervous System, in which the newly differentiated disorders of the autonomic system are discussed in satisfying detail; and on the Endocrinous Syndromes, in which the uniglandular and pluriglandular syndromes, as recently defined, are completely summarized. The article on Typhus Fever is written in the light of the newer bacteriological studies and the experiences during the present war. One is told that the Serbian epidemic which claimed 135,000 victims, including 30,000 of the 70,000 Austrian prisoners, was brought under control within a period of four months after the various sanitary commissions began their work. Because of its practical importance and because of the fact that this subject is treated in a stepmotherly fashion even in the large treatises on surgery, the article on Ulcers, especially the treatment of leg ulcers, deserves special mention. This article is illustrated by means of a plate showing different types of leg ulcer and various methods of treatment. A full exposition of modern statistical studies of Variation is perceived in the article on this subject, in which it is shown that a knowledge of the biological facts of variation has a practical bearing in medicine and surgery. The biographical sketches forming an interesting part of this volume include those of Sydenham, Franciscus and Jacobus Sylvius, Sir Henry Thompson, Tissot, Trousseau, Valsalva, Van Helmont, Van Swieten, Velpeau, Vesalius, and von Ziemssen.

Among the special articles may be enumerated the following: Suicide; Tattoo Marks; Injuries and Diseases of Tendons; Teratology; Teratoma; Diseases, Injuries, and Anomalies of the Testis and Epididymis; Thalassotherapy; Thirst; Thoracic Surgery; Thymus; Thyroid Gland; Goiter; Tics; Tonsils; Training Schools for Nurses; Transplantation of Tissues; Typhoid Fever; Gastric and Duodenal Ulcers; Diseases and Injuries of the Ureters; Injuries and Diseases of the Urethra; Urine; Diseases of the Cervix Uteri; Displacements of the Uterus; Involution of the Uterus; Malformations of the Uterus; Tumors of the Uterus; Vaccination; Vaccine Therapy; Malformations and Diseases of the Vagina; Physiology of Vision; Vital Statistics; Wassermann Reaction; Water; and Yellow Fever.

In a work of this kind, the publication of which has been comprised within a period of about four years, it is inevitable that there should be an Appendix in which are recorded all the more recent advances in medical science. The Appendix includes articles on the following subjects: Antinarcotic Legislation, Asiatic Cholera, Health Insurance, Anomalies of Muscles, Osteopathy, Paraffin Wound Dressings, Poison Gases in Warfare, Prescription Writing, Protozoa, Social Service, Spectacles, Stethoscope, Trypanosomiasis, Ultramicroscopy, Anomalies of Veins, Pathology of Veins, and Antiseptic Irrigation of Wounds. The last is an ample exposition of the Carrel-Dakin method of wound treatment as evolved during the present war.

The General Index, which comprises a section of 105 pages at the end of this volume, greatly enhances the value of the Reference Handbook. All special articles are referred to by numerals in heavy type. A great many other subjects that are discussed in the text of these special articles may be located in the general index, in which they are referred to by numerals in light type. Apart from its value as a means of quick reference, this index may be used as a guide in systematic courses of reading.

The Medical Record Visiting List, or Physicians' Diary for 1918. Revised. Price, from $1.50 to $4. New York: William Wood and Company.

This well known visiting list still retains its position as the most convenient and handsome of the works of this kind. The present issue has been revised, so that the dosage table conforms to the latest revision of the United States Pharmacopœia. A new table of diagnosis of contagious diseases has been inserted. In addition to the miscellaneous information, there will be found the usual pages for visiting list, consultation practice, obstetric engagements and practice, vaccinations, deaths, addresses of patients and nurses, and cash accounts. The paper is good, and the size and general appearance are attractive. For general convenience it is unsurpassed.

Poliomyelitis, in All Its Aspects. By John Ruhräh, M.D., Professor of Pedriatrics in the University of Maryland Medical School and the College of Physicians and Surgeons, Baltimore, and Erwin E. Mayer, M.D., Instructor of Medicine in the University of Maryland Medical School and College of Physicians and Surgeons. Illustrated with 118 engravings and two plates. Price: $3.25 net. Philadelphia and New York: Lea and Febriger, 1917.

Any addition to the voluminous literature of poliomyelitis must justify itself first of all. So much literature has collected around the subject that the practitioner is bewildered and prefers to guide himself by the light of some "text-book" description. The writers of this book have set themselves the difficult task of presenting an adequate account of the disease in one volume—and they have succeeded nobly. Beginning with an interesting historical summary, they next define the disease in half a thousand well-chosen words, give a concise, but adequate, description of the pathology, with several excellent plates, and then devote ten pages to that vexed question, the nature of the virus; in so doing they consider all that is worth while in the literature. The writers then go on, after discussing the epidemiology at length, to give an excellent clinical description of the disease in all its aspects, many plates adding to the value of this part. Treatment is thoroughly discussed, especially muscle training and exercise. Especially valuable, we think, is a chapter modestly called, "Some Anatomical and Physiological Reminders"; in this the writers have presented some excellent charts, diagrams and tables whereby the interrelations of neurons and muscles are shown in great detail. The book closes with a table of epidemics of poliomyelitis in the history of the world. Besides being a valuable scientific work, the book is well gotten up mechanically and is not too large for a handy work of reference.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics, Materia Medica and Diagnosis in the Jefferson Medical College, Philadelphia; assisted by Leighton F. Appleman, M.D. Instructor in Therapeutics, Jefferson Medical College, Philadelphia. September 1, 1917. Price, $6.00 per annum. Philadelphia and New York: Lea and Febiger.

The September number of this well known quarterly contains articles on diseases of the thorax and its viscera, including the heart, lungs, and blood-vessels, by W. Ewart; Dermatology and Syphilis, by W. S. Gottheil; Obstetrics, by E. P. Davis, and diseases of the nervous system, by W. G. Spiller. These contributions are, as usual, of a high order of merit; and since the writers have been connected with this publication for several years there is a continuity in their discussions which not infrequently is wholly lacking in works of this character.

Society Reports.

SOUTHERN MEDICAL ASSOCIATION.

Eleventh Annual Meeting, Held in Memphis, Tenn., November 12-15, 1917.

SURGICAL SECTION.

CHAIRMAN, DR. F. WEBB GRIFFITH OF ASHEVILLE, NORTH CAROLINA.

Tumors of the Urinary Bladder.—Drs. EDWARD S. JUDD and S. W. HARRINGTON of Rochester, Minn., said that from a therapeutic standpoint bladder tumors might be classified as those satisfactorily treated by endovesical methods and those requiring open operations. There was no question but that the benign papilloma would usually respond to fulguration. Exception to this would be the case of multiple papillomata in which the treatments would be numerous and prolonged, or in case the individual was not tolerant to this kind of treatment. It would be better to do an open operation in either of these instances. It had been customary with them to have all of their bladder tumor cases examined cystoscopically at definite intervals following the original operation with the view of keeping down any suggestion of a recurrence. In the past few years they had found 14 cases of recurrence, following resections, which were amenable to fulguration. One of these patients was fulgurated 15 months following the resection and had been well for two years. One was fulgurated after two years, and had been well for four years. One was fulgurated after 18 months, and the patient now stated, three years after this treatment, that he was well. One was fulgurated after three years, and had not been seen for three months. One had been fulgurated yearly for the last three years for recurrences, and was last examined five months ago. One was fulgurated one month after operation and had not been seen for three months. In case the benign tumor did not respond readily to fulguration, it should be removed by an operation. These papillomata cystoscopically simulated benign growths, and when they did not behave well under fulguration it was a suggestion that they might be malignant. All definitely malignant papillomata, either of the papillary type of carcinoma or of the type infiltrating the bladder wall, were best treated by the open operation at once. All large benign tumors, such as myomata, fibromata, and angiomata, should be removed by suprapubic operation. The operative procedure for tumor of the bladder consisted of excision of the tumor and resection of the portion of bladder wall from which the tumor arose. A simple excision of the tumor was permissible only in the case of a papillary tumor on a pedicle. Even with this form of tumor it was better to excise a portion of the adjoining bladder tissue. Excision of the growth was not sufficient and was no safer than resection. In all cases resection should include the entire thickness of the bladder. This meant the invasion of the prevesical space, but with modern technique it added very little if anything to the operative risk. If the resection was not extensive, the remaining opening could be closed and drainage established through the bladder. If a large segment of bladder was removed it was better to drain the space for several days. The drain could be brought out through the bladder or along the side of the bladder. If the prevesical tissues were exposed drainage was essential. The treatment of bladder tumors was gradually being settled on a definite basis. Much experience with the endovesical treatment had demonstrated the type of tumor that could be cured by fulguration and also the type of tumor that did not respond to this method of treatment. Further experience with the suprapublic open operation had taught them that a radical excision of the tumor, the portion of the bladder wall involved, and the prevesical tissues could be performed with satisfactory immediate and ultimate results.

Hypertrophic Pyloric Stenosis in Infancy.—Dr. WILLIAM D. HAGGARD of Nashville, Tennessee, said that a case of pyloric stenosis presented a picture so characteristic and clear cut that diagnosis should not fail; even a mild case should be recognized, provided every case of vomiting in infancy be given adequate consideration and a careful examination. We had no symptoms of toxemia, or strangulation, and the symptoms and their sequence were classical. Palmer enumerated them in the order of their importance as follows: (1) Persistent, recurrent, explosive vomiting; (2) Starvation stools and diminished urine, with emaciation; (3) Visible gastric peristalsis; (4) Palpable tumor; (5) Bulging epigastrium, with stretched abdomen; (6) Progressive loss of weight. The symptoms might appear within a few days of birth, or be delayed until the second and rarely the third month. They usually appeared during the third or fourth week. Vomiting was the first symptom usually noted. A previously healthy, normal, usually robust male, breast-fed baby, began to vomit abruptly in the third or fourth week without apparent cause. To the persistent, explosive, forcible vomiting was added symptoms of faulty nutrition, constipation, oliguria, and steady loss of weight. The vomiting was characteristic and different from other vomiting in young infants. Visible gastric peristalsis was a constant symptom. The wave passed from left to right, and might be elicited after taking food. Palpation a little to the right and above the umbilicus often revealed a tumor about the size and shape of a small green olive. The tumor was most distinct in the more severe cases with thin retracted abdominal walls. It was variable in its position and might be out of reach under the liver. If every case of hypertrophic pyloric stenosis was operated upon as soon as the diagnosis was established, with the present improved technique, the mortality for this condition, when subjected to operation, might be reduced generally to approach 10 or 15 per cent. Failure to seek prompt surgical relief was too often fatal; even though the baby was apparently holding its own under medical treatment, it might suddenly, and without apparent cause, become progressively worse and die in a short time.

Treatment of Tropical Abscess of the Liver. — Dr. JOHN S. HELMS of Tampa, Florida, said that there was little doubt among those who were experienced in the observation of this disease as to the causal relation between the entameba histolytica and liver abscess of the tropical variety. It must be admitted that there was such a thing as bacterial infection and consequent abscess of the liver separate and apart from amebic infection, and that in most cases where the ameba was the primary cause of the liver abscess there was also a bacterial infection. It had been proven that the ameba of man carried with it pyogenic organisms that might be in the blood stream and find lodgement in the area of lessened resistance of the liver due to the presence of ameba. The general conception was that the abscess was usually a single one, but the experience of the best observers seemed to prove that in about 50 per cent. of the cases the abscesses were multiple. Where the abscess was solitary it was generally located in the right lobe and usually near the convex surface, and in many instances its dome was underneath the diaphragm. After the diagnosis had been made, he believed that there was no other treatment except surgical that gave any certainty of good results. It had been his practice, and he was convinced it had a rational basis, to adopt the open treatment and to effect drainage through the transperitoneal route, and he was convinced after a rather large experience with operation in these cases that it was always practical.

The Treatment of Acute Diffuse Peritonitis.—Dr. H. A. GAMBLE of Memphis, Tennessee, stated that it was his practice to open the abdomen under general anesthesia, remove, or repair the primary lesion, introduce split rubber drainage tubes with gauze wicks into Morrison's pouch, the pelvis, and wherever else indicated, and complete the work as expeditiously as possible. From now on the main indications were to maintain free drainage, promote elimination, sustain the strength of the patient, and guard against complications. The patient, upon being placed in bed, was put in the sitting posture and 500 c.c. of normal salt solution administered subcutaneously. This was repeated every four to six hours (Murphy's method of proctoclysis), with plain warm water, was started also at once. He did not feel that for the first 24 to 48

hours absolute dependence could be placed upon absorption from the rectum and colon. It had been his observation that where there was a profound toxemia the processes of absorption from the intestinal tract had frequently been held in complete abeyance. This also applied at times to the subcutaneous tissues, and he had under such circumstances converted an apparently hopeless case into one which recovered by blood transfusion. Dressings were changed frequently, every one to two hours for the first 24 hours, instead of allowing them to become thoroughly saturated. In the after-treatment of these cases one had constantly to be on his guard for complications, the most important of which in the order of their frequency were acute dilatation of the stomach, secondary abscesses, intestinal obstruction, and phlebitis. Acute dilatation of the stomach was associated with a large proportion of all cases of diffuse peritonitis, and was best treated by frequent gastric lavage, keeping the stomach empty, and the administration of pituitrin. The treatment of other complications was along general surgical or medical principles.

Remarks on Kidney Surgery.—Dr. JOHN R. CAULK of St. Louis read a paper based upon a considerable experience, including 33 nephrotomies or nephrostomies, 50 nephrectomies, 10 pyelotomies, or ureterotomies, 11 fixations, and 3 decapsulations. There had been 40 operations for stone on 36 patients; 17 nephrotomies or nephrostomies; 10 pyelotomies and ureterotomies; 9 primary nephrectomies, and 4 two-stage operations. Twenty-one were done on the right side, seven on the left, and eight bilateral. The symptom of kidney pain had been variable; 28 of the 36 cases had pain; only 17 of these had had colic. There had been 16 nephrectomies for tuberculosis. More than that number were refused operation on account of double involvement, or other complications. Of these 16 cases all were unilateral but 2; these 2 did not improve after operation, and both patients died within 6 months. There had been 29 operations for nontuberculous renal infections, either infected hydronephrosis, pyonephrosis, or pyelonephritis. Of this group there had been 20 primary nephrectomies, and 9 two-stage or secondary nephrectomies. There had been 3 patients on whom a nephrostomy had been done for ureteral ligation complicating pelvic surgery, one a double, two a single ligation. He had done 11 kidney fixations for floating kidney, and in spite of the discouraging results which were credited to this type of surgery his results had been the best of all. There had been 4 nephrectomies for tumor, 2 carcinoma, 2 hypernephroma. Two were done by lumbar nephrectomy, 1 transperitoneal. One patient lived three years and enjoyed two years of excellent health and gained considerably in weight, and died of bone metastases. Another died within two months. Two are living and well, one a year and one a year and nine months after operation.

Latent Manifestations of Syphilis in and About Joints.—Dr. EDWARD S. HATCH of New Orleans drew the following conclusions: "Joint syphilis is much more common than is generally supposed. In the *x*-ray findings and in the luetin reaction we have nearly positive diagnostic aids. An *x*-ray picture, Wassermann and luetin reaction should be made in all suspected cases, and then, if there is doubt, the therapeutic test should be applied. The necessity of this is plain, as the treatment of the diseases likely to be confounded with joint syphilis is quite different from the treatment of that disease."

The Use of Radium in Non-Malignant Uterine Hemorrhage.—Drs. C. JEFF MILLER and E. L. KING of New Orleans presented this communication in which King said that the non-malignant conditions of the uterus causing menorrhagia or metrorrhagia might be grouped as follows: (1) Cases in which there was little or no demonstrable pathologic change in the uterine wall, no history of infection, and in which the uterus was apparently normal in size and position, with normal adnexa. In such cases the bleeding was, in all probability, due to some disturbance of the internal secretions, especially of the thyroid or of the ovary. This condition was often encountered in young girls about puberty. (2) The menopause. (3) Chronic metritis. (4) Hypertrophy, or hyperplasia of the endometrium, especially when so marked as to be adenomatous or polypoid in character. (5) Fibroids, adenomata, or adenomyomata of the uterus. (6) Chronic endometritis, especially after incomplete abortion. (7) Passive congestion of the uterus, as in retroflexion or prolapse. In the first 3 groups radium might be used to the exclusion of surgery; in groups four and five, some cases were suitable for radium, and others required operation; while in groups six and seven, operation was indicated. They had treated ten cases classified under groups 1 and 2. The youngest was in a girl of 16, who had bled profusely for months; the others were in patients from 25 to 46 years of age. In all of them the bleeding had persisted for years. They had all been curetted from one to six times without relief; most of them had also been treated medicinally in various ways; one had had 23 and one 28 *x*-ray treatments. All were naturally anemic and debilitated, especially the 16-year-old girl, who was in bad shape. Nine of them were given intrauterine radium treatments, the average dose being about 1000 milligram-hours. One patient was given a very short treatment, 2¼ hours' treatment, the radium being placed in the upper vagina. The periods became normal, and she was now in robust health. In only one patient did the treatment fail to relieve the condition. In two other cases it was necessary to repeat the treatment. Only one patient suffered from severe menopausal symptoms, although in several of them the symptoms were present in a mild degree. The next 18 cases fell in the third and fourth groups. The patients ranged in age from 30 to 55, and most of them had suffered from bleeding for several years—as a rule, menorrhagia first, and later metrorrhagia as well. In every case examination revealed a large, often tender uterus, with no sign of tumor or adnexal trouble. Of these 18 patients 13 had been curetted from 1 to 4 times, and 7 had had other operations on the uterus or adnexa performed at the same time, all without relief. One of these had also had subsequent *x*-ray treatments, with no improvement. The other 5 had been treated medicinally in various ways, including packing. In every case radium treatment was followed by amenorrhea: in two patients there was a recurrence of the bleeding about one year later, the flow being approximately normal. The others were still relieved. Six patients suffered from marked menopausal symptoms; 5 others were similarly affected, but the symptoms were mild and transient. The patients suffering most from the artificial menopause were nearly all between 40 and 51; this coincided with the author's experience after hysterectomy. In three women, aged 35, 45, and 51, the condition was relieved by corpus luteum extract. Eight patients suffered from leucorrhea for 2 or 3 months after the treatment. In those cases in which subsequent pelvic examinations were made marked reduction in the size of the uterus was found, and the tenderness, as a rule, disappeared. The dosage in these cases was 500 to 1000 milligram-hours. Their results had been and were most gratifying, and they believed there was a definite field for radium therapy in the treatment of these annoying and often obstinate affections. It was not a cure-all, but its judicious use would often obviate the necessity of a mutilating operation with the attendant risk to the patient, whose well being should be our constant aim.

Interpretation of Lumbosacral Backache in Women.—Dr. EDWARD H. RICHARDSON of Baltimore said that the determination of the specific cause of lumbosacral backache in a woman involved a careful study both in the domain of the orthopedist and in that of the gynecologist. In the former we must scrutinize the lower spine, the lumbosacral, and the sacroiliac articulations very closely for evidences of arthritis, of injury, and of chronic strain from one or more of the causes enumerated above. In the latter the point to remember was that, with rare exceptions, whatever the nature of the particular gynecological disorder, it produced lumbosacral backache only through the strain incident upon faulty posture, and that no matter how skillfully our operative therapy might be, it would often fail utterly to relieve the backache unless supplemented by orthopedic measures which would restore normal balance.

Tetanus Treated by Subarachnoid Injections of Magnesium Sulphate and Antitetanic Serum; Recovery.—Dr. DEWITT B. CASLER of Baltimore presented a paper of which the following were the conclusions: "(1) Certain patients are definite tetanus carriers, and, as such, are liable to be a source of infection to themselves in any surgical operation on the bowel, or about the rectum. (2) In any abdominal operation, especially in pelvic work, where the surgeon has to deal with inflammatory masses, indurated and adherent to the bowel wall, great care should be taken to close in this indurated area as thoroughly as possible, and so avoid the danger of tetanus developing in the injured bowel wall. (3) It is wise in every case of postoperative tetanus to begin at once subcutaneous injections of magnesium sulphate, and in the severe cases subarachnoid injections. (4) It must be borne in mind that there is always a certain amount of danger from paralysis of the respiratory center, and when subarachnoid injections are given, means for artificial respiration should be at hand. (5) Magnesium sulphate given intraspinally affords the greatest amount of comfort and relief to those cases, where death often comes, not only from the toxemia but from exhaustion."

The Rôle of Syphilis in Surgery.—Dr. GEORGE GELLHORN of St. Louis said that he had seen extensive suppurations of the abdominal incision resist all possible treatments for weeks, but turn into clean and vigorously granulating wounds as if by magic when antiluetic treatment was instituted. He recalled four cases in which the entire abdominal incision broke open about a week after operation. The tissues of the abdominal wall showed no tendency whatever to unite, but there was no suppuration present. All four patients were profoundly cachectic. Two were probably not luetic, but one was a frank syphilitic, and the fourth, despite a negative Wassermann, was probably diseased. It would be interesting and important to know how high the percentage of syphilis was in such cases of complete disinclination of the tissues to heal. He had at present under his care a woman with tertiary syphilis, in whom several surgeons had unsuccessfully attempted to repair a third degree laceration of the perineum. He subjected this patient to energetic antisyphilitic treatment with the view of softening the cicatricial tissues about the vulva and of forestalling disturbances of wound healing. In the course of this treatment, which included several injections of salvarsan, a laparotomy for pus tubes became necessary; and the patient went through this operation without the slightest complication.

(*To be continued.*)

FIRST DISTRICT BRANCH OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Eleventh Annual Meeting, Held in Newburgh, November 9, 1917.

(Special Report to the MEDICAL RECORD.)

THE PRESIDENT, DR. RICHARD GILES OF COLD SPRING, IN THE CHAIR.

(*Concluded from page 963.*)

Intermittent Hydronephrosis and Pyonephrosis in the Female.—Dr. DOUGAL BISSELL of New York made this presentation. He said that for the purpose of convenience he would use the word nephrectasis when referring to distention of the kidney pelvis without regard to the character of the fluid, for the condition to be considered was mainly one of hydrostatic pressure, whether the contents of the tumor was urine with or without pus. Inability of the ureter to accommodate itself to the urinary stream, as the result of stricture, stone, papilloma, or the pressure of a body from without, such as a fibroid tumor or a pregnant uterus, constituted factors in the causation of nephrectasis, but abnormal mobility of the kidney with angulation of the ureter or with transient polyuria were the important causative factors in the intermittent form. It was the rule in cases of prolapsed kidney for the upper or abdominal portion of the ureter to descend with the kidney, the degree of prolapse of the ureter following closely the degree of prolapse of the kidney. When this was not the case the curve of the ureter became more and more marked until an acute angulation of the ureter might form with resulting interference with the drainage and damming back of the urine in the pelvis of the kidney. Intermittent nephrectasis might be of two types. It might occur daily or at irregular intervals. The daily type was perhaps without exception due to abnormal mobility of the kidney associated with acute angulation of the upper portion of the ureter. The type occurring at greater intervals had as its causative factor partial obstruction of the ureter, upon which was superimposed at intervals transient polyuria. A calculus in the ureter might occasion a partial or complete distention of the kidney pelvis but its presence alone never accounted for intermittent nephrectasis. A stone in the ureter must terminate in one of three ways, partial obstruction of the urinary stream, complete obstruction with or without necrosis of the ureter, and extravasation of the urine into the perirenal tissue, or expulsion of the stone. A supernumerary or accessory renal artery passing in front of the ureter was considered by many authorities as an etiological factor in nephrectasis. The importance of the accessory artery as a causative factor in nephrectasis the essayist had never been able to demonstrate to his own satisfaction. As the nephrectasis of pregnancy occurred at definite periods in the life of the female it might be considered as coming within the scope of this paper. The anatomical and mechanical reasons for this form of renal pelvic distention, as commonly accepted, were to the author's mind not satisfactory and seemed to him unsupported by facts. In discussing the diagnosis of cases of nephrectasis, when the tumor had reached a palpable size and its anterior surface was in apposition with the anterior abdominal wall, Dr. Bissell said we usually expected to find resonance immediately over the tumor and dullness in the flank, but the location of dullness varied (1) with reference to whether the right or left kidney was involved, (2) with the extent of mobility or fixity of the kidney, (3) with the amount and direction of the distention of the kidney, (4) with the amount of gas in the colon the time of the examination, and (5) with the extent of fixity or mobility of the cecum and ascending colon. The study of a large group of movable kidneys through the median abdominal incision had led the essayist to the conclusion that not infrequently the right prolapsed kidney was located well to the outer side of the colon whereas the left prolapsed kidney usually remained posterior to the colon. Therefore, when there was superimposed upon this malposition of the right kidney a marked distention, the colon might be forced well toward the median line, but the relative position of the left kidney to the colon under similar conditions usually remained practically the same. Intermittent nephrectasis might be mistaken for renal abscess, single or multiple cystic kidney, hypernephroma, or extravasation of the urine into the perirenal area, for tumor of the ovary, liver, gallbladder, or spleen. The differentiation was, however, not difficult if the history pointed to a subsidence and recurrence of the tumor at more or less regular intervals. In differential diagnosis the history regarding intermission or non-intermission was the chief consideration. In considering the treatment of intermittent nephrectasis, it should be remembered that the condition might subside after one or two attacks and not recur. Such, however, was not the rule if the sacculation of the pelvis of the kidney had been of considerable size. Treatment with the curative object in view must depend upon the cause and, if the cause of distention could not be determined or if having been determined it could not be remedied, nephrectomy, when the remaining kidney was normal, was the procedure of choice; but if the patient had but one kidney, the kidney sac should be opened and a fistula established. The objective signs of an abnormally movable kidney were so unmistakable, and the subjective symptoms so characteristic and disturbing, that the scant consideration given to the surgical treatment of the ptosed kidney seemed incomprehensible. To those who did not believe in the operation of nephropexy from the standpoint of relieving certain subjective symptoms, the

author suggested that they consider its advisability as a prophylactic means, not only with the object of correcting the cause of interference with the flow through the ureter, and thus preventing nephrectasis, but with the object also of eliminating renal engorgement which might act as a causative factor in tuberculosis of the kidney.

Dr. J. Wilson Poucher of Poughkeepsie said that Dr. Bissell had so fully given everything with reference to the symptoms, diagnosis, and treatment of intermittent distention of the kidney, that it seemed to him that any remarks on his part would be superfluous. He wished, however, to thank Dr. Bissell for having brought out certain points. One of these was that over-distention of the pelvis of the kidney was practically always due to angulation of the ureter caused by malposition of the kidney and that relief was due to the kidney being lifted to its proper axis when the pelvis would be emptied. Dr. Poucher said his first introduction to a case of hydronephrosis when he was a young practitioner was when he was called to attend a lady and found her suffering from very acute pain and the entire abdomen symmetrically distended. The case appeared to be one of abdominal ascites. He gave the woman a large dose of morphine and decided to call an older surgeon into consultation. The case looked very much like one of acute peritonitis for which nothing could be done. When he called to see the patient later in the day he found her sitting up and the kidneys relieved. She had passed large quantities of urine and the abdominal distention had disappeared. He then discovered that this woman had a kidney with considerable mobility. He advised a nephropexy, which the patient declined. After a short time the experience just related was repeated and then the woman was ready to submit to an operation. That was done twenty years ago. The woman was living today and there had been no recurrence of her trouble. In all cases of intermittent hydronephrosis uncomplicated by stone, tuberculosis, or of the opposite kidney, nephropexy would prevent a recurrence of the condition. As to the causes that produce angulation or obstruction of the ureter Dr. Bissell's description of his theory was the most up-to-date which the speaker had heard. He had known a woman who had moderate attacks of distention and hydronephrosis and they were due to the twisting of the kidney on its axis so that it lay up on edge and the symptoms were always relieved by getting the kidney into its proper position. This woman finally had a nephropexy performed some ten years ago and was cured. There was just one point which Dr. Bissell did not mention, and that was that one rarely found a hydronephrosis of this character in a kidney that moved all the way over to the median line or all over the abdomen. Pyonephrosis or hydronephrosis produced by stricture, either in the kidney or ureter or by tuberculosis, as was sometimes found, the treatment was always a proper nephrectomy, though, as the speaker understood, the province of Dr. Bissell's paper was limited to the consideration of hydro- or pyonephrosis due to movable kidney. It had been the experience of all general surgeons who had done any great amount of work on the kidney that they usually found some other condition in addition to the stricture, either a tuberculosis of the kidney or some other condition interfering with the function of the kidney and in most of these cases in which a primary nephrotomy was done it was necessary later to do a nephrectomy.

Dr. H. Dawson Furniss of New York said he thought we did not now see so many of these cases of extreme hydronephrosis as Dr. Bissell and Dr. Poucher had reported. Such cases were now receiving attention earlier and consequently did not reach this extreme stage of dilitation of the renal pelvis. They had learned to diagnose these cases earlier and to give them the advantage of treatment in the beginning and thus save the kidney. Every case that came complaining of renal colic showed evidence of obstruction, which might be due to stone, to tuberculosis, to movable kidney, or stricture of the ureter. Acute pain meant obstruction of the ureter, and the nature of the obstruction could be determined by one or more of the various methods at our disposal. Caldwell had shown that only about 5 per cent. of renal or ureteral calculi were not demonstrable by the *x*-ray. This 5 per cent., if the stone was in the ureter, might be demonstrated by the use of the wax-tipped catheter, or by the pyelograph or the ureterograph. As to the location of the ureteral obstructions, Hunner reported that he had made observations on this point in 100 cases, and he found that in the vast majority the obstruction was in the lower end of the ureter, within the first two to five centimeters from the lower end. As to the cause of the stricture, it might be due to a hematogenous infection from a phlegmon, from tonsillitis, from chronic appendicitis, or might occur after the removal of a stone. In one case in which a stone was removed last February there was recently an obstruction at the lower end of the ureter. He had seen several other similar cases recently. There was no question but that in the majority of cases the obstruction would be found at the lower rather than the upper part of the ureter. The speaker said he had seen no cases in which the obstruction could be said to be due to the pressure of the pregnant uterus or to a growth, but he had seen instances in which it occurred after operation where the broad ligaments were involved, thus producing stricture or angulation. Many cases of stricture or obstruction had intermittent colic, and it might come on with such regularity that the patient could predict with certainty the attacks. In the diagnosis of these cases we should remember that every case with renal colic had not necessarily stone. At the first examination the patient should not be cystoscoped, but should first be examined for the presence of pus, blood, etc., and the character of the infection, if present, ascertained. Then there should be an *x*-ray examination for calculi. After that the patient should be cystoscoped, after giving indigo-carmine 10 c.c. of a 0.3 solution intravenously. Normally this appeared within three to six minutes. If it showed on one side and not on the other, we knew that we had something inhibiting the flow. If it was not due to a calculus and there was no tuberculosis, it might be due to pressure atrophy as a result of stricture. Having determined that obstruction of the ureter was present, the next point was to determine where the obstruction was located and the degree of the obstruction. In the majority of cases this could best be done by means of catheters (No. 5 or 6 French). As to the use of thorium nitrate injections, by this means one obtained an *x*-ray picture showing the silhouette of the inside of the kidney. However, one should be cautious about making a pyelograph except in a hospital. In normal individuals these injections caused no pain, but in cases in which there was a certain amount of obstruction present the irritation caused by the injection might bring on an acute attack of retention. A retention brought on in this way was more dangerous than that of one of urine alone. Still pyelography and ureterography remained the best and most accurate methods of diagnosis of stricture. Having determined, therefore, that there was an obstruction and the point at which it was located, the next point to be settled was what procedure to adopt. That would depend upon the location of the obstruction, the cause, the amount of infection, and the degree to which function was interfered with. The degree of impairment of kidney function was more important than the amount of infection. If the function was greatly impaired, Dr. Furniss said he was in favor of taking out the kidney, provided the remaining kidney was functioning well. In cases in which the obstruction was due to movable kidney and the ureter was more or less fixed and there was dilatation of the pelvis of the kidney nephropexy was indicated. It had been found that in the majority of cases the stricture was in the lower end of the ureter, and the point here was whether this stricture could be dilated so that operation would not be necessary. Personally the speaker said he was unable to keep these ureters sufficiently dilated. He had used a 20 French catheter and yet they had become small again. In four cases he had performed a ureterovesicular anastomosis with satisfactory results. By functional tests, *x*-ray examination, a combination of thorium and *x*-ray test, one should be able to determine whether a stricture was present, where it was located, and whether the kidney was worth saving.

Dr. Bissell, in closing the discussion, said that in answer to Dr. Furniss' question as to the length of time that these patients had suffered from their

nephrectasis, he had been correct in supposing that they were old cases; one had had symptoms of the trouble for four years and the other for ten years. He thought they were pretty much in accord as to the causes of this condition and that the explanation that pressure on the ureter might be one of these causes was correct. Dr. Poucher had made the remark that the essayist was up to date in his theory with reference to angulation of ureter being caused by the failure of the ureter to follow the prolapsed kidney. This was not altogether a new theory. It had been suggested by a French physician, Pignon, in 1856, but he had not been able to support the theory with proofs as well as had been done recently. He was perfectly right in assuming that the kidney might prolapse and the ureter not prolapse in some instances. The reason was that when one found a movable kidney the ureter usually took the same motion and accommodated itself to the position of the kidney, but when it did not do this an angulation of the ureter occurred and a damming back of the urine into the pelvis of the kidney resulted.

Acute Abdomen.—Dr. JOHN B. DEAVER of Philadelphia read this paper, in which he considered acute abdomen more especially in reference to acute perforations of and gangrene of the appendix, perforating gastric or duodenal ulcer, acute perforating and gangrenous cholecystisis, acute hemorrhagic pancreatitis, and acute intestinal obstruction. He stated that the most common type of acute perforation into the abdominal cavity was that of the appendix. When perforation occurred, whether the process had developed suddenly or slowly, the primary consideration was not the treatment of the lesion in the appendix so much as that in the peritoneum. Within the first 24 hours of any peritonitis the process was confined and at this stage amenable to surgical interference. The operative mortality at this stage was about 1 per cent., but it rose rapidly if first seen after that period. Some of the guiding signs that indicated when an appendicitis went over into a peritonitis were persistence and exacerbation of the pain and tenderness in the right iliac fossa, extension of the tenderness, increase in pulse rate and muscular rigidity, and absence of peristalsis. After discussing the misleading character of the symptoms of gangrene of the appendix, Dr. Deaver stated that next to perforation of the appendix the most common cause of the acute abdomen was a perforating chronic gastric or duodenal ulcer. Here the pain was of an acute stabbing character referred to the upper abdomen. A downward course of the infection sometimes led to the error of accusing the appendix of being the source of the trouble. With the escape of fluid through the perforation into the abdominal, the pulse rate rose, the abdomen became distended, and intestinal obstruction became almost complete. As tenderness became more marked the symptoms of shock were followed by collapse. As a rule after the first onset of pain the patient vomited only once. This was an important distinction between perforation and obstruction or strangulation of the bowel. While the symptoms indicative of perforation into the peritoneal cavity were characteristic, they did not designate what part of the gastro-intestinal canal was affected. The previous history was, of course, important, and, if this were always clear and always obtainable, there would be little difficulty in making the distinction. The symptom complex of an acute perforation of a chronic ulcer, whether situated in the duodenum or in the anterior wall of the pyloric antrum, was the same. If presented by a young, anemic female the chances were in favor of the gastric location; if in an adult male, the site would be more likely to be found in the duodenum. In case of hemorrhage, the ulcer would more likely be found in the gastric location. It was not generally possible to make a pre-operative determination of the position of a perforating peptic ulcer, nor was it important; the most essential point was to prevent the catastrophe by proper treatment, surgical, as a rule, of the underlying causes that led to it. What ignoring danger signals mean was perhaps best illustrated in acute perforating or gangrenous cholecystitis. Mayo had called attention to the fact that perforation of the gall-bladder had been one of the most fatal of the different types of acute perforation. He attributed this to the fact that the cases came to operation late, because the patients having had one or more attacks of gallstone colic considered the attack merely a repetition of such an attack and surgery was not resorted to until too late. Infection was the primary factor in acute cholecystitis. An infected gall-bladder seldom, if ever, regained its normal condition, and subsequent acute or chronic inflammation and the formation of gallstones were the phenomena to be expected. In most instances the severer forms of infection occurred in connection with cholelithiasis. The chief danger of a suppurative cholecystitis was a perforation. The appendix was often involved and might also perforate. Another lurking menace of repeated inflammation of the gall-bladder was the effect on the pancreas. The overwhelming, sudden seizures of the acute abdominal conditions thus far discussed were repeated and exaggerated in the symptoms of acute pancreatitis. The mortality of this disease was high if unoperated upon and high enough (23 per cent.) in operated cases. Acute pancreatitis usually fell into three types, ultra-acute, acute, and subacute. The prognosis in the first two types was bad. Subacute pancreatitis was the more common type of the disease and was more amenable to treatment. Fortunately this condition was among the less frequent causes of acute abdominal crises, for it might be said to head the list as far as exquisite suffering and unfavorable prognosis were concerned. Intestinal obstruction, exclusive of intussusception, was said to be the cause of one-fourth of the cases of acute abdomen. The symptoms did not differ greatly from those of perforation of a hollow viscus. Vomiting, however, was more persistent and continuous. The pain was distinguishable from the pain of peritonitis by being so much more susceptible to palpation than to percussion; the rigidity so typical of peritonitis was usually absent, and there was total obstruction of the bowels. The patient was also restless and tossed about. The important point in connection with intestinal obstruction was to recognize the condition and to bring it to operation at the earliest possible moment, before septic absorption and inflammation led to a grave and hopeless peritonitis. The greatest factor in the mortality of peritonitis was undoubtedly delay in surgical intervention, and next in importance was faulty method of treatment at the onset of acute conditions preceding the peritonitis. The main point in caring for the latter was complete physiological and anatomical rest. No food should be given by mouth, and above all nothing in the nature of a laxative or purge. In a series of 259 operations for acute appendicitis, 79, or 30.5 per cent, had been purged before admission. At operation in all but two of these cases the appendix was either perforated, gangrenous, acutely ulcerated, or surrounded by an abscess. There were seven deaths in the series and five of these had been purged before admission. It was important to direct the spread of infection downward toward the pelvis by the Fowler sitting position. Another pre-operative measure of immense value was the Murphy method of enteroclysis. Icebags were of value only in relieving pain and lessening peristalsis, not in reducing inflammation. During the interim of undetermined diagnosis the important thing was to follow the Hippocratic dictum to do no harm. A forced enema should be avoided, as it had been known to send the fluid through the perforation into the peritoneal cavity. In appendical peritonitis of less than 40 hours' duration immediate operation had given the best results. In cases of appendical perforation with progressing peritonitis of more than 40 hours' duration delay was the best policy. Lavage of the peritoneum was unnecessary and harmful. The pus should be removed in the gentlest manner, care being taken not to disturb the protecting coat and lymph. Every case of perforating peptic ulcer operated on within the first 24 to 48 hours should get well. The essayist stated that he had operated on 51 such cases with one death. It was his practice to perform a primary gastrojejunostomy after closing the perforation. In the treatment of acute gall-bladder conditions cholecystectomy was the operation of choice when concomitant circumstances made this operation feasible. Removal of the gall-bladder not only greatly lessened the chance of recurrence of gallstones, if such were present, but also cured pancreatitis and pancreatic lymphangitis, the

forerunner of disease of the pancreas. In fulminating ultra-acute pancreatitis early operation was imperative in order to give the patient a fighting chance, but in general it was an advantage to wait and give the body a chance to prepare itself for a still greater tax upon it. Dr. Deaver also discussed the relative values of the intra- and extraperitoneal routes for operations on the pancreas.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

One Hundred and Twelfth Annual Meeting, Held November 26, 1917.

THE PRESIDENT, DR. J. BENTLEY SQUIER, IN THE CHAIR.

EXECUTIVE SESSION.

Report of Counsel.—Dr. GEORGE W. WHITESIDE submitted this report, in which he stated that the field of investigation and prosecution during the past year had been wide and varied. Investigations had been made and prosecutions conducted against druggists who had been practising medicine, unlicensed physicians from foreign countries and other parts of the United States, corporations, electrotherapeutists, face specialists, and chiropractors. During the year a very thorough investigation of chiropractice in this country had been made and the investigators had been able to successfully prosecute several chiropractors. The counsel had secured 35 arrests during the year and had obtained 24 convictions. Twenty of the persons convicted were fined sums varying from $25 to $150, and three who were convicted were given jail sentences. One case which the counsel considered of special interest to the profession was that of the Gatlin Institute of New York, Inc., and William A. Godfrey against the society. The history of the case was, briefly, that Godfrey had been hired by the corporation, that he was prosecuted by the society, and acquitted by the Court of Special Sessions. The Gatlin Institute then brought a suit against the society to recover damages for false arrest and malicious prosecution and recovered a judgment against the society for $2,500, which judgment was appealed from the Appellate Division. In the prosecution against the Gatlin Institute as a corporation, it was charged that the institute as a corporation was unlawfully practising medicine and that they were aided and abetted by Godfrey. The question involved in the case was whether a corporation could hire a registered physician to make diagnoses and prescribe treatment and thus enable the corporation to carry on the practice of medicine. Godfrey contended that there was no holding out on his part to practise medicine and that neither he nor the institute was practising medicine. The counsel, on the other hand, held that both Godfrey and the institute were practising medicine in that they were treating the drink habit. Among the questions raised by the counsel on appeal were: "May a corporation under the Business Corporation Law practise medicine or may it do so by employing registered physicians, who receive a salary from the corporation, treat patients, or diagnose their cases, and is such treatment a violation of the section defining medicine and the Public Health Law?" The Appellate Division reversed the judgment awarding Godfrey damages and dismissed the complaint. The Court, after a review of the facts, upheld all of the contentions raised by the counsel, and Judge Mills expressed the opinion that the case was one of great importance, as being likely, if it stood, to lead to the opening of many quack sanatoriums and "cure-all" institutes under guise of business corporations or registered trade names of individuals who were licensed physicians. The Court held that Godfrey and the institute should have been convicted and pointed out that the examination and prescription by the licensed physician was a sham employed by the institute. The counsel reviewed the other cases prosecuted during the year, and stated that in addition he had given general aid to the Comitia Minora and the Board of Censors in their work, and had also given legal assistance in the problems which they had brought before him. He had prepared a paper on the proposed Medical Practice Act drawn by the State Board of Medical Examiners and a committee from the State Medical Society, having the approval of the Board of Regents and the counsel of the State Society. He had cooperated when it was possible with the various departments of the State and city governments in connection with improvements in the Medical Practice Act, and various of these departments had cooperated with him.

Report of Committee on Public Health.—Dr. FRANCIS CARTER WOOD submitted this report. He said that the only matter brought before the committee during the year 1917 was a request from the New York Social Hygiene Society that the committee express an opinion on Assembly Bill No. 309, an act to amend the Penal Code in relation to advertisements concerning venereal disease. Believing that this was a matter that properly belonged to the Legislative Committee they referred it to that committee and learned that it was already being considered by that committee.

Report of Committee on Legislation.—Dr. GEORGE W. KOSMAK submitted this report in which he stated that the regular number of meetings had been held during the session of the Legislature in January, February, March, and April. Representatives of the committee had appeared at the hearings on compulsory health insurance and the antinarcotic drug bill. A special meeting had been held to consider the Assembly bill with reference to the publication of advertisements dealing with the treatment of venereal disease. The Social Hygiene Society was very desirous of obtaining the support of the committee, and the bill as amended was finally passed. The object was to eliminate advertisements of this character from the newspapers and magazines, but the bill resulted in restricting reputable advertisements in medical journals. Publishers had had the matter under careful consideration, and it was probable that some action would be taken when the Legislature met again. While the purpose of the original bill was well intentioned, its failure in construction might result in the repeal of the recent amendment to the Penal Code relating to this question. It was to be hoped that some arrangement could be made whereby the unjust features of the bill could be eliminated. In reviewing the character of legislative actions of interest to the medical profession it was stated that the principal matters of interest taken up by the State Assembly were the bills relating to compulsory health insurance and the question of narcotic drugs. In no case had final action been taken, and it was probable that these questions would again be considered. The usual bills for admitting members of special sectarian organizations to practise medicine were introduced and defeated, and no important amendment to the Medical Practice Act was added. The above reports were all accepted by the Society.

Minority Report from Legislative Committee.—Dr. CHRISTIAN F. J. LAASE presented this minority report in which he endeavored to show the difficulties under which the Legislative Committee labored and that through no fault of the personnel of the committee, but rather through faults of the method of administration, the work of the committee was not as effective as it should be. He presented resolutions embodying the suggestion that the by-laws of the society be changed so that legislative matters affecting the medical profession should be brought before the Society as a whole for discussion, instead of being referred to the Comitia Minora. This report was received and placed on file.

Report of the Milk Commission.—Dr. ROLAND G. FREEMAN submitted this report. He stated that the Milk Commission was supervising 14,598 quarts of milk, produced on twenty-four farms. The inspector had made 2,652 visits during the year, and in addition had spent 89 days in the laboratory. Twenty-eight tuberculin tests had been made requiring 56 days' work. The experimental production of goat's milk referred to in last year's report had been continued and the number of goats increased so that at present quite a large supply of goat's milk was available for observation in our institutions. It was being supplied to several institutions where pediatrists were making comparative studies on the efficiency of cow's milk and goat's milk to determine whether it was desirable to have a permanent supply of goat's milk for babies who did not do well on cow's milk.

Public Health Education.—Dr. ESTHER L. JEFFERIS

submitted this report, which was read by the Secretary. The report stated that the eighth annual series of lectures for the public on the prevention of disease had been given, eignt meetings having been held from February 6 to March 29, 1917. The total attendance averaged about 2,500. The usual hearty cooperation had been received from the members of the Society, the Department of Health, the Bacteriological Laboratory of Cornell Medical School, Yale University, and the Mutual Life Insurance Company, which had contributed speakers. The newspapers had contributed their quota of advertising assistance upon which the committee during their last eight years' experience had learned to depend.

Secretary's Report.—Dr. DANIEL S. DOUGHERTY submitted this report, which showed that the membership of the Society at the present time was 2,779. This was an increase of 47 over the membership of the previous year.

Resolutions.—Dr. ARTHUR F. CHACE presented resolutions protesting against Section 209 of the excess profits tax. He pointed out that this Section imposed an excess tax of 8 per cent. on all incomes ot over $6,000 derived from labor while that tax was not imposed on incomes derived from investment or in other words from "loafing." The professional man was taxed for working, and he was so situated that if he entered the service his income from his practice stopped entirely. These resolutions were adopted by the Society and will be presented at the coming session of Congress.

Dr. FREDERIC SONDERN presented resolutions in which he pointed out that Section 105 of the Sanitary Code, regulating diagnostic laboratories, gave the Health Department power to inspect the records of such laboratories, and that these might be used as a means of ascertaining whether communicable diseases were being properly reported. The resolutions were to the effect that such records were to be regarded as confidential, and that a physician was under no obligations to open them for inspection by the Health Department. These resolutions were adopted.

Dr. JOHN P. DAVIN presented resolutions to the effect that whereas the aims of the County Society were identical with those of the Health Department, namely, the betterment of health conditions, and since the profession had had to contend against measures and methods which were inimical to the interests of the profession and whereas such measures were promulgated without the knowledge of the organized medical society, this condition should be obviated by the appointment of a committee from the Society which should cooperate with the City Administration and the Health Department selection of public health officials and in the promulgation of measures affecting public health.

SCIENTIFIC SESSION.

The Clinical Value of the Complement Fixation Test in Tuberculosis.—Dr. HYMEN R. MILLER presented this communication. He said it was demonstrated a number of years ago that the complement fixation reaction for tuberculosis was feasible. The test held out practical possibilities only within the last few years when fresh interest in the subject was quickened by the newer work of many research men. The difficulty centered about the production of a suitable antigen. Best results seemed to have been obtained by the antigens of Calmette, of Besredka and his followers, Bronfenbrenner, Craig, etc., and of Petroff. With these antigens, however, not infrequently there was false fixation of normal and luetic sera. In February, 1916, Mill and Zinsser proposed a simple antigen which had been described elsewhere, made up of ground tubercle bacilli in physiological sodium chloride solution. This antigen was prepared by taking 20 mg. of the moist tubercle bacilli mass, placing it in a conical centrifuge tube, and adding to it 90 mg. of table salt. With a glass rod, filed to roughness at the end, this paste was ground by hand for about one hour. Distilled water was then added to isotonicity, that was 10 c.c. to the above mentioned quantities. This was the antigen. Just before using, it was shaken up and the heavier particles allowed to settle in the course of a few minutes. Except for the removal of these large elements the suspension was used as a whole without centrifugation and without filtration. With this antigen well over 3,000 serums had been tested. The reaction was practically never positive in normal and non-tuberculous patients. It was negative in from 80 to 90 per cent. of clinically arrested cases. It was positive in the very largest number of incipient cases, of first and second stage (Turban classification), and in a considerable number of third stage cases. The reaction became negative before death, also when the clinical course of the disease indicated improvement. The complement fixation test was independent of tuberculin skin reactions. The test indicated the presence of active disease. The reaction was negative in luetics unless there was active tuberculosis present.

Dr. ALFRED MEYER said that his interest in this work had begun about the same time that Dr. Miller began his investigations. His work, however, had been along the clinical side, while that of Dr. Miller had been entirely laboratory work. He had been sending Dr. Miller material from three sources, 85 cases in all. The largest number of cases came from the Bedford Sanitarium of the Montefiore Home, an out-of-town institution; others came from Mount Sinai Hospital, and the remainder from his private practice. These 85 cases fell into three classes; the first group consisted of 48 cases with a positive sputum and definite symptoms of tuberculosis. Of this group 96 per cent. gave a positive complement fixation reaction. A second class of patients, numbering 15, had negative sputum but were nevertheless probably tuberculous, and these gave a positive complement fixation reaction in every case. There were 22 cases of other diseases, mostly thoracic, probably not tuberculous, and of these 68 per cent. gave negative reactions to the complement fixation tests. There were cases of pleural effusion, pulmonary tumors, valvular lesions, and one of diabetes. Two cases in class two ought perhaps to be excluded, because in the one there was a four plus Wassermann and the possibility that the Wassermann test and the complement fixation test for tuberculosis might overlap, and in the other there had been some tuberculin tests with constitutional reaction a short time before. There were three cases in the entire series in which the conclusions conflicted and these could not be explained. Craig reported 150 cases of syphilis, of which only two gave a positive tuberculous complement fixation test; in these Craig said there might have been a combination of syphilis and tuberculosis. Dr. Corper, after a study of 327 sera, had stated that no conclusions should be drawn from a positive complement fixation reaction for tuberculosis if a positive Wassermann was present, but he gave no clinical evidence, and hence Dr. Meyer felt inclined to accept his statement with hesitation. In the speaker's series there were three cases that gave a positive Wassermann and two of them a four plus reaction, and with one exception they gave a negative complement fixation reaction for tuberculosis. One, however, also gave a positive complement fixation for tuberculosis. This patient then had an *x*-ray plate taken, but the roentgenologist would not commit himself to an opinion as to whether tuberculosis or syphilis was present in the lung. Dr. Meyer said he thought it wise to withhold final opinion in this test, but he felt from his personal experience with it that it had come to stay; he would insist, however, that in order to come to a dependable conclusion as to its value Dr. Miller's technique be followed with absolute accuracy down to the minutest detail. Any deviation from the published description, however slight, might vitiate the results and would be manifestly unfair.

Dr. FRANCIS CARTER WOOD said that those who had lived a long laboratory life had had a wide and variegated experience of the appearance and disappearance of tests, and that it was perhaps well to moderate enthusiasm in the presence of a new one. It was an extremely difficult matter to apply a laboratory method to a disease as complex and variable as tuberculosis—even more variable than syphilis. One should be very careful in judging of the clinical activity of the tuberculous process by comparison with the strength of the complement fixation reaction, which was known to be extremely rough. It should be remembered that possibly the clinical activity might be due to the presence of other organisms and allowance should be made for this. Any one who had done autopsies on old cases of

tuberculosis understood why certain late cases did not give any reaction to the complement fixation test. Seeing these old cavities, it was evident how little absorption could take place from them because of their thick, fibrous walls, and it could also be seen why the tubercle bacilli might be found in sputum when the complement fixation test was negative. It would be interesting to give injections of tuberculin to mobilize the toxins in individuals who had given negative reactions and then test them again and see what difference the tuberculin made. Dr. Wood understood that Dr. Miller did not get a positive fixation test in animals after the injection of tuberculin. Finally, Dr. Wood said that as we were discussing another test requiring the drawing of a considerable quantity of blood he would like to urge upon teachers of anatomy and surgery the importance of teaching the anatomy of the superficial veins of the arm and the proper method of inserting a needle therein. If this were done one would not see so many sloughs and undesirable results from the attempt to inject salvarsan or other therapeutic agents into the superficial veins of the arm nor so often see repeated punctures and a bloody condition of the patient and bed as a result of the efforts to extract a few c.c. of that now most important diagnostic fluid.

Dr. Emanuel Libman said he had had a very limited experience with this method as carried out by Dr. Miller, but he had kept in touch with Dr. Miller's work. He had, however, tested some cases in the wards of the hospital. To have had, as Dr. Miller reported, only two positive results in 1400 tests looked as though a positive reaction meant that tuberculosis was present. He would like, however, to see someone else take the patients in a hospital ward and give every one a Wassermann and a complement fixation test and then to compare the findings with autopsy findings; they had thus far had no autopsy findings in cases given the complement fixation test. It seemed from the evidence at present that one practically never got a positive reaction in a case that did not have tuberculosis, excepting as Dr. Miller had observed, that in old or well-advanced cases of tuberculosis one was likely to get a negative reaction. To be of value in a given case it was important to know how often one should make the test, because there might be a variability of the test in the same patient at different times. As matters now stood, it seemed as though a positive reaction indicated the presence of tuberculosis, but it was important to know that a negative reaction did not exclude active tuberculosis.

Dr. Abraham Garbat said that he had had the good fortune to be able to follow out the clinical side of this test and to make the tests himself. This they had been doing at the German Hospital for the past six or seven months. Most of their material had consisted of cases of non-pulmonary tuberculosis, as tuberculous infection of the peritoneum, kidneys, bladder, bones, joints, etc. He refrained from giving percentage results because he felt that at the present time it would not be conclusive, in view of the comparatively small number of cases. However, he had come to the conclusion that the complement fixation test was a distinct aid in the diagnosis of doubtful conditions. It would be necessary to settle the question of relationship between a positive reaction and an active process in these non-pulmonary infections; for example, in a case of tuberculosis of the glands it was of the greatest importance to decide whether one was dealing with an active process or not. With reference to the question of non-tuberculous cases giving a positive reaction, the speaker stated that he had not found one non-tuberculous patient who gave a positive reaction. Dr. Libman's suggestion could be answered; they had done both the complement fixation and the Wassermann tests on some patients. In one case, that of a woman who had been to several dispensaries complaining of pain in her back, and whose condition was not diagnosed, there was a negative Wassermann and a two plus positive tuberculosis complement fixation test. This was a surprise, as the woman showed no symptoms of tuberculosis. The woman was examined with the *x*-ray and it was found that she had a beginning Pott's disease. With reference to the relationship of a positive Wassermann reaction and the tuberculosis complement fixation reaction, he believed a positive Wassermann reaction had nothing to do with the complement fixation reaction for tuberculosis. They had among their employees a number of normal people and in applying the routine Wassermann test to them they had also applied the complement fixation test and had not found one positive reaction. From the laboratory standpoint, Dr. Miller mentioned two points which might be discussed. He said that the technique was the same as that of the Wassermann test. It was too bad that there was no one definite laboratory technique for the Wassermann test. An effort had been made in this city to reach an agreement as to a standard technique, but each man insisted that his method was best and no definite technique had been decided upon. In the complement fixation test for tuberculosis it was absolutely imperative that all workers should follow the same details and not each one go his own way. The complement fixation test for tuberculosis was a very sensitive test and not a rough test like the Wassermann. One must be very careful that the antigen was rubbed up very fine. Then, too, the complement must be titrated, very carefully, and the normal antibodies against sheep's red blood cells must be considered. If a laboratory worker undertook to do this reaction and found that his results did not correspond with those of Dr. Miller he should not blame the reaction but should make an effort to see where his error lay.

Dr. Leo Kessel said he had had the privilege of observing the complement fixation test tried upon a variety of clinical material for almost two years and was convinced of its value in the diagnosis of active tuberculosis. He was interested in seeing whether the intensity of the serum reaction in any way paralleled the clinical activity of the pulmonary process. A group of about seventy patients, all showing tubercle bacilli in their sputum, were arbitrarily divided into four classes, varying in degree of clinical severity from those with no toxic symptoms, no acceleration of pulse, and no fever to those presenting marked toxic symptoms and who, for the most part, were bedridden. Tabulated results were shown by a chart. Within general limits a relationship seemed to exist between the intensity of the serum reaction and the degree of the activity of the tuberculous process exhibited by these patients. Certain discrepancies were pointed out, but in spite of these discrepancies it was evident that the serum reaction bore a direct rather than a haphazard relationship to the intensity of the pulmonary process. Three patients in whom active pulmonary tuberculosis had been diagnosed persistently presented a negative fixation test, and two of these proved ultimately to be pulmonary syphilis, one a bronchiectasis. In a fairly large series of patients with clinical evidence of syphilis the speaker had never seen a complement fixation for tuberculosis positive. He felt that a positive complement fixation for tuberculosis in a patient with a positive Wassermann reaction pointed definitely to an active tuberculous focus.

Dr. Philip Castleman of Boston said that there was very little to add to Dr. Miller's splendid paper, except to say that he had been a little too modest in speaking of his own antigen. In Boston they had tried all the antigens in general use and in their hands none of these antigens had given as good results as had that of Dr. Miller. He had come to the conclusion that the only reliable antigen was the one suggested by Dr. Miller and he was using that antigen at present. Dr. Miller had sent him the organisms for the antigen from his laboratory. Dr. Castleman said he had had quite a little experience because he had endeavored to get the clinicians to allow him the use of their clinical records to compare with the findings of the complement fixation test for tuberculosis on all the specimens that came in for the Wassermann test. He had thus made over 7,000 tests, and out of those 1,358 were positive for the Wassermann reaction. Of these there were 332 patients who gave a positive tuberculosis complement fixation test, and of these 243 gave a negative Wassermann and 89 gave a positive Wassermann. These 89 cases giving both the Wassermann and tuberculosis fixation positive he had endeavored to keep in touch with through the physicians who had sent in the specimens. They had been able to follow up 35 patients, and of these 24 had shown definite signs of tuberculosis. The question, where one found a patient with a posi-

tive tuberculosis complement fixation reaction, was whether he would develop clinical signs of tuberculosis later. As an illustration he cited the case of an Italian woman, 40 years of age, married, who had been complaining of pain in her back for ten months. The patient was cystoscoped and the catheterized specimen of urine was examined and found to be sterile and inoculation into a guinea pig had been negative, giving no evidence of tuberculous infection of the kidney. The complement fixation test for tuberculosis, however, was positive. Six weeks later a guinea pig was inoculated with a specimen of the urine and this time gave a positive result. The woman was operated, the left kidney removed and the pathological examination showed tuberculosis of the kidney. Dr. Castleman cited several other cases in which a positive tuberculosis complement fixation test in a patient showing no symptoms of tuberculosis was found later to have had the disease. Taking all these cases into consideration, he said he felt that the test was absolutely accurate in showing the presence of tuberculosis if it was carried out by skilled laboratory men. There were a few very necessary points to be considered in making the test. First, the blood must be fresh. Often a blood two or three days old became anticomplementary. Second, it was absolutely necessary to fix the complement for forty minutes; often it was better to allow it to stand for one hour before adding the sensitized sheep cells. Third, the reading should not be made before one hour nor should it be made later than two hours after adding the sensitized cells. Fourth, the ice box method took too long; the water bath at 37° C. was entirely satisfactory. As regarded the cross fixation between tuberculosis and syphilis, he endeavored to show that it did not exist and mentioned results of the following experiments: He set up four tubes containing blood which was previously found positive for both the Wassermann test and the tuberculosis test. Tubes 1 and 2 were tested by the Wassermann test and tubes 3 and 4 by the tuberculosis complement fixation test. After the completion of the reaction the solutions were filtered. The filtrate from tube 1 was again tested by the Wassermann test and the one from tube 2 for tuberculosis; one from tube 3 for tuberculosis and the one from tube 4 for the Wassermann test. By regulating the volume of the patient's blood he found in a number of cases that the filtrate of tube 1 was negative for the Wassermann, that of tube 2 positive for tuberculosis, that of tube 3 negative for tuberculosis, and that of tube 4 positive by the Wassermann test, thus proving conclusively the absence of cross fixation. He had, however, urged others to carry on this work and report their results, as his work in this line was limited.

Dr. MILLER, in closing the discussion, said that he thought that a few observers were agreed in the belief that there was no cross fixation between luetic and tuberculous sera. He had tested a large number of syphilitic sera, and they were all negative except four; in these four instances he knew nothing of the clinical symptoms at the time of the examination, but it was learned later that there was tuberculosis present in two of these cases; in the other two the disease could not be excluded. Dr. Castleman's work in filtering out the specific antigens and testing the filtrates was very much in line with the work of Bronfenbrenner, who had been able to satisfy himself and others that the antibody for tuberculosis was distinct and separable from the antibody found in luetic serum. Many workers obtained cross fixation because they used antigen which could give lipoidal fixation. In order to determine the effect of injections of tuberculin on the complement fixation reaction, Dr. Miller had injected animals with tuberculin. In animals thus injected he had been unable to get a positive complement fixation reaction and he was inclined to believe that the injection of tuberculin would not produce a positive reaction in normal animals. He was, at present, carrying on experiments to determine the effect of subcutaneous injections of tuberculin on the complement fixation reaction in arrested and doubtful cases. Dr. Miller said the important point to be stressed was that the complement fixation reaction for tuberculosis was a biological and not a mathematical test. In general the reaction paralleled the course and intensity of the clinical picture. Not infrequently it proved of help in diagnosing tuberculosis when the clinician could reach no definite conclusion.

Therapeutic Hints.

Disorders of Dentition.—Whitla uses the following formula when restlessness, sleeplessness, vomiting, and other disturbing symptoms, are present in this period:

℞ Sodii bromidi .....gr. xxxij
Chloral hydratis .....gr. iv
Liquor. ammon. acet.....℥iv
Syrupi simplicis .....℥iv
Aquæ chloroformi.....ad ℥ij
M. et ft. mistura.

Sig.—A teaspoonful every two hours until relieved, for a child 12 months old.—*Dictionary of Treatment.*

Acute and Chronic Catarrhal Conjunctivitis.—May uses iced compresses over the diseased eye for fifteen minutes to an hour, three times daily. The conjunctival sac is also irrigated three or four times during the twenty-four hours with a solution of boric acid or a 1 in 6000 solution of mercury bichloride. A bland ointment (vaseline or boric acid) is to be placed on the edges of the lids at night in order to prevent them from sticking together. A 25 per cent. solution of argyrol or a 5 per cent. solution of protargol should be instilled into the conjunctival cul-de-sac for five minutes from three to six times a day. The lids should be kept closed and each time the eye should be irrigated afterward with the boric acid solution.

The last mentioned treatment should be kept up until the discharge has disappeared. If the disease shows a tendency to become chronic, weak astringent solutions are to be used, zinc, borax, alum, tannic acid, silver nitrate, gr. 1 10 to ℥j; also ointments of the yellow oxide and ammoniated mercury, or silver nitrate 1 per cent., should be applied on the everted lids once a week. The occasional use of the alum or sulphate of copper stick on the everted lids will also hasten recovery. Bland ointments to the edges of the lids at night must be continually applied. As in all chronic catarrhal conditions, the remedies should not be too long continued, but should be changed from time to time.—*Diseases of the Eye.*

Chronic Nasal Catarrh.—Scott recommends the following combination of Sajous for this condition:

℞ Sodii bicarb.,
Sodii bibor.....āā gr. viij 0.5 gm.
Fluidextract. pinus canad..ɱxv 1.0 c.c.
Glycerini .....f℥ij 8.0 c.c.
Aquæ.....q.s. ad. f℥iv 120.0 c.c.
M. Sig.—Apply with atomizer three or four times daily.

After which Scott suggests, the use of the following:

℞ Pulv. sanguinariæ .....℥j 4.0 gm.
Acid. tannici .....gr. v 0.3 gm.
Pulv. camphoræ .....℥j 4.0 gm.
Bismuthi subnitratis.....℥ij 8.0 gm.
M. Sig.—To be used by insufflation or as a snuff every three or four hours.—*Hughes' Practice of Medicine.*

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Original Articles.

THE DIAGNOSIS AND TREATMENT OF PATHOLOGICAL CONDITIONS IN THE ANTERIOR URETHRA THROUGH THE URETHROSCOPE.

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IN the following pages I shall discuss at some length and with extreme detail the use of the urethroscope in pathological conditions of the anterior urethra, and will reserve for a future paper, a discussion of the pathology of the posterior urethra as viewed and treated through the posterior urethroscope.

The time is passed, I hope, where a persistent gonorrheal discharge is treated by trying one injection after another, without any concern as to the pathological condition of the urethra which keeps up the discharge.

Of late, much attention has been paid, and rightly so, to the prostate, the seminal vesicles, and the posterior urethra as sources of reinfection in gonorrhea, and the cause of the chronicity of the disease. While recognizing the importance of these parts, however, we must not neglect a careful inspection of the anterior urethra, which may show lesions quite as important as in the parts just mentioned. Lesions in the anterior urethra, moreover, have the advantage over those in the prostate and seminal vesicles, in that they can be brought directly into view and can be directly treated.

It should be borne in mind, also, that there are pathological conditions in the urethra which can be diagnosed and treated in no other way than by the use of the urethroscope. Moreover, it cannot be impressed too emphatically upon the reader, that, in the majority of cases, the most obstinate gonorrheal stricture of the urethra was at first a mere infiltration in its walls, which could easily have been seen and successfully treated if the urethroscope had been employed at the right time, or as a matter of routine in the treatment and diagnosis of urethritis. I must emphasize that the *only* way to diagnose a stricture of the anterior urethra before it has advanced so far as to give obstructive symptoms is by the timely employment of this instrument; and, as a corollary to the above, I would say that a stricture of the urethra following a gonorrhea ought to be diagnosed and treated before any symptoms of it are present.

The present paper is the result of many years' experience in urethroscopy, and the author has employed practically every form of instrument that is on the market. He has also kept in close touch with the literature on the subject, both here and abroad, but still has no hesitancy in stating that there are certain technical details and certain "tricks" described in the following pages which cannot be found elsewhere.

It is the object of this paper to present a *practical* discussion of the subject, not omitting the minutest detail, so that any one who is willing to devote his time to the subject can with a little patience master it. He can then treat his gonorrheic patient with intelligence and obtain results which cannot be obtained by any other method.

The entire subject will be discussed under the following captions:

1. Description of instrument.
2. Precautions and contraindications in the performance of urethroscopy.
3. Preparation of instruments and patient.
4. Appearance of the normal urethra through the urethroscope.
5. Pathological conditions in the anterior urethra seen through the urethroscope.
6. Treatment of pathological conditions through the urethroscope.

1. *Description of Instrument.*—It is important to have an instrument with a magnifying lens placed at the right focal distance. The lens should be so arranged that it can be moved from side to side, so that intraurethral applications can be made with the lens *in situ*. With this arrangement we have the magnified picture of the urethra directly under vision while making such applications. I would especially caution against buying instruments without a magnifying lens attachment. Ingenious instrument dealers will at times try to persuade you to buy such instruments on the plea that one sees the urethra in its natural condition, and not in an artificial condition of magnification. One could, for the same reason, refuse to employ the microscope for the examination of a pathological specimen and expect to gain more knowledge by looking at it with the plain eyes "in its natural condition." For many years I employed a urethroscope without lens attachment, and while I could recognize gross lesions it was impossible to make out the finer pathological changes which characterize the very beginning of the change from normal to pathological, and which it is so very important to recognize at the earliest possible moment. While in Europe I spoke with Wossidlo[3] on this very point, and he took exactly the same view of the subject as I do. It is also essential that the lens should not be too small, as is the case with some of the urethroscopes on the

market. The best lens is about ½ inch in diameter, and arranged on a pivot, so that it can be swung from side to side or entirely away from the opening if necessary. (See Fig. 1.)

One urologist, thinking that a large size lens

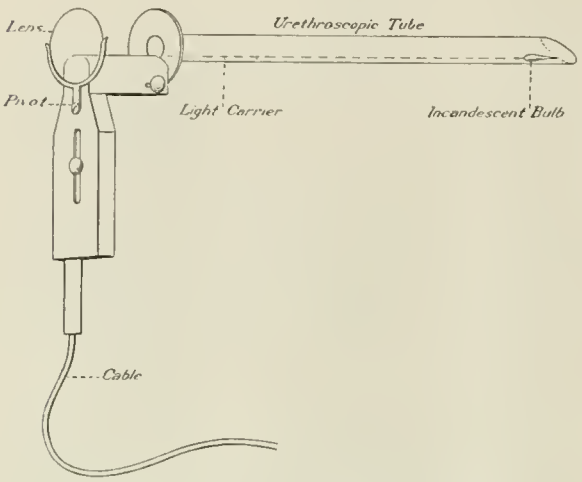

Fig. 1.—Urethroscope with lens attachment.

would be in the way while making applications to the urethra directly under vision, invented a urethroscope in which the lens is very small, so that an applicator (or other instrument) can be put into the urethroscopic tube while the lens is in position. The trouble with such a small lens is that it does not give nearly as much magnification as the larger one does, as one can easily convince himself by comparing the two. Later on, in describing the technique of urethroscopy, I shall show that the larger lens need not at all be in the way of making direct applications or doing operations in the urethra directly under vision with the lens in situ. If one has already purchased such a urethroscope it is an easy thing to have the small lens removed and the larger one put in its place.

In the urethroscope pictured above it will be noticed that the source of illumination is a small electric lamp attached to a light carrier which is inserted into the lumen of the urethroscopic tube when in use. It is true that the light carrier takes up a certain amount of space in the lumen of the tube, thus giving less room for intraurethral manipulations, but after some experience in intraurethral work we will find that there is plenty of room left to do all the manipulations necessary. In order to avoid the employment of a light carrier, several urologists have invented urethroscopes with a lens system so arranged that the source of light is at the proximal end of the tube (near the eye of the observer) and is focused into the distal end by the system of lenses. This arrangement leaves the entire lumen of the tube free for work. I would especially caution *against* the use of such urethroscopes. While theoretically correct, practically they are of very little value. If you look through one of them, all you see is a great flood of light at the distal end of the tube, and while very *gross* pathological lesions can be made out, it is impossible to make out the important finer details. It might sound peculiar, but it is nevertheless a fact, that light is more or less opaque, and you cannot see nearly as clearly through a flood of light that has been focused from a distance of a few inches as when the source of light is only one-quarter inch away from the object. Do not let the dealer mislead you by having you look through the instrument held against your hand to show you how brilliant the light is at the other end. As before said, you see plenty of light, but nothing else.

2. *Precautions and Contraindications in the Performance of Urethroscopy.*—1. Never use the urethroscope in the presence of a marked purulent urethral discharge, or an acutely inflamed urethra, whether either condition is due to gonorrhea or not. If, however, the acute stage has long since passed, and there remains a persistent urethral discharge, such discharge is no contraindication to the performing of urethroscopy. On the contrary, it is often to the credit of the urethroscope that the cause of such persistent discharge can be determined by no other means. Even though the discharge contains a few gonococci (not many, of course), there would be no objection to urethroscopy, as here again a small infected follicle may be discovered and treated through the urethroscope, which follicle may be the only reason for the persistence of the gonococci.

2. Never pass instruments into the urethra just prior to making a urethroscopic examination, as artificial hyperemia, erosions, or other artificial conditions, may be produced. If you want to make a complete examination at one sitting, do the urethroscopy first, then explore the urethra with bougies à boule, sounds, or any other instrument.

3. Except in unusual cases, do not attempt to make a urethroscopic examination in the presence of a very small meatus. Even if you can insert a very small tube, the area of vision through such a

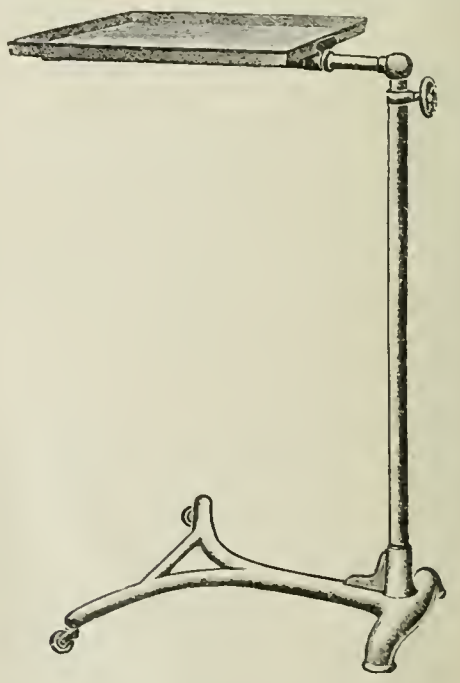

Fig. 2.—Table for urethroscopic instruments.

tube is so small that you cannot see nearly as much or as well as when a larger tube is employed. If possible, do a meatotomy, and then employ a larger tube.

4. Do not use a tube so large as to stretch the

urethra abnormally, because the pressure of the tube will cause artificial anemia and otherwise distort the parts. In many textbooks the advice is given to use the largest tube that it is possible to get into the urethra. This advice is bad, for the reasons above given.

5. It is not advisable to perform anterior urethroscopy and posterior urethroscopy (or cystoscopy) at the same sitting. The irritation of so much instrumentation is harmful to the average urethra, and the pain of the two proceedings is more than most patients can endure. In exceptional cases, where patients come from out of town, and whose stay in the city is limited, if it becomes necessary to perform both examinations, do the anterior urethroscopy first.

6. Never use cocaine or other anesthetic for the performance of anterior urethroscopy, as the action of the drug may prevent a clear, natural impression of the parts.

III. Preparation of Instruments and Patient.—Before commencing, we should have everything in readiness for diagnosis and *treatment*. We must remember that a lesion discovered during examination may be very difficult to locate and find at a subsequent examination. It is advisable, therefore, if at all possible, to be prepared to treat it at once while we have it under vision.

We should have ready the following appliances: (1) Urethroscopic tubes with obturators, (2) light carrier, (3) cotton applicators, (4) intraurethral forceps; (5) solutions of silver nitrate, or applicators which have been dipped in such solutions, or pure silver nitrate which has been fused upon a stick or applicator; (6) for special operations we might need cautery knife, electrolysis needle, and other intraurethral operating instruments. Most of these latter instruments need only be prepared for subsequent examinations, as such operations are not generally done at the first sitting. They will be described later on.

The urethroscopy may be performed with the patient lying flat upon his back, or in the cystoscopy position. I personally find it more convenient and less tiresome to the patient to have him flat upon his back. This position has also the advantage that the urethroscopy may be followed, if necessary, by exploration of the urethra with sounds, bougies à boule, or other instruments, without changing the position of the patient. A convenient method is to have a table (Fig. 2) like an invalid table, which can be raised and lowered, across the lower portion of the patient's legs and knees, upon which are placed, upon a sterile towel, all the articles above enumerated.

I shall now describe the above appliances in detail:

1. *The Urethroscopic Tubes and Obturators.*—These come in various sizes, corresponding in number to the ordinary urethral sounds. It is not at all necessary to have many sizes, for practically all the work may be done with four different sized tubes, as follows: 20 F., 24 F., 27 F., and 31 F. Some of the tubes have the distal ends circular, while some are oval. It makes absolutely no difference which is used.

2. *The Light Carrier.*—This consists of a small metal rod with a minute incandescent lamp at its end. Wappler has recently made his light carriers so that the lamps can be simply screwed on to the metal rod. This is a great improvement over his previous models, in which a fine piece of wire had to be fed through the narrow lumen of the metal rod. The light carrier has a magnifying lens attached to it, and so arranged that the lens can be turned from side to side, so that intraurethral applications and operations can be performed.

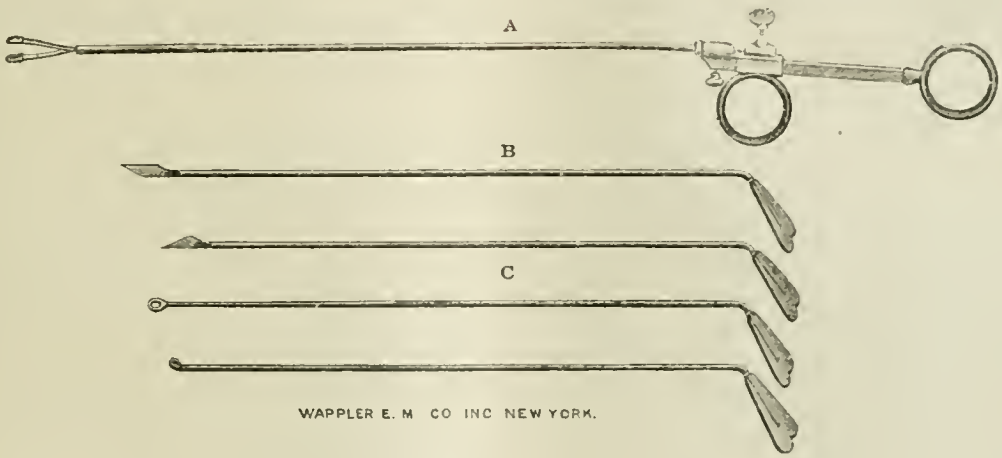

Fig. 3.—Urethroscopic Instruments. A, forceps; B, knives; C, curettes.

3. *The Cotton Applicators.*—These come in two sizes. Those for the anterior urethra are about 6 inches in length, and those for the posterior urethra are about double this length. They are made by dipping the ends of the wooden sticks in either water or collodion and wrapping cotton around them while wet. The long ones used for the posterior urethra may have cotton wrapped about both ends. There is less danger of the cotton coming off if collodion has been used. After having been made up in quantity they may be sterilized by using any form of dry-heat-pressure sterilizer. The sterilization does not affect the collodion.

We should have these applicators made up in two different styles, one for mopping the urethra and the other for the application of medicaments to the urethra. Those used for mopping away the blood or mucus from the urethra should have much more cotton wrapped about them than the others. In fact,

those used for applying medicaments should have merely the minutest amount of cotton on them; just enough to hold a small amount of the medicine. Those used for mopping should not have so much cotton about them as to interfere with their *easy*

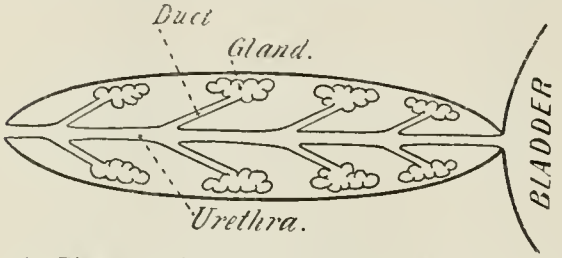

FIG. 4.—Diagrammatic scheme of the glands and ducts of the anterior urethra.

passage through the urethroscopic tube. If you do much urethroscopy it is advisable to have two kinds of applicators for mopping, one for the smaller size tubes and the other for the larger tubes. In making up the applicators it is always advisable to have too little rather than too much cotton on them, as they become much thicker with time, probably through the absorption of moisture. The final test is their ability to go *easily* through the urethroscopic tube.

4. *The Intraurethral Forceps.*—(Fig. 3, A.) This is a great convenience, though not of absolute necessity in urethroscopy. It sometimes happens that some of the cotton comes off the applicator and remains in the lumen of the urethroscopic tube, or even in the urethra, just beyond the tube. This accident may result either from having the cotton carelessly wrapped on the stick, or by forcing an applicator with too much cotton on it through a urethroscopic tube too narrow for that particular applicator. With this forceps it is surprising to see how easily the cotton can be removed from the tube or urethra. One may try the experiment by packing a urethroscopic tube as tightly as possible with cotton, and then appreciate how easily this can be removed with the forceps.

In case one does not possess such a forceps, and a piece of cotton becomes dislodged in the tube, it may be removed by introducing a plain applicator stick, without cotton, but wet at the end, and by a twisting motion engage the piece of cotton and remove it. It may take a little time, and cause some embarrassment in the urethroscopic examination, but with patience you can always get it out. Even if the piece of cotton has been pushed out of the end of the urethroscope into the urethra proper, it generally can be removed. Should it remain in the urethra, however, it will cause no trouble, as the force of the urine will certainly carry it out. This, however, ought never to happen. The urethral forceps can also be used to remove stones which have been stuck in the urethra.

5. *Solutions for Medicating the Urethra.*—As previously stated, the applicators which are to carry the solutions should have only a minute amount of cotton on them. It is advisable to dip the applicators into the solutions beforehand and shake off the excess, and so have them ready for use. The reason for this is, in the first place, that by so doing there is less danger of having too much solution on them, for it is not advisable to have them soaking wet; and in the second place, as before explained, when we discover a lesion in the urethra we must immediately go for it, for unless one has an assistant the mere act of dipping the applicator into the solution and shaking off the excess is enough to dislodge the instrument from the lesion. These may be trifling facts, but in actual experience they are of importance.

The solutions of silver nitrate generally employed are 10, 25, and 50 per cent., and the pure caustic. The first three are prepared by simply putting the cotton-covered applicator into the respective solutions and shaking off the excess. The pure silver stick consists simply of some pure lunar caustic fused on the end of a wooden applicator, or at the end of a fine metal probe. The latter is essential for getting into the minute ducts, while the former may be used if a larger surface is to be treated. The wooden applicators are generally too thick for ducts or follicles.

The metal applicators which carry the pure caustics are made by heating the end of the applicator, and, while hot, putting it against a small crystal of silver nitrate. The crystal will adhere to the end of the probe, which is then carefully heated further in an alcohol lamp or bunsen burner until the silver liquefies around it evenly, when it is permitted to cool. It is well to have the solution run toward the point, so as to have a minute knob at the end when it has cooled. It is important to use only the minutest crystal of silver nitrate, or else the applicator end will be too thick to enter the minute follicle opening.

The wooden silver-nitrate applicators may be bought ready made, but are somewhat expensive. With a little experience, they may be made by the doctor himself. Take a molded silver-nitrate cone, place it into a small test tube, and heat it carefully in the test tube till it melts. While it is melted dip the wooden applicators in, holding them downward, so that the solution flows toward the end of the stick. The trick in the making is not to dip the wood in while the solution is too hot, or else the end of the applicator will be burned off. It is likely that the first few attempts will fail, but after a little experience we get the right moment when to dip

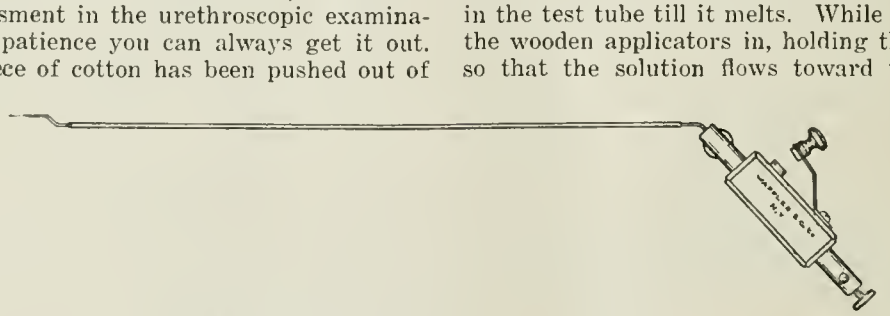

FIG. 5.—Electrolytic needle for urethroscopic use.

the wood in. If the silver at the bottom of the test tube has cooled and become hard, it may be reheated again and again as long as there is the smallest portion of silver nitrate left. These home-made applicators may not look as nice as those bought, but for practical use they are just as good.

IV. Appearance of the Normal Urethra Through the Urethroscope. Method of Performing Anterior Urethroscopy.—The urethroscopic tubes and their obturators are sterilized by boiling, and kept in an antiseptic solution. The light carrier, with lamp, is simply washed with alcohol and kept in the same solution or on a dry, sterile towel. The lamp is tested, and the proper degree of illumination obtained; the current is then temporarily turned off. It is best not to test the light before the patient, as it may make him very apprehensive to think that a red-hot lamp is going to be inserted into his urethra. Everything that might be used is now placed in readiness on a table covered with a sterile towel. One should be certain to have very many applicators, as in some cases there is more mucus and more oozing than is expected.

The patient is examined lying flat upon his back. The penis is cleansed with soap and water, alcohol, and weak oxycyanide of mercury solution (1:4000). A sterile towel with a hole in the center for the penis is now applied over the patient, so that the penis projects through the hole and lies on the sterile towel. The instrument table may be spread over the lower portion of the patient's legs and knees. The source of light may be either the ordinary dry-cell battery, or the street current with an intervening rheostat.

The examiner should also sterilize his hands or use sterile gloves. The proper size tube is taken from the solution, and the excess of solution allowed to flow off. If the obturator is in the sheath of the urethroscopic tube, it should first be removed, as the tube will be found to be filled with solution. The drier the instrument is, the less mopping will have to be done later on, when the instrument is in situ. For this reason also we should employ as little lubrication as possible.

If the distal end of the urethroscopic tube is round, we may introduce it in any way; but if oval, we introduce it so that the oval opening looks upward; *i.e.* toward the roof of the urethra. After the urethroscopic tube has been introduced we remove the obturator and mop out the urethra until it is perfectly dry. We then introduce the light carrier, the lamp of which has been previously tested and the proper illumination procured. As soon as the lamp is in situ we turn on the current. Every light carrier has an arrangement whereby the current may be turned either on or off by a switch attached to the handle of the carrier. We then turn the lens so that we may look through it.

We then look in, and no matter what portion of the urethral mucous membrane comes into view we so manipulate the tube that the central opening comes into view. This central opening of the urethra is always our landmark, from which we get our bearings and know where we are. No matter what portion of the urethra we examine, we should always come back to this central opening before we explore a different portion of the urethra.

The central opening is the lumen of the urethra. Normally, except during micturition or ejaculation, there is no lumen to the urethra. The walls are always in contact, and the urethral mucous membrane is thrown into folds to allow of its distensibility during coitus. And so, when we look through the urethroscope, which artificially opens the urethra, we see an indication of an opening from which radiate 18 or 20 fine lines. These fine lines represent the folds of the urethral mucous membrane, and the indication of the opening, which is known as the central opening, represents the closed lumen of the urethra. While this picture may vary slightly according to what portion of the anterior urethra is inspected, and may also vary somewhat in different individuals, the main picture must be the same for a normal urethra. We must have a closed, or very slightly opened canal, and we must have the fine radiating lines above described. Any variation from this shows a loss of elasticity in the urethral walls, which means the commencement of stricture formation. The only exception to this rule is the urethroscopic picture of that portion of the urethra just beyond the meatus. In this portion there are normally no folds, the mucous membrane is not elastic, and we see a more or less wide-open central figure, with hardly any radiating lines. In other words, the urethroscopic picture which is absolutely normal for the region near the meatus would be considered pathological if seen anywhere else in the anterior urethra.

Inasmuch as it is the object of this article to give a *practical* description of the parts, a description which will be of definite use to the worker in urethroscopy, I will not burden these pages with a description of the many varieties of pictures that may be seen in the normal urethra, but will only emphasize the important point already referred to, that as long as we have *a closed or slightly opened central figure with distinct radiating lines we have a normal condition of elasticity of the urethra, and any variation from this is pathological, the region near the meatus excepted.* We thus see that there is nothing difficult or mysterious in the comprehension of the urethroscopic picture of the normal urethra, but it is just what we would expect from the anatomy of the parts. The color of the normal mucous membrane of the anterior urethra is of a reddish hue, and has a glistening appearance. Neither the color nor the glistening can be described in words, nor even reproduced well in colors, for which reason no colored plates are presented here. It must be seen in order to be recognized. Where the urethroscope presses upon the mucous membrane a temporary local anemia is sometimes produced, and as the pressure is removed by moving the urethroscope the blood may be seen to rush into the parts. All this is strictly normal. Any other change is abnormal. Small spots of intense redness denote erosions ;or, if around the urethral opening of a follicle, it generally means infection of the follicle. A loss of the glistening appearance is aften the first stage of infiltration of the submucous tissue, and often indicates a beginning stricture. A white or grayish appearance without any blood-vessels indicates the scar tissue of permanent stricture. All these appearances will be gone into in detail when discussing the pathological appearances of the anterior urethra. All we have

to remember for the present is *that a mucous membrane with glistening appearance and of reddish hue is normal, and any variation therefrom abnormal.*

Having observed the appearance of the mucous membrane, as regards the central figure, striations, color, and glistening, we now observe the condition of the follicle openings. As most of these are situated in the upper wall of the urethra we so manipulate the urethroscope as to bring this portion into view. Normally, the follicle openings cannot be seen at all, or appear merely as small or medium-sized holes in the mucous membrane. Any variation from this is abnormal. Openings with pus or secretions oozing out of them indicate infection (not necessarily gonorrheal), and openings which are red and inflamed, or surrounded with a halo of redness, show inflammation of the follicle, and, most likely, infection.

After studying one particular area of mucous membrane we slowly move the urethroscope toward the meatus, looking in all the time, and noting any pathological lesion that may appear. We examine the urethra from behind forward; that is, as we are removing the instrument. We must not neglect to look at the mucous membrane at the very tip of the penis, that is, just near the meatus. Should there be any bleeding or mucous in the way, we remove the light carrier and mop the parts dry. Of course, it is possible to dry the parts with the light carrier in situ, but I have found it more convenient to remove the light carrier.

V. Pathological Conditions of the Anterior Urethra as Seen Through the Urethroscope.—The most frequent pathological conditions found in the anterior urethra are: (*a*) New growths, (*b*) granulations and erosions of the mucous membrane, (*c*) infections and inflammation of the follicles and glands, (*d*) infiltration of the submucous tissues, forming the different grades of stricture formation.

A. *New Growths.*—These are rather rare, and are easily recognized. I have seen only two or three cysts of the anterior urethra, and do not believe that I have seen more than a score of cases of warts in many hundred urethroscopies. I have not kept statistics, but such is my general impression.

Cysts in the anterior urethra are exceedingly rare. In the posterior urethra, especially in the region of the verumontanum, they are much more common. In one of the cases where I found a cyst in the anterior urethra the patient had his first gonorrhea, but in spite of persistent treatment it refused to get well. As a matter of fact, treatment seemed to make absolutely no impression upon the disease. The pus came out just as profusely, and the gonococci were just as numerous after several weeks of treatment as on his initial visit. Contrary to the general rule that a urethroscopy should not be performed in the presence of an acute discharge, I felt that there must be something in the urethra to account for this lack of response to treatment. I therefore urethroscoped him, after carefully washing out the urethra, and followed the urethroscopy with an intravesical irrigation. No harm resulted from the urethroscopy. At about two inches from the meatus I found a large urethral cyst which almost completely filled that portion of the urethra. This cyst formed a mechanical hindrance to the injection fluid which the patient used, although there was no interference with the urinary flow, possibly due to the powerful muscular action of the bladder. On the surface of the cyst were many fine blood-vessels. I do not know if the cyst was congenital or acquired, as the patient never had had a urethroscopy performed on him previous to his present infection. Removal of the cyst caused the gonorrhea to yield rapidly to treatment.

As a matter of diagnosis, we should remember that sometimes prolonged pressure of the urethroscopic tube at one point may cause a temporary edema in a localized spot a little removed from the point of pressure, and this edema may be mistaken for a cyst by an inexperienced observer. If we watch such a supposed cyst for a little while, we will see it completely disappear as the circulation is reestablished.

Polypi are also at times found in the anterior urethra.

Urethral warts are generally multiple, and cannot be mistaken for anything else. They are perfectly benign neoplasms, and have not the tendency to degenerate into malignant tumors which is so characteristic of vesical papilloma. As a matter of symptomatology, whenever a person suffers from excessive hemorrhage from the urethra after the passage of a sound we should suspect warts, either in the anterior or posterior urethra. In some cases the hemorrhage is very persistent and even alarming, and may continue for several days. Even after the hemorrhage has stopped, the most gentle urethral instrumentation may bring it on again. During the period of hemorrhage it is not advisable to do any instrumentation, but a retained catheter may be left in the bladder until all signs of hemorrhage have ceased. We then do nothing for several weeks, after which time, having everything in readiness to check a possible return of the hemorrhage, we attempt to remove the warts rapidly from either the anterior or posterior urethra.

The importance of the suspicion of warts in cases of urethral hemorrhage cannot be too strongly emphasized. I have seen one case in which, although the patient was in a large general hospital, the diagnosis was not made, and the patient had submitted to two perineal external urethrotomies for supposed stricture without relief. After his discharge from the hospital he was referred to my dispensary clinic, and a simple anterior urethroscopy revealed the entire anterior urethra studded with warts; and later a posterior urethroscopy showed the same condition to exist in the posterior urethra. Treatment brought about a complete cure.

Carcinoma of the urethra is very rare. Oberlander[3] has seen only three cases of it in 40 years. He has also never seen a case of true tuberculosis of the anterior urethra.

Chancre of the urethra is not so rare, but it is generally situated right near the meatus, and we rarely need a urethroscopic examination for its detection.

B. *Granulations and Erosions of the Urethral Mucous Membrane.*—These are frequently found by the beginner in urethroscopy, but really occur very seldom in the *anterior* urethra. Of course, if we explore the urethra with several bougies à boule,

sounds, etc., and do a urethroscopy immediately afterward, we will find many erosions, but these are merely the artificial product of the explorations. I have, therefore, purposely emphasized the caution either to make explorations and urethroscopy at different sittings, or, if they are to be done at the same sitting, to do the urethroscopy first. Granulations, while not uncommon in the posterior urethra, are not nearly so common in the anterior urethra. They are more often found by beginners, who view the urethra through a urethroscope without a magnifying lens. Erosions cannot be mistaken for anything else. They are simply slight denudations of the superficial layers of the urethral mucous membrane and bleed at the slight touch.

C. *Infections and Inflammations of the Follicles and Glands.*—I have put these two conditions together, because they are generally found together. An infected follicle duct opening is generally inflamed, and similarly, in the vast majority of cases when we see the mouth of a follicle duct inflamed, the inflammation is due to infection in the follicle, although, for scientific proof, we most resort to bacteriological examination. Except in cases so far advanced that the follicle is so distended with pus that it can be palpated from the outside, the *only* way we can diagnose an infected follicle duct or gland is by the use of the urethroscope. An inflamed follicle opening appears in the urethroscope as a more or less prominent hole or slit, intensely red, and often surrounded by a halo of redness. It should be remembered that normally the follicle openings are either not visible at all, or only faintly so, so that, when a follicle opening stands out prominently, and is of a bright red hue, it is inflamed, and the inflammation is generally due to infection.

An infected follicle appears as a more or less prominent opening from which pus is seen oozing. As a general thing, it is also surrounded by a halo of redness, but not necessarily so. One must be careful, however, to have the field perfectly dry, so as not to mistake lubrication for pus.

Those that decry the use of the urethroscope, and see no advantage in it, should see some of these infected follicles, and appreciate how, without such information, they must grope in the dark, searching for the cause of the persistence of a gonorrheal discharge, and, what is still more important, they will then appreciate how such a follicle can be treated, and the cause of such discharge eliminated by this means. Such treatment cannot at all be applied in any other way than by the use of the urethroscope.

In his article on "Urethroscopy and Marriage Consent" Asch[3] cites several cases of patients without any symptom of an uncured gonorrhea, in which no gonococci were found either on smear or culture, and no flocculi were found in the urine, in whom, however, the urethroscopic examination revealed small follicular abscesses in the urethra, the puncture of which through the urethroscope brought out pus containing virulent gonococci. Other pathological conditions, such as membrane formations under which gonococci were still present, were found. In all of these cases, the gonorrhea had long since ceased giving any symptoms, and the patients only came to be examined for prospective wedlock—more as a matter of routine and conscience.

D. *Infiltration of the Submucous Tissue, Causing the Different Grades of Stricture Formation.*—These infiltrations are of exceeding importance, as the forerunner of possible stricture. *One must not wait till signs of obstruction appear before diagnosing a stricture of the urethra, but must make the diagnosis by the urethroscopic picture,* before any signs of obstruction appear, and before it can be appreciated with the bougie à boule.

I have said that the urethroscopic picture of the normal urethra shows a central opening from which radiate between 15 and 20 fine lines which represent the folds in which the mucous membrane is thrown. In a practical treatise like the present it is unnecessary to discuss the various theories of stricture formation or even to go into much detail as regards the pathology of strictures. Suffice it to say that at the commencement there is a subepithelial deposit of small round cells at one small area; this is called a soft infiltration. Through the urethroscope we notice a disappearance of some if not all of these fine radiating lines at this point. *This is the first stage of stricture formation,* and it is exceedingly important to diagnose this condition, as at this stage the infiltration is still soft, and proper treatment will restore the urethra to an absolutely normal condition. The disappearance of the fine lines means a loss of elasticity at this area due to the deposit of the small round cells. The mucous membrane will also have lost some of its luster. At this stage of stricture formation, no scar tissue having yet been formed, no indication of this earliest stage of pathological change in the urethra can be appreciated with either the bougie à boule, sound, or any other instrument. The importance of urethroscopy at this stage will be seen, *as it is the only way to diagnose this condition.* A failure to diagnose and properly treat the urethra at this stage may let the golden opportunity slip by, and the condition may develop into a true stricture.

Should no treatment or improper treatment be instituted, however, the pathological processes will continue, and the next stage will set in. This is characterized by the organization of these cells, and the development of bundles of connective tissue in the deposit of small round cells that constituted the previous soft infiltration, with finally the formation of true scar tissue just as in any other part of the body. This is called a hard infiltration. When this has taken place a restitutio ad integrum is no longer possible. At this stage, moreover, a careful examination with the bougie à boule may detect a beginning thickening at this point, or even a beginning constriction. The urethroscopic picture now shows a disappearance of all the fine lines, meaning a loss of the elasticity of the urethra at this point, and we may even recognize scar tissue as clearly and distinctly as in any other part of the body.

If the pathological process continues, we will finally see distinct scar tissue, a loss of the fine lines not only at the point of stricture but for some distance in the urethra at either side of it, and a canalization of the urethra in this area. By this latter term is meant that the urethra no longer closes up beyond the end of the urethroscopic tube as the tube is withdrawn, but on account of the rigidity of the scar tissue it remains wide open so that we can actually look into the urethra beyond the limits of the urethroscopic tube. The Germans

well express this, by saying that the picture gives one the impression as if looking into the mouth of a cannon. One sees a distinct inelastic canal instead of a soft, closing urethra as the urethroscope is being withdrawn.

As stated before, however, as we approach the region toward the meatus, the fine striations are *normally* absent, and this must not be interpreted as scar tissue. The above description of the pathological formation of stricture applies to every part of the anterior urethra except that portion near the meatus.

Before closing this description of the urethroscopic picture of pathological conditions in the anterior urethra, I would like to record a very rare condition, which I have encountered only once in all my experience, but which it is very important to recognize.

For want of a better name, I have called it membranous urethritis following gonorrhea. This condition has been very seldom described, and even some of our larger textbooks devoted to urology, make absolutely no mention of it. Asch,[2] however, describes a somewhat similar condition under the title of mebranous formation. The disease is very difficult to cure and is the cause of the persistence of the gonococcus for indefinite periods of time, but with very little urethral discharge. I do not think it can be cured except by treatment through the urethroscope, and it certainly cannot be diagnosed without resorting to urethroscopy, as it presents no symptoms, except a very scanty urethral discharge with the persistence of gonococci for months—a symptomatology which may be due to very many other conditions.

The urethroscopic picture, however, is very characteristic. One sees a dirty grayish membrane covering the mucous membrane of the urethra. Sometimes the membrane covers large areas, and sometimes it is only seen in patches. It is very easily removable in parts, and the mere introduction of the urethroscope causes pieces of various sizes to separate. One often sees the small detached particles rolled up in clumps in various parts of the urethra, looking not unlike the particles which one encounters in infants upon retracting an adherent prepuce. I believe that the small particles encountered are caused by the breaking up of the larger patches either by the urethroscope or by the urinary stream. It seems that the gonococci flourish luxuriantly beneath the membrane, and are unaffected by any irrigation fluid, and this is the cause of their marked persistence. The treatment will be given later under the proper caption.

In the above description of the pathological conditions encountered in the anterior urethra with the aid of the urethroscope, I have strictly adhered to my intention to make it as *practical* as possible. I have, therefore, purposely omitted the description of rare or unusual findings, such as cases of primary carcinoma or tuberculosis of the urethra, which are at times reported as medical curiosities. If we consult the vast and exhaustive German literature on urethroscopy we shall find a great array of pathological conditions described and classified as seen in the anterior urethra. Conditions are described as psoriasis of the urethral mucous membrane, eczema of the urethra, etc. Now, I have no quarrel with these authors, and admire their thoroughness and deep study of the subject. Of course, we find unlimited variations and combinations of conditions in the urethra just as in any other mucous membrane, but to give each shade of differentiation a different name, as some of the European authorities have done, is to my mind intensely impractical. It has, moreover, absolutely no bearing upon the treatment or cure of chronic gonorrhea or any of its sequelæ. It is for this reason that I have described only those conditions which one is apt to meet and which have a bearing upon the diagnosis and treatment of gonorrhea.

VI. *Treatment of Pathological Conditions Through the Urethroscope.*—Under this caption I will only describe the urethroscopic treatment of urethral lesions. Obviously certain conditions diagnosed by the use of the urethroscope such as strictures, require treatment other than urethroscopic, such as dilatations with the Kollmann dilator, treatment by sounds, etc., but description of such treatment is not within the province of this paper. I will only describe such treatment as can be given through the urethroscope and how the treatment is applied.

One of the most frequent conditions encountered is the presence of infected follicles in the urethra. As previously stated, these are more often found on the upper wall of the urethra. They are often the cause of the chronicity of gonorrhea, as well as of the frequent relapses and reinfections. The destruction of these follicles may be accomplished in one of four ways: (1) By the use of chemicals, (2) with the urethroscopic knife, (3) by electrolysis, and (4) by the high frequency current.

There are other methods also, such as injecting chemicals with a fine syringe into the follicle openings, curettings, etc., but the four methods just enumerated are the ones most often employed, and sufficient for all cases.

Every one of the first three methods should certainly be mastered, as different methods must be employed for different conditions as will presently be described. The high-frequency method, lately advocated by Swinburne,[30] seems to be a very simple and efficacious method, but it requires the use of a high-frequency machine, an expensive luxury not enjoyed by everyone. It is certainly not worth while for one who does not specialize in genito-urinary work, and who is therefore not apt to treat bladder tumors, to get the machine simply for the purpose of destroying urethral follicles. As a matter of fact, every kind of follicle can be successfully treated by one or other of the first three methods.

1. *Technique of Destroying Follicles by Chemical Means.*—For this purpose silver nitrate is the best chemical. A minute piece of the crystal is fused upon the end of a very slender metal probe, care being taken that the end is not too thick to enter the mouth of the duct. After the urethroscope is *in situ*, we mop the urethra dry with a cotton applicator, and expose the follicle opening to be treated. Should it at any time become necessary to do any more mopping, it is best first to remove the lamp before the applicator is employed. This is done for the following reason: It is, of course, possible and more convenient to do the mopping with the lamp

in situ, but, unless the cotton is wrapped around the applicator with unusual tightness, it often happens that some small filaments of cotton come off and stick to the lamp. This ordinarily does no harm unless it interferes with vision, if any other method (knife or cautery) is employed for the destruction of the follicle. But if we use a chemical these filaments of cotton will take up some of the chemical while the probe is inserted, and parts of the urethra which we do not intend to treat may get the effect of the cauterization.

Having mopped the urethra dry, and having the follicle opening directly in view, we insert the probe carrying the caustic directly into the follicle opening as far as possible. It takes some experience to do this; in fact, more experience than when handling the knife or cautery. With the two latter methods, no harm is done by allowing the tip of the knife or cautery point to rest gently on some portion of the urethral mucous membrane, while we are groping our way to the follicle mouth. This is especially true when employing the galvanic needle or high-frequency method as we do not turn on the electric current until we are definitely within the duct. With the silver probe, however, any portion of the mucous membrane that it touches is immediately cauterized, a most undesirable result. It may perhaps be well for the beginner to manipulate the urethroscopic tube in such a manner that the follicle opening is near the edge of the tube, but away from the lamp. He may then run the probe along the edge of the tube, and so hit the opening. With experience, however, we can get the probe directly into the opening without touching any other portion of the urethral mucous membrane.

We try to get the probe to the very bottom of the follicle so as to destroy it as completely as possible. After the cauterization has been accomplished, we remove the probe as carefully as possible so as not to touch any other portion of the urethra. The beginner may follow the same procedure in removing it as in introducing it, namely, to keep to the edge of the tube. We immediately mop the urethra dry, so as to minimize the caustic action on the rest of the urethra.

We now slowly move the urethroscopic tube a little forward, looking in all the time in search for more follicles or other pathological conditions. Should we find two or more infected follicles very close together, it is not good policy to cauterize them all, as the resulting local reaction may be too severe. We simply treat one, and note the others on the history chart or diagram. Follicles, at some distance from each other may, however, be treated at the same sitting.

2. *The Destruction of Follicles with the Urethroscopic Knife.* (Fig. 3, B.) Having located our follicle as before, and decided to slit it open with the knife, we first make a careful inspection of it, and bring it clearly into view. We should make up our minds beforehand just how much and how far we intend to cut, and then go about it boldly and deliberately. The reason for this is, that as soon as the cut is made the portion of the urethra in view is so rapidly filled with blood, that our vision is obscured. Unless, therefore, the entire procedure is done rapidly we will not be able to finish our undertaking. There is no use of experimenting with the knife, by slitting up a portion of the duct and seeing how we get along. Unless we have our plan beforehand, we should not undertake it. In some cases it may be well to put the mucous membrane on the stretch in a drumlike fashion. The inexperienced is likely to be too timid with the use of the knife, but with ordinary care there is absolutely no danger in its use, and no danger in cutting too deeply.

3. *The Destruction of Follicles by Electrolysis.*—In the use of electrolysis, it is necessary to employ two different sources of electricity—one for lighting the urethroscopic lamp and the other for furnishing the galvanic current for the needle. If we employ the same source for both, the patient may get a very severe shock.

I generally employ a small dry-cell battery for lighting my urethroscopic lamp, and the regular Edison street current, with a rheostat, for the electrolysis needle. We put the cords upon the rheostat and connect the cord going to the positive pole with a flat abdominal plate or sponge which has been moistened with either salt water or vinegar water. If a plate is used, this is covered with a towel, wet as above, and the whole is applied to the patient's abdomen. The cord from the negative pole of the rheostat goes to the handle carrying the electrolysis needle. If we do not know which pole of the rheostat is negative and which positive, we determine this in the following manner: We insert the tips of the cords into a glass of salt water and turn on the electric current to its full extent. We shall soon notice very many bubbles collect at the end of one of the cords; this is the one connected with the negative pole. There may be a few bubbles also at the other pole, but the negative pole cord is the one at which they collect in large numbers.

Having located our follicle opening and mopped the urethra dry at that point, we insert the needle carefully into the opening, as far down as possible. We try as much as possible to get the needle directly into the small opening, so as not to touch any other portion of the urethra, which may cause bleeding and necessitate more mopping. We must also be careful not to touch the lamp carrier, as this may extinguish the light for the time being.

We start by having the rheostate at zero. Having our needle in the follicle opening, we connect the cord with the needle holder and gradually regulate the current with the rheostat, increasing the strength of the current till it is as much as the patient will stand, and until we see white bubbles come from the follicle mouth. We leave the needle in the follicle, with current turned on, for a few minutes, until we see that the follicle is entirely destroyed. If there should occur frequent touchings of the electrolysis needle with the light carrier it may be advisable to turn off the light while the electrolysis current is on, and then shut off the current from the needle while we look in to see how things are progressing. The experienced urethroscopist will, howver, have no difficulty in avoiding contact of needle and lamp.

In Wossidlo's clinic in Berlin it was the custom to use a milliamperemeter to regulate the amount of electrolysis; the current was increased until the milliamperemeter showed that there was passing only two or three milliamperes, and this was kept

up for two or three minutes. Experience has shown me, however, that this is neither necessary nor wise. Our object is to destroy the follicle, and we employ as much electrolysis and for as long a time as necessary to accomplish this result. We cannot give too much, as the patient will object.

We may by this method destroy as many follicles as we choose, or as much as the patient will stand at one sitting. The local reaction is very slight compared to the other methods.

4. *Destruction of Follicles with the High-Frequency Current.*—Swinburne[30] employs the Buerger instrument, and describes his method as follows: "During the examination, and during the treatment I always have an irrigator attached to the instrument, so that there is a constant stream of cold, sterile water running; and in turning on the electric current I simply leave it on for a second or so. If the water is not running, the sensation of burning is a little greater than when it is running. Patients very quickly get used to it, and do not mind it, though some make a good deal of fuss. I always begin at the deepest follicle that I can find and work my way forward. In some cases there are only two follicles, and in some, as I have reported, there have been as many as eight. At each follicle I turn on the electric current two or three times, doing it for one or two seconds each time, according to the way the patient acts. I have made examinations and treatment once a week; in the acute cases the patient uses his injection of silver once or twice daily at home during the interval. I do not recall having made more than three applications of the fulguration in any one case—*i.e.* in the acute cases. In some chronic cases I have made, I think, even four, perhaps more. This method has proved quite satisfactory in my hands."

It has been suggested, more upon theoretical grounds than anything else, that inasmuch as the follicle ducts do not run a straight course it is impossible to destroy them completely; that all we do is to close up the mouth of the follicle duct, thereby really doing more harm than good. It is true that if we were to make a microscopic section of the urethra after treating a follicle by any of the above methods, we would, in all probability, find that in a certain number of cases we have not destroyed the entire follicle. But for all *practical* purposes, if we discriminate as will be presently described, which follicles are to be treated by which particular method, the above objections will be seen not to hold.

Of course, if we have a very inflamed follicle, filled with pus and harboring gonococci, and if we close up the opening which drains this follicle, leaving the virulent infection within, we actually do harm. In such a case the germs continue to increase, the inflammation increases, as well as the pus within the follicle, and if the duct has been securely closed by our treatment an abscess will form, to break out externally, or anywhere at the point of least resistance, often in the most undesirable of places. But if clinically there is no inflammation within the follicle, even if some few gonococci should still lie dormant therein, the firm closure of the duct by electrolysis (not silver nitrate) will soon cause such gonococci to be shut off from the moisture of the urethra and all other nutrition, and they will eventually disappear. Whether this is the correct explanation or not, one thing is certain: that clinically, and later bacteriologically, such a follicle is destroyed, and no gonococci are harbored therein.

We will now take up for consideration the very important question as to which follicles and ducts are to be treated by chemical means, by knife, or by electrolysis. Only general rules can be laid down as there are endless varieties in the appearance of the follicle openings corresponding to the different grades of inflammation or infection present. As a general rule, I do not think it desirable to treat by chemical means those follicles which show much inflammation about their duct openings, or where much pus is seen oozing from the mouth of the duct. The chemical action of the silver nitrate will but increase the inflammation of the surrounding tissue, thus reducing its resistance, and making a more favorable soil for the multiplications of the germs. As a matter of fact, follicles that show much discharge had better be left alone, as the drainage is evidently good, and ought not to be interfered with. If the discharge has stopped, but the halo of redness is still seen, showing that there is some slight inflammation still present, we may, by the application of silver nitrate cause the inflammation to disappear. Follicles with very large openings are also better treated with chemical means than by knife or cautery. Follicles in which the openings are very minute, with pus exuding, and no gonococci found either on smear or culture, may be destroyed by electrolysis on the theory that, should there still be a few gonococci lying dormant in the interior of the follicle, the firm closure of the duct will cut off their nutrition from the urethral moisture, and cause them to be either encapsulated or otherwise killed from lack of nutrition. Follicles which are seen to be filled up with pent-up secretion, but in which the urethral opening of the duct is very small and the drainage therefore not as good as it should be, are best slit up with the knife. Our object here is not to destroy the follicle but to provide better drainage. With the knife we may also remove hard concretions which we may sometimes feel in the follicle. The high-frequency current may be employed wherever the electrolytic needle is employed. It seems to be a more convenient method of destroying a follicle, as well as a more certain method.

Urethroscopic Treatment of Other Pathological Conditions Found in the Anterior Urethra.—Warts in the urethra can easily be seen and treated through the urethroscope. They may be removed by either the high frequency current or the intra-urethral snare, by any sort of biting forceps which can be introduced through the urethoscopic tube, by slow cauterization with chemicals, or by electrolysis with the needle attached to the negative pole, just as has been described in the destruction of the infected follicles by this method. In most cases, however, the best method of removal is simply to scrape them away with the edge of the urethroscopic tube. This may not make a very pretty operation, but it is the most practical method in the vast majority of cases. As a matter of fact, many of the warts are scraped off by the introduction of the urethroscope.

The treatment of cysts is simply to tear them apart, with a needle such as is used for electrolysis or with the urethroscopic knife. There is very little bleeding following such destruction.

Urethral polypi may be removed either with the intraurethral snare, or by means of a special intraurethral scissors or biting forceps. The base, after removal, may be touched with silver nitrate.

Soft infiltrations may be treated through the urethroscope by swabbing the parts either with pure tincture of iodine or 2 per cent. silver nitrate solution. This swabbing is repeated every five to eight days, according to the reaction produced. As soon as all signs of local inflammation have disappeared, dilatation treatment, at first by sounds and later with the Kollmann dilator if necessary, should be instituted. The detail of this latter treatment is beyond the province of a paper devoted primarily to urethroscopy, but it should be instituted at the earliest possible moment. It is to the great credit of urethroscopy that such treatment, dependent upon early urethroscopic diagnosis, can be instituted at a time when no symptom of beginning stricture is evident, and that such early treatment will prevent a stricture with all its inconveniences and deleterious consequences. The treatment will cause an absorption of the small round cell infiltration, and will bring back the urethra to a perfectly normal condition.

The treatment of hard infiltration I believe to be beyond the province of the urethroscope. It is in fact already a stricture and should be treated as such. Asch[2] suggests that at the commencement we may try the same treatment by swabbing as was advised for soft infiltration. Of course there are borderline cases, in which one may be in doubt whether the condition has advanced beyond the soft stage into the hard one, and in such cases the swabbing method may at times bring about a cure; but I doubt whether in true hard infiltration such result can be obtained. There is no harm in trying for a little while, but dilatation treatment must not be too long postponed. Asch also suggests the use of the intraurethral curette for hard infiltrations. I have never tried this method, for theoretically, from a study of the pathology of the condition, I cannot see how it can possibly be of benefit.

Erosions of the mucus membrance are to be treated by swabbing them with a 10 per cent. solution of silver nitrate. In making such applications one should be be careful to have only a minute amount of cotton on the applicator, and not to have the solution dripping from the applicator so as to flow all over the rest of the urethra. The application is to be followed immediately by dry swabbing.

The treatment of membranous urethritis (above described) must be persistent and prolonged, and requires much patience on the part of both physician and patient. It is necessary to remove as much of the membrane as possible, and touch up the underlying mucous membrane with one or two per cent. silver nitrate. The removal of the patches causes no bleeding. Asch[2] has suggested curettage of the urethra for the relief of this condition. Whatever method may be employed, it must be persisted in until all tendency to membranous formation has disappeared.

REFERENCES.

1. Aronstam, Noah E.: The Various Gross Pathological Conditions of the Urethra Revealed by Urethroscopy. *Urol. and Cutan. Rev.*, Sept., 1915.
2. Asch, Paul: Twelve Lectures on the Modern Treatment of Gonorrhea in the Male. Rebman Co., 1915.
3. ———: Urethroscopy and Marriage Consent. *Urol. and Cutan. Rev.*, Tech. Suppl., Oct., 1913.
4. Ballenger, Edgar G., and Elder, Omar F.: The Treatment of Gonorrheal Folliculitis by Cauterization with the D'Arsonval Current. *Jour. Amer. Med. Assn.*, May 27, 1916.
5. Begg, Colin Luke: Organic Stricture of the Urethra. *Am. Jour. Surg.*, Dec., 1916.
6. Blumenthal, Franz: Die praktische Bedeutung der Urethroscopia anterior. *Ztschr. f. Urol.*, Band 8, erstes Heft, 1914.
7. Broadman, Joseph: The Need of the Urethroscope in the Diagnosis of Pathological Conditions in the Anterior Urethra. *New York Med. Jour.*, Aug. 14, 1915.
8. Chetwood, Charles H.: The Practice of Urology; A Surgical Treatise on Genito-Urinary Diseases Including Syphilis. 2nd edit., 1916.
9. Dorrance, George Morris: Treatment of Impassable Stricture by the Use of an Air-Dilating Urethroscope. *Pennsylvania Med. Jour.*, Oct., 1913.
10. Englander, S.: The Urethroscope; Its Importance in Urethral Pathology, Diagnosis and Treatment. *Cleveland Med. Jour.*, Vol. XII, No. 7.
11. Geiringer, David: A Direct-view Irrigating Urethroscope for Diagnosis and Treatment. MEDICAL RECORD, Sept. 6, 1913.
12. Gordon, G. S.: A Combined Examining and Operating Urethroscope. *Am. Jour. Urol.*, Sept., 1915.
13. Greene, Robert Holmes, and Brooks, Harlow: Diseases of the Genitourinary Organs and the Kidneys, 1912.
14. Guiteras, Ramon: Urology, 1912.
15. Howard, H. W.: The Rôle of the Urethral Glands in Chronic Urethritis. Trans. Amer. Urol. Assn., 1916, p. 74.
16. Hübner: Ueber die accessorischen Gänge am Penis und ihre gonorrhoische Erkrankung. *Berl. klin. Wchnschr.*, Apr. 21, 1913.
17. Hühner, Max: Intravesical Irrigation in Acute Gonorrhea. MEDICAL RECORD, May 6, 1911.
18. Joly, J. Swift: An Operating and Observing Urethroscope. *Lancet*, Jan. 10, 1914.
19. Kaufman, Joseph: Folliculitis Urethralis. *New York Med. Jour.*, Mar. 24, 1917.
20. Keyes, Edward L., Jr.: Diseases of the Genitourinary Organs.
21. Lefort, Albert: Gonorrheal Infection of the Urethral Glands. *New York Med. Jour.*, Apr. 22, 1916.
22. Lohnstein, H.: Zur endoskopischen Diagnostik und Therapie der proliferierenden Urethritis. *Zeitschr. f. Urol.*, 1914, p. 529.
23. MacGowan, Granville: A New Urethroscope. *New York Med. Jour.*, May 2, 1914.
24. MacGowan, Granville: Intraurethral Operations. *Jour. Am. Med. Assn.*, Sept. 18, 1915.
25. Mobley, Chas. A.: Endoscopy: Its Value in Urologic Practice. *Jour. S. Carolina Med. Assn.*, Dec., 1915.
26. Oberlander, F. M.: The Clinical Significance of Urethroscopy. *Am. Jour. Urol.*, Jan., 1913.
27. Peterkin, G. S.: A Conception of Urethral Stricture That Admits of Scientific Treatment. *Northwest Med.*, Dec., 1916.
28. Steiner, Saul: Urethroscopy in Chronic Gonorrhea. *Urol. and Cutan. Rev.*, No. 6, 1914.
29. Stümpke, Gustav: Ueber gonorrhoische Granulationen. *München. Med. Wchnschr.*, July 14, 1914.
30. Swinburne, George Knowles: Fulguration in Gonorrheal Folliculitis, MEDICAL RECORD, July 21, 1915.
31. Windell, J. T.: Modern Methods of Urethral Inspection. *Urol. and Cutan. Rev.*, Mar., 1916.
32. Wossidlo, Erich: Die praktische Bedeutung der endourethralen, endoskopischen Eingriffe. *Ztschr. f. Urol.*, 1914, p. 161.
33. Wossidlo, Hans R., and Wossidlo, Erich: The Progress of Urethroscopy; The Diagnosis and Therapy of Diseases of the Urethra. *Urol. and Cutan. Rev.*, Tech. Suppl., Jan., 1913.

34. Young, H. McClure: Presentation of a New Urethroscope. *Jour. Missouri Med. Assn.*, Feb., 1913.

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INTUBATION IN LARYNGEAL DIPHTHERIA;

WITH NOTES ON SIXTY-FOUR CASES

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Before discussing the subject in question I deem if opportune again to recall the great services rendered by the master of intubation, the late Dr. Joseph O'Dwyer of this city, who after numerous failures and discouragements finally succeeded in presenting to the world a priceless gift in the form of an intubation set, which has saved multitudes of children from gradual, agonizing death. Before this marvelous invention was fully accepted by the medical profession he had been frequently humiliated by incompetent and possibly envious critics, rather than honored, remunerated, and decorated, by the State or country, or perpetuated in bronze or granite, as he surely would have, had he been as successfully engaged in the acts of destruction, in the art of warfare.

During the past five years I have had the privilege of intubating sixty-four children suffering from laryngeal diphtheria, with but one fatal issue. I feel certain that this favorable result was due to the facts, firstly, that the physicians in attendance had promptly administered ample doses of antitoxin to neutralize the diphtheritic toxin; and secondly, that they used the good judgment to invite me to perform the operation while their patients were still in fair vitality, and not gasping for the last breath of air, as is often the case with those sent to hospitals for contagious diseases. It may be noted that all of these children remained in their own homes, often in most undesirable surroundings, and without skillful nursing. Four of them lived out of town, requiring two or three hours' journey to reach. To emphasize the absolute feasibility and perfect safety with which intubation can be performed even under the most trying conditions, let me briefly relate the following case:

L. P., 4 years old, the son of Slavish parents in the poorest district of Perth Amboy, N. J., had been ill for three days before consulting Dr. S. Finding involvement of the nasopharynx and larynx, he immediately administered 10,000 units of antitoxin and prescribed other remedies ordinarily in use. During the night the child got very much worse and the laryngeal stenosis had assumed alarming intensity by the time we arrived there. Owing to considerable tumefaction and unusual depth of the larynx, intubation was somewhat difficult, but the boy obtained prompt relief with introduction of the tube. After giving another 10,000 units of antitoxin and ordering absolute rest, we left the child, practically without any specific directions, under the care of the mother, who was entirely helpless and unable to understand our language. Five days later we returned for extubation, and, to our great amazement, were met at the door by the little patient, tube still in the throat, but apparently perfectly happy. Extubation was comparatively easy, and the boy required no aftertreatment whatever.

This case, among several similar ones, has fully convinced me that intubation can be performed without hesitancy even in the humblest of homes without any preparations or skillful aftertreatment. This optimism is not shared by a goodly number of clinicians, one group of whom, discarding intubation entirely, as a dangerous operation, and preferring tracheotomy, with the certain dangers and disadvantages of hemorrhage, secondary infection, tracheal fistula, stricture of the larynx, delayed convalescence from a slowly healing wound, and a disfiguring cicatrix; and another group of physicians, who, though recommending intubation in preference to tracheotomy, are nevertheless quite timid in accepting it as the operation of choice in all cases of laryngeal stenosis. They lay particular stress upon the risk of the tube causing ulceration of the larynx, or the danger of return or increase of the dyspnea, either by pushing false membrane before the tube or blocking it while in the larynx, and also of expulsion of the tube by coughing or otherwise. Now I do not at all hesitate to say that those who claim intubation to be a dangerous operation have never had the opportunity or inclination to learn the operation under the guidance of a competent instructor, nor have they given it a fair trial. In the many years of experience with intubation I have never met with the aforementioned difficulties, and I believe that this is due, firstly, to the fact that with the early administration of antitoxin the virulent types of diphtheria of olden times are of very exceptional occurrence nowadays; and secondly, to the care and scrutiny in the selection of the cases and strict attention to the principles and technique as handed down to us by the late Dr. O'Dwyer.

To begin with, we must be absolutely positive that the cases in question actually require intubation. On several occasions I have been invited to intubate children who, instead of suffering from laryngeal stenosis, were in reality in the last stages of pulmonary edema, complicating pulmonary or cardiac disease. Recently I was called to intubate a fifteen-months'-old infant supposedly dying from diphtheritic laryngeal stenosis. The baby did have tonsillar diphtheria, but I could find no trace of laryngeal involvement, the noisy breathing having been due to intense dyspnea accompanying myocardial disease. I declined to intubate, and advised heart stimulants. The parents of the child, however, could not be reconciled to this view, seeing that the "baby was choking," hence insisted upon getting a throat specialist to intubate. This was done two hours later, with the result that the baby died during the operation.

The next point of importance before proceeding with intubation is to be certain that the instruments are in perfect working order. Particular attention should be paid to the construction and condition of the tube, more particularly that it be free from rough or sharp metal edges, for otherwise, when during the act of swallowing the epiglottis and upper end of the tube are pushed posteriorly by the backward pressure of the base of the tongue, and the lower end of the tube is pressed forward, the gliding movement of the rough tube is very apt to injure the anterior wall of the trachea and thus to produce the ulceration of the larynx previously spoken of. We must also note that the obturator fits snugly and that the tube selected corresponds to the size of the child's larynx.

After having ascertained these details to our entire satisfaction we may then proceed with the

operation. The patient is placed upon a strong table, and, from shoulders down, wrapped tightly in a small sheet or blanket, fastened by several strong safety pins. An assistant standing at the head of the table inserts a mouth gag in the left angle of the child's mouth, well back between the teeth, and opens the gag as wide as possible without using undue force. The same assistant steadies the patient's head and holds the gag in place. The operator, standing to the right and in front of the patient, holds the introducer lightly between thumb and fingers of the right hand, with the thumb resting just behind the button that serves to detach the tube, and the index finger in front of the trigger underneath. The index finger of the left hand is now gently passed into the pharynx, down to the beginning of the esophagus, and by bringing the finger forward in the median line and raising and fixing the epiglottis, the tube (threaded with silk to prevent it from slipping into the stomach in case it is wrongly put into the esophagus) is gently introduced along the left index finger into the larynx. The left index finger is then quickly put on the shoulder of the tube, and the introducer, with obturator, is withdrawn after pushing its upper button forward. After the tube has been securely pushed home the mouth gag is removed, but the silk thread is left in the tube for about ten minutes, until it has been ascertained that the dyspnea is relieved and no loose membrane is crowded down in the lower portion of the trachea. In removing the thread, the finger is reinserted to hold the tube in place. As a rule, introduction of the tube is followed by an active spell of coughing, which generally expels mucus and bits of membrane that may have been lodged in the upper respiratory tract. Should we fail, however, to relieve the dyspnea, it is advisable immediately to remove the tube by pulling the thread, to induce emesis and expulsive coughing by tickling the child's palate and throat with spoon or finger, and then to reintroduce the tube, or, if the case be very urgent, to use a smaller tube temporarily. There is never any danger in repeated intubation, or even failure to intubate, provided the operation is performed very gently—more particularly so as not to force a false passage—and the index finger is not allowed to rest upon the upper portion of the larynx too long, so as to obstruct the air passage.

The aftertreatment consists in keeping the patient quiet, preferably in a recumbent posture, application of an ice collar around the neck, and administration of antitoxin (if needed) and small doses of bromide, strychnine, and stropanthus. Feeding may be resumed a few hours after intubation: in babies, breast or cow's milk in small quantities, by means of a spoon; in older children, semisolid substances, such as custards, wine jelly, junket, soft-boiled egg, ice cream, and the like. Small pieces of ice may be given instead of water. It is often of advantage to feed the child with the head lower than the body.

With the absolute subsidence of the dyspnea and temperature, which usually occurs in from three to seven days, we may proceed with extubation. It is always advisable to have another tube ready for immediate reintubation in case removal of the tube is followed by return of intense dyspnea. The patient is prepared in the same manner as for intubation. The extractor is guided along beside the left index finger and very gently inserted into the aperture of the tube. The engaging terminal blades of the extractor are opened by lightly pressing upon the upper arm of the extractor, which is then promptly withdrawn from the throat. This maneuver is not always very easy, but even repeated failure will do no harm, provided no force be employed. Occasionally one succeeds in removing the tube by "stripping" the larynx from below upward with one hand, at the same time grasping the head of the tube between the index and middle fingers of the other hand.

As a rule, these procedures end the operation. On rare occasions, however, there is an immediate return of the asphyxia. In this event, unless the dyspnea assumes extraordinary gravity, we may administer an emetic (apomorphine) or minute dose of morphine and atropine hypodermically, and spray throat with a one or two per cent. solution of cocaine until the spasmodic stenosis has been relieved.

A few months ago I had the opportunity of convincing myself of the efficacy of this preventive measure in a very severe case of post-extubation asphyxia, although it required about twenty minutes to accomplish it. I recall but one instance where I was obliged to reintubate three times, and the case failed to show diphtheria bacilli after repeated laboratory examinations. In these cases, which are generally spoken of as "retained intubation tubes," we usually remedy the trouble by gradually introducing larger tubes with each reintubation and by local attention to the nose and throat.

To counterpoise the admonition frequently given, "never to intubate patients who are extremely asphyxiated" (*e.g.* E. W. Goodall, *Intern. Med. Ann.*, 1907), I may be permitted to relate the following instructive experience:

J. D., 5½ years old, had been coughing croupy for three or four days, and, as the parents were poor, was treated by them with the usual home remedies. In the middle of the night his condition became so alarming that they hurried for a neighboring physician. Finding that the boy was suffocating from diphtheritic laryngeal stenosis, he promptly summoned me to perform intubation. As I entered the dingy and foul smelling room I was greeted with "It is too late, Doctor." Indeed, the boy was actually in the last stage of asphyxia, his face bluish black, his eyes protruding and suffused, his breathing suspended, and his entire body perfectly limp—apparently dead but for a barely audible fluttering of his heart. I remarked to my colleague that since we were not going to be paid for our visit anyhow, we might as well gain something from the additional practice in intubation. Thereupon I quickly inserted a tube in the boy's larynx, carried him to the front of an open window and injected one-twentieth of a grain of strychnine hypodermically, while Dr. F. proceeded with artificial respiration. There was shortly a marked change for the better and the child improved so rapidly that, after administering 10,000 units of antitoxin, we were able to leave him under the care of his mother within about an hour after our arrival. I extubated six days later and the boy recovered fully without any further attention.

I need hardly add that after this and similar experiences we could not help but become enthusiastic advocates of intubation in preference to tracheotomy.

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THE REORGANIZATION OF THE NEW YORK CITY CHILDREN'S HOSPITAL AND SCHOOL.

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THE reorganization of the New York City Children's Hospital and School, which was begun in 1915, marks an important epoch in the care and treatment of the feebleminded.

The history of the Randall's Island institution dates back to the mid 30's or shortly after the property was acquired by the city of New York. The first institution on the island was a branch of the city almshouse. In 1848 the first extensive group of buildings was finished and occupied, and the report for that year states that it is the "most complete, convenient, and elegant establishment for the rearing of young orphans of the city's care known in the world."

From the first it is evident that an indiscriminate variety of cases of all ages was admitted; this was even further amplified after the institution came under the supervision of the Department of Charities and Correction in 1860 by the addition of prisoners from the Penitentiary and Workhouse on Blackwell's Island. These prisoners, who were of the usual workhouse type, were required to perform much of the labor in and about the institution, and they remained in this capacity on the island until the division of Charities and Corrections into separate departments. The almshouse nature of the institution is indicated as late as 1914 by the perusal of the New York Charities Directory (p. 390) for that year. The following is quoted therefrom: "The Randall's Island institutions also receive defective children who are too young to be sent to institutions for special training, or who for other reasons will not be received by other institutions. In fact, any destitute, sick, or defective child, whose particular circumstances and condition do not fall within the requirements of any other institution is likely to find his way to Randall's Island." In 1914 efforts to bring about a more uniform classification were inaugurated and by 1915 almost all the inmates of "normal" mentality, including cripples, were transferred elsewhere.

It is interesting to trace the origin of the name of the institution—The Children's Hospital and School—which is singularly appropriate and avoids the use of either of the objectionable words—"feebleminded" and "asylum." The progressive increase in size and the wide diversity of cases resulted in the development of separate institutions. In 1875, there were separate reports from the Randall's Island Hospital, the Infants' Hospital, the Idiot Asylum, and the School for Feebleminded. A consolidation of all except the Infants' Hospital was effected in 1892. Ten years later all the institutions were united under one superintendent and named the Randall's Island Hospitals, Schools, and Asylum. This title was subsequently changed to the Children's Hospitals and Schools, and modified in 1916 to the Children's Hospital and School.

Practically all the buildings, which were the "most complete in the world" seventy years ago, are still standing and in use, although badly worn and unfit for occupancy. To the original nucleus, scattered over a long period of years a few additions have been made, notably the nurses' home, power house and laundry, and gymnasium; but with two exceptions, the reception hospital and Jacobi ("G"), each of 80 beds, no new accommodations for patients have been provided since the late 60's or early 70's. Furthermore, the physical plant was allowed to deteriorate as fast as natural processes would permit. Realizing the necessity of rehousing the patients, Commissioner Kingsbury obtained an appropriation of $600,000 in 1915 and $1,000,000 in 1916, and at this writing there are twelve new buildings under construction, ten of them wards to accommodate 1,400 patients. These structures are being built in the most substantial manner and will be the last word in the housing of the feebleminded. The plans were drawn and supervised under the direction of Dr. Walter E. Fernald of the Massachusetts School for Feebleminded at Waverley. It is hoped the new buildings will be occupied during 1918, and at the same time that many of the outworn structures will be razed. Another appropriation of at least $1,500,000 will be required to complete the modern housing of the entire institution to care for 2,000 patients.

The medical work and administration were formerly carried on by a medical board, serving gratuitously, composed of practising physicians residing in the city. They were assisted by a staff of resident internes varying from one to four in number and receiving a small compensation (usually $10 per month).

The reorganization brought about in 1916 placed the supervision of all departments of the institution in the hands of a medical director and a staff of nine physicians, including a pathologist. The old medical board was reorganized as well and renamed the medical council, the executive function of the former being transferred into advisory and consulting. In addition to the latter, Commissioner Kingsbury appointed an advisory board composed of prominent citizens, both lay and medical, interested in various sides of the problem.

The clinic for atypical children, formerly independent of the institution, but a part of the central office organization of the Department of Public Charities and located successively at the Post-Graduate Hospital, Bellevue Hospital, and 57 East 125th Street, was moved to Randall's Island in August, 1917, and became an integral part of the institution. the name "Mental Clinic" having been previously substituted for its former title.

The staff of the clinic, consisting of two physicians, two nurses, two stenographers, and one psychologist, became united with that of the institution and works interchangeably with the latter. This combination gave a total of twelve physicians and two psychologists to the institution, probably the largest staff of any hospital of similar nature in this or any other country, but really too small to take care of the 3,000 cases which pass annually through the clinic, or the 1,000 or more new admissions each year to the institution which has a daily average census of over 2,000.

The clinic on the island is open daily from 9 until 11, except Monday and Tuesday, when it is held at the Cumberland Street Hospital, Brooklyn, to accommodate the Brooklyn and Queens patients.

Patients are referred from public and private agencies, by the courts, and by physicians, or they may come voluntarily or through their families or friends. Other mental clinics and the ungraded classes of the Department of Education also refer cases for admission. In each instance when they have been previously examined or have been known to charitable organizations, an abstract or transcript of record is asked for to save wasteful repetition of work. All applicants for admission to the Craig Colony for Epileptics, to Letchworth Village, Newark, to the Rome Custodial Asylum, or to the Syracuse State Institution for Feebleminded pass through this clinic, and many of the cases come to Randall's Island pending admission in one of these up-State institutions.

Only recently has a definite policy been formulated as to the scope and function of the institution. Now only the feebleminded, or those suspected of being feebleminded, and the epileptic who reside in Greater New York are admitted. Borderline and problem cases are also received for study and disposition. More and more is the institution developing into a clearing house where intensive study, treatment, and training may be carried out according to the most approved and latest methods, and with this is disappearing the custodial asylum feature which has represented so much of the work of the institution in the past. To achieve this end, the accumulation of the low grade and helpless patients of idiot class must be relieved by adequate State care of the feebleminded. Basing our figures on the averaged estimates of a number of reports (Fernald, Johnstone, Goddard, and Kuhlmann) and surveys (Porter County, Ind., Nassau County, N. Y., and New Castle County, Del.) the State of New York has suitable provision for only one-tenth of the feebleminded in the State. In view of this fact, it is evident that the Randall's Island Institution cannot either meet its share of this public need or accelerate sufficiently the movement of population within its walls, until the State provides proper receptacles for the cases which must go to State institutions, and only then will the institution assume what I think is its real place in the commonwealth.

Admission to the institution is obtained usually after the patient has been seen at the mental clinic and a report received from the Bureau of Social Investigation as to the acceptability of the case as a public charge. Relatives able to reimburse the city wholly or in part are expected to do so. The large majority of the patients are referred to the institution by other agencies and are held without commitment. About ten to fifteen per cent. (under the age of 16) are committed by the Children's Court, and a very small percentage are committed directly as feebleminded under Chapter 361 of the laws of 1914.

The work of the institution consists of two main divisions, medical and educational. On admission the following are routine procedures: Culture for *B. diphtheriae*, Wassermann test, Schick test, typhoid vaccination, vaginal smear, urine examination, and physical and mental examinations.

After completion of the record, cases are presented at the daily morning staff conferences for diagnosis. Presentations are likewise made for consideration of discharge, placement in service, etc. These conferences are attended by physicians, psychologists, the supervisor of training, and field workers. Stenographic notes of the proceedings are taken and recorded in patient's record.

The institution is well equipped in personnel to handle every phase of the main subject. The medical council is composed of well-known specialists, who are on call for any assistance desired in the following branches: Internal medicine, surgery, orthopedics, dermatology, neurology, psychiatry, roentgenology, ophthalmology, laryngology, oral surgery, and endocrinology. It is planned to increase the physical equipment to the high plane already reached in the personnel.

The educational department embraces all branches of training, including organized play and recreation. At present there is a teaching personnel numbering thirty-six, and it is planned to increase this to forty in 1918. The scholastic work is now congregated in one building, and the industrial and manual work is likewise segregated. It is desired to give a full day's program to every child who is capable of training, for which the findings of the psychological examination form the basis. No time is wasted in trying to force training upon a patient who is unable to profit thereby. The following branches are taught: Scholastic, Seguin, singing, orchestra, band, gymnasium, sewing, dressmaking, power-machine operating, fancy needlework, weaving, applied art, basketmaking, raffia work, carpentry, cobbling, rug and mat making, household service, including cooking, and table waiting, and gardening. Printing, cement molding, brush and broom making and book binding will be added shortly. For young children and the low grades, a greater application of sense training and kindergarten work has been established. For the blind and near-blind, the New York Association for the Blind has generously supplied two teachers, and for a year past these doubly handicapped patients have had both training and recreation.

Disorders and defects of speech are common in the mentally defective. Organized efforts to study and treat these conditions have been made during the past year under the supervision of Mrs. E. W. Scripture.

It is felt that fully 100 per cent. more patients are receiving some form of training than formerly.

The single idea of the institution is the study, treatment, and training of the *individual* whether he be feebleminded, epileptic, or exhibit some phase of conduct disorder, and it is hoped that this may be carried out in spite of large numbers that must be dealt with, by systematic and cooperative effort. In this way it is confidently felt that valuable results will be obtained and the wonderful opportunities for human service will not pass neglected.

Poisoning with Chlorine Gas.—Kramer reports a case of industrial poisoning with chlorine gas fumes. The symptoms were much like those in military cases, but the case ended fatally after an interval of twenty days, a course not often seen in the latter. The blood contained many myelocytes and normoblasts with an unusual progressive tendency to thrombosis, to which the fatal result may be attributed. These blood finds are said to be unique.—*Vierteljahresschrift für gerichtliche Medizin.*

THE SIGNIFICANCE OF NEGATIVE SPUTUM EXAMINATIONS IN PULMONARY TUBERCULOSIS.

By MORRIS H. KAHN, M.D.,

NEW YORK.

A SURVEY of the records of patients under observation for suspected pulmonary tuberculosis reveals many cases with equivocal lung signs. Cases of asthma, emphysema, and chronic bronchitis, of atherosclerosis or myocardial disease with pulmonary congestion are frequently under supervision for long periods in the tuberculosis clinics of the Department of Health.

It is admitted that early diagnosis of tuberculosis is most important from a therapeutic and prognostic standpoint, and it often happens that in these cases the tubercle bacilli may be present in very small numbers only. Sputum examinations are made at irregular intervals, and when these occasional examinations are returned negative, the diagnosis remains undetermined. Sanatorium treatment is often undertaken and a negative diagnosis may be reached after a sojourn of several months in the country.

The various methods of diagnosis outlined in a previous paper are all of considerable importance, and at times of invaluable assistance in the study of any particular case. The Arneth blood count, the cytological examination of the sputum, *x*-ray of the lungs, and complement fixation by tubercle bacillary antigen are methods not to be neglected, where no decision is otherwise reached. Absolute certainty in the diagnosis, of course, can come only with the direct demonstration of the tubercle bacilli in the sputum.

The present study was undertaken: (1) To ascertain the significance of persistently negative sputum examinations in pulmonary cases. (2) To advocate the collection and examination of twenty-four hour specimens of sputum from all pulmonary cases in preference to a fresh sample of the morning sputum alone, as is usually advised. I have indications that this special point is of value where occasional sputum examinations have repeatedly been found negative. My data on this point are as yet insufficient to record here in detail (See Kahn, M. H.: *Journ. Lab. and Clin. Med.*, 1916, I, No. 8). Naturally the entire twenty-four hour quantity should be subjected to homogenization or should be centrifuged to collect the bacilli for microscopic examination. It is also desirable to examine the daily specimens for a period of about two weeks.

In Table I is an analysis of 82 cases that died as a result of pulmonary tuberculosis and came to autopsy at the Metropolitan Hospital during 1914. Only those cases are included in which postmortem diagnosis corroborated the clinical findings and in which sputum examinations were made either at the hospital or in the municipal Diagnostic Laboratories.

The reason that only the records of 1914 were deemed suitable for the study was that after that year, no cases were admitted to the hospital without a previously reported positive sputum examination. As is seen, all the cases showed positive pathological evidence of pulmonary tuberculosis after death.

TABLE I.

Case No.	Path. No.	Post Mortem Pathological Findings.	Sputum	
			Neg. No. Exam.	Pos. No. Exam.
1	2000	Chronic pulmonary tuberculosis with cavities. Acute miliary tuberculosis. Tuberculous pyelonephritis. Tuberculosis of prostate and bladder	3	
2	2005	Chronic pulmonary tuberculosis with caseation and tubercles	3	2
3	2007	Chronic pulmonary tuberculosis with cavities and caseous degeneration		
4	2008	Chronic pulmonary tuberculosis with miliary tubercles	3	
5	2009	Chronic pulmonary tuberculosis with miliary tubercles		
6	2010	Chronic pulmonary tuberculosis with cavity formation		2
7	2011	Chronic pulmonary tuberculosis with cavity formation	3	2
8	2013	Chronic pulmonary tuberculosis with cavity formation		1
9	2016	Chronic pulmonary tuberculosis with cavity formation		1
10	2019	Chronic pulmonary tuberculosis with cavity formation		1
11	2020	Chronic pulmonary tuberculosis with cavity formation		1
12	2024	Chronic pulmonary tuberculosis with caseation and miliary tubercles		1
13	2029	Chronic pulmonary tuberculosis with caseous pneumonia and cavities		1
14	2030	Chronic pulmonary tuberculosis with acute caseous bronchopneumonia	3	2
15	2032	Chronic pulmonary tuberculosis with cavity formation		
16	2039	Chronic pulmonary tuberculosis with caseous degeneration and cavities	3	
17	2041	Chronic miliary tuberculosis with general miliary tuberculosis and lobular pneumonia	3	
18	2043	Chronic pulmonary tuberculosis with caseous degeneration	3	
19	2045	Chronic pulmonary tuberculosis with cavities	3	
20	2048	Chronic pulmonary tuberculosis with cavities and miliary tuberculosis		4
21	2051	Chronic pulmonary tuberculosis with cavity formation and pleuritis	3	
22	2054	Chronic pulmonary tuberculosis with cavity formation		1
23	2055	Chronic pulmonary tuberculosis with cavity formation		1
24	2058	Chronic pulmonary tuberculosis with cavity formation		1
25	2063	Chronic miliary tuberculosis with atelectasis tuberculosis peritonitis	3	
26	2064	Chronic pulmonary tuberculosis, with cavity formation		4
27	2069	Chronic pulmonary tuberculosis with consolidation and miliary tubercles	3	
28	2071	Chronic pulmonary tuberculosis with abscess cavity at apex		4
29	2074	Chronic pulmonary tuberculosis with old cavity at apex of which the surface is smooth and the contents resorbed		1
30	2075	Chronic pulmonary tuberculosis with numerous cavities		1
31	2078	Chronic pulmonary tuberculosis with miliary tubercles and nodular areas with calcification	2	
32	2082	Miliary pulmonary tuberculosis		1
33	2083	Chronic pulmonary tuberculosis with entire lungs honeycombed		1
34	2084	Chronic pulmonary tuberculosis with numerous honeycombed areas		1
35	2088	Chronic pulmonary tuberculosis with cavities and consolidation		1
36	2089	Chronic pulmonary tuberculosis with miliary tubercles		1
37	2092	Chronic pulmonary tuberculosis with small cavities	3	
38	2093	Chronic pulmonary tuberculosis with numerous cavities		2
39	2094	Chronic pulmonary tuberculosis with numerous small cavities		2
40	2100	Cavities at apices. Disseminated miliary tubercles both lungs tuberculous enteritis	3	
41	2101	Miliary tuberculosis of liver and spleen, left consolidated, with miliary tubercles. Right cavity at apex. Miliary tubercles liver, tuberculosis of prostate		1
42	2102	Right miliary tubercles and cavity		1
43	2103	Left, lobar pneumonia, lower lobe		4
		Right, miliary and tubercles and cavities		
		Left, large cavity and tubercles		
44	2104	Right, cavities and consolidation	1	
		Left, honeycombed with cavities		
45	2106	Right, bronchopneumonia (tuberculosis)		
		Left, small cavities apex peribronchial caseation miliary tubercles	3	
		Tuberculosis mesenteric lymph-nodes.		
46	2110	Right, nodular areas of tuberculosis, lower lobar pneumonia	3	
		Left, miliary tuberculosis at bases. Chronic hepatitis aortitis, probably specific.		
47	2111	Left, grayish areas of lobular tuberculosis		1
		Right, cavities and gangrenous degeneration miliary tuberculosis of liver.		
48	2117	Chronic pulmonary tuberculosis right lung, tuberculosis peritonitis and enteritis		1
49	2118	Cavities left apex and miliary tubercles		4
50	2119	Right, greater portion solid-cavities upper lobe.		
		Left, cavity apex and miliary tuberculosis throughout		1
51	2121	Scattered areas of consolidation right lung cavities. Upper lobe with miliary tubercles		1
52	2125	Right, caseous necrosis entire lung with many bronchiectatic cavities		
		Left, and miliary tuberculous		1
53	2129	Chronic pulmonary tuberculosis, cavity formation, caseous and miliary syphilitic peribepatitis		
54	2130	Left, cavities and miliary tubercles	3	
		Right, cavities and miliary tubercles and caseation		
55	2133	Left, tuberculous nodules	1	
		Right, multiple cavities at apex and caseation at base		1
56	2134	Right, cavities apex, tubercles and caseation		
		Left, caseation	3	

TABLE I.—(*Continued*)

Case No.	Path. No.	Post Mortem Pathological Findings.	Sputum Neg. No. Exam.	Sputum Pos. No. Exam.
57	2136	Right, cavity at apex and few cavities at base		1
		Left, cavities upper lobe tuberculous enteritis		
58	2140	Right, caseating tuberculosis.....		
		Left, both lobes, caseating tuberculosis.....	3	
59	2141	Left, cavity apex, diffuse tuberculous infiltration.....		4
		Right, diffuse tuberculous infiltration.....		
60	2143	Right, large cavities.....		
		Left, cavity apex and caseous tuberculosis.....	3	
61	2150	Chronic pulmonary tuberculosis with cavity formation tuberculous liver and spleen.....		1
62	2152	Chronic pulmonary tuberculosis with cavitation miliary tuberculosis of liver. Aortitis, probably specific.....		1
63	2153	Chronic miliary tuberculosis with multiple cavitation at apices.....		1
64	2157	Chronic caseous tuberculosis of lungs.....	1	
65	2159	Chronic pulmonary tuberculosis with cavitation.....		1
66	2164	Chronic pulmonary tuberculosis with cavitation and miliary tubercles.....		1
67	2165	Chronic pulmonary tuberculosis with cavitation.. ..		2
68	2166	Chronic miliary tuberculosis, no cavities		1
69	2167	Chronic caseous tuberculosis, with cavitation ...		1
70	2168	Chronic confluent miliary tuberculosis with cavities...		1
71	2170	Chronic pulmonary tuberculosis with cavities and caseation	3	
72	2177	Chronic pulmonary tuberculosis with cavities, miliary type.....		1
73	2178	Chronic tuberculosis both lungs, multiple cavitation. Tuberculous enteritis		2
74	2179	Acute miliary tuberculosuis, lungs		1
75	2180	Chronic pulmonary tuberculosis, with cavities.....		1
76	2181	Chronic pulmonary tuberculosis, with cavitation.	2	
77	2186	Chronic pulmonary tuberculosis, with cavitation right lung.....	2	
		Chronic miliary lesions both lungs.		
		Chronic aortitis and syphilitis.		
78	2188	Chronic pulmonary tuberculosis with multiple cavitation.....		1
79	2191	Chronic pulmonary tuberculosis, multiple cavities on right side.....		1
80	2193	Chronic pulmonary tuberculosis, with cavitation....		1
81	2195	Chronic pulmonary tuberculosis, with cavitation. Tuberculosis, peritonitis and enteritis		1
82	2198	Chronic pulmonary tuberculosis, with cavitation....		1

Unfortunately the lungs were not kept for bacteriological or microscopical study. The records of the Department of Health and all other available records were searched for the results of sputum analyses of these cases.

A numerical tabulation was also made of the cases divided into two classes according to the extent to which the tuberculous processes in the lungs progressed, that is (1) miliary lesions, consolidation, and caseation, and (2) the presence of cavity formation. (See Table II.)

It may be of interest to mention the occurrence and localization of tubercle bacilli in pulmonary lesions.

The tuberculous process and the secondary foci go through stages of cell growth, necrosis, and connective tissue development. In the most chronic varieties of tuberculosis the development of fibrous tissue is the predominant feature, and this leads to a thickening of the interalveolar, peribronchial, interlobular, and subpleural connective tissue. Tubercle bacilli are found in and among the various cells, but not in the fibrous tissue itself.

A caseous or necrotic change is probably never altogether absent at some period in the development of any tuberculosis formation, and as a rule this is the prevailing feature. In caseous material tubercle bacilli are generally very scanty.

When softening goes on to excavation, suppuration may be excited by pyogenetic cocci and perhaps also by the tubercle bacillus, and in cavities the tubercle bacilli are found in immense numbers.

Though the number of cases is far too few from which to draw any conclusions, and the accuracy and absoluteness of the negative sputum reports are liable to question, it may be of interest to analyze the findings as far as they go.

TABLE II.

Autopsied Cases 1914	Cases with Negative Sputum. 1 Exam.	2 Exams.	3 Exams.	Cases with Positive Sputum. 1st. Exam.	2nd. Exam.	3rd. Exam.	4th. Exam.
Cases with miliary lesions consolidation and caseation	1	1	8	8	2	0	0
Per cent	5	5	40	40	10	....	
Cases with cavitation.....	1	2	14	33	6	....	6
Per cent	1	3	23	53	10	....	10
Total number cases	2	3	22	41	8	*	6
Per cent	2.4	3.6	26.8	50	9.7	*	7.3

*No cases with only three examinations.

A review of Table II shows the following facts:

1. Of the 82 cases autopsied, 20 are classed in the group with miliary lesions, consolidation, and caseation, and 62 are cases showing cavity formation.

2. Three consecutive sputum examinations were made and proved negative in 8 cases, or 40 per cent. of the first group, and in 20 cases, or 33 per cent. of the second group. It is thus evident that three successive sputum examinations made at irregular intervals may be negative in a good proportion of cases showing advanced pulmonary tuberculosis. With the formation of cavities the likelihood of three successive sputum examinations being negative is lessened.

3. Of the total number of 82 cases that died from pulmonary tuberculosis, 28 cases, that is one-third of all cases, showed sputum negative in 3 consecutive examinations.

4. Six cases which showed cavity formation postmortem had three successively negative sputum examinations within a few months before death. This would suggest that several negative sputum examinations should bear little or no weight in making a decision as to whether a case is tuberculous or not.

5. The sputum was positive in 10 cases, or 50 per cent., of the cases of the first group, and in 45 cases, or 73 per cent., of the cases of the second group.

6. Of these 55 cases with positive sputum 41, or half of all cases, were positive in the first examination made.

Perhaps the analysis given in this paper will stimulate a comparative study from the records of various other institutions where the sputum examinations were made more often, and where a larger amount of material may serve as the statistical basis for the conclusions derived.

165 WEST SEVENTY-FIRST STREET.

Malaria Carriers.—Kaminer and Zondek have found malarial parasites in the blood of apparently healthy subjects. The latter were at least fever free, and aside from a little headache and lassitude did not complain.—*Deutsche medizinische Wochenschrift.*

Camphorated Mucilage in Fetid Wounds.—German surgeons have used this preparation extensively in gangrenous wounds with good results. Not only is the fetor abolished, but separation of the sloughs and healthy granulations are promoted.—*El Siglo Médico.*

AMAUROTIC FAMILY IDIOCY OR INFANTILE DEGENERATION WITH SYMMETRICAL BILATERAL BLINDNESS.

By EDWARD J. BERNSTEIN, M.D.,

DETROIT, MICH.

AMAUROTIC family idiocy is a disease so rare in most parts of the country, and of a nature to interest pediatrists and neurologists equally as much as ophthalmologists, that it seems an account of a case coming under my care would be of interest.

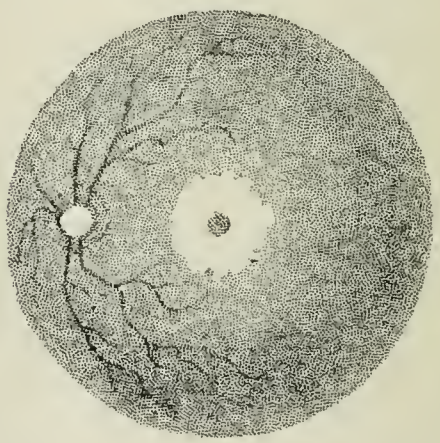
This is a disease which very strangely affects babies of Russian Jewish parentage almost exclusively. The children seem to be quite normal until about the fourth or fifth month, when the mothers begin to notice that the child fails to respond as it had done, the most noticeable factor being failure to follow the mother with its eyes, and a growing feebleness, usually beginning in the muscles of the neck and gradually extending to the whole musculature, ending in complete paralysis, marasmus, blindness, and death before the second year of life. The disease usually attacks two or more members of the same family, hence its name; as many as five in one family have been reported.

Though I have been connected with eye clinics in one capacity and another for nearly thirty years, this is the first case that I have ever seen, and in speaking to a number of the ophthalmologists here in Detroit, that about corresponds to their experience. Only one or two men had seen any. Notwithstanding this rarity, but because of it, we should all know about it and be prepared to recognize it. The etiology of the disease is absolutely unknown; it certainly is not syphilitic, traumatic, infectious, or tuberculous. It has been said, and this is held by most writers, that it is due to consanguinity of parentage; but some years ago I had occasion to look up the matter of consanguineous marriage as a cause of another malady, and I am convinced that it has nothing at all to do with it. Firstly, marriages among cousins is not at all uncommon among Jews generally, and idiocy or cerebral degeneracy is not one of the frailties of the Jewish people, whatever else may be said about them. Moreover, it is an unwritten law in the family of the Rothschilds that they marry cousins, and no one has seen any mental degeneracy in that family. In certain tribes of the interior of Africa, intermarriage is even more close, even brother and sister marrying, and they breed a very sturdy race of men. In certain groups of the Polynesian Islands, polyandry is practised to a large degree, one woman serving all the members of one family, and yet they also breed strong, healthy individuals. Consanguineous marriages are very common among all the nobility of Europe and aside from those diseases due to profligacy, there is no evidence of idiocy or lack of vigor. Neither profligacy nor lack of mentality are large factors among Jews. The fact that this disease is almost entirely found among the offspring of Russian Jews points to some particular factor in their make-up. The fact that many of the parents of these children acknowledge blood-relationship is not surprising, but to assign that as its cause, seems untenable. My own idea is that the degeneracy is due to the terrible economic conditions; the nerve-racking fear and the starvation and misery of their lives in Russia have much more to do with it, than anything else as yet brought forth. However that may be, the sad fact remains that nothing we can do has the slightest influence in diminishing the trouble or staying the death of the infant, which usually comes before it reaches its second year.

The picture of the eye backgrounds and of the general progressive paresis is unmistakable once it is seen. I am perfectly free to confess that when I first looked into the eye I could not definitely make the diagnosis, as it, in a measure may be taken for a new growth in the choroid—either tuberculous or leucosarcoma, a coloboma congenitalis, an embolus of the central retinal artery, or the maculocerebral degeneracy.

Maculocerebral degeneracy occurs usually about puberty and does not lead to complete blindness nor to paralysis or death, nor does it occur at all among Jews. An embolus of the central retinal artery is so rarely bilateral that only four or five cases have been recorded and they do not usually come at all in children.

Returning to the question of consanguinity of



Fundus of the left eye in a case of amaurotic family idiocy

parentage as a cause for diseased conditions, to refute that theory it is only necessary to call attention to the fact that breeders of live stock produce their best strains by this very process, selecting, of course, only healthy parents. It is evident that when both parents are below standard they will produce weaklings and that seems to be the case in this instance.

The pathology of the disease is pretty well worked out by many observers on this subject. It is a general ganglion-cell degeneration from the cerebral cortex throughout the whole nervous system. The picture we see in the eye—the large whitish area surrounding the central yellow spot, which shows out as round maroon-colored spot, is whitish and considerably elevated above the surrounding tissues and is due to the degeneration of the ganglion layer in the retina. At the macula region the ganglion cells are densest, gradually thinning out toward the periphery, so that while the ganglion cells throughout the retina are degenerated, they show most distinctly around the yellow spot, while directly in the center of the macula, there being no ganglion cells, that spot shows red.

The history of the case is as follows:

C. G., aged nine months, was referred to the eye department of the Grace Hospital from the pediatric department by Dr. A. Metzner, to ascertain whether the baby's apparent dullness was cerebral or due to the eyes. Up to its fifth month it had progressed normally, but gradually the mother noticed that the child did not follow her with its eyes as she moved about its bed. It developed an attack of whooping-cough about this time, from which it has recovered. The child is well-nourished and grasps fairly well and has not yet developed much weakness about the neck or thoracic muscles. Judging from the attack of whooping-cough, I thought central retinal artery embolus was the cause of its apparent blindness, but later and more thorough examination showed my error.

In the early stage at which I first saw the eyes (the condition was symmetrical in each eye), the whitish area seemed so distinctly elevated above the surrounding retina that I was not sure but that it indicated a growth between the choroid and the retina. The small retinal vessels pursued a tortuous direction as in new growth formation, but it merely means that in this case I caught the case while the cells were still swollen —later on they will atrophy and the retina will smooth out.

The parents are not related. They have three other living healthy children. A baby died three years ago, and so far as I can learn it was well until five months old, when it began to fail much as this one has, and died at the age of two years. It was seen by several medical men at the Children's Hospital, and a diagnosis of amaurotic family idiocy was made.

As far as I can learn these two cases are the first to have been recognized in Michigan.

1212 Kresge Building.

IODIZED HYDRIDE ANTISEPSIS A HALF CENTURY AGO.

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In 1842 iodine came into the U. S. P.; in 1858 Snow and Sir James Simpson were experimenting with an anesthetic called hydride of amyl, and about the time of our own Civil War the halogen and the lightest known liquid were mixed and the mixture was employed for antiseptic purposes. A notice of the solution may be found, upon page 554 of Dunglison's Medical Dictionary as late as the edition of 1873, wherein these words appear:

"Iodized Hydride. A solution of iodine in amyl hydride, grains xx to ʒi. When applied to the skin the hydride evaporates, leaving the iodine equally distributed on the surface."

The book also records the employment of that solution upon various septic processes, notes its value as a deodorizer, and explains that amyl hydride is a local anesthetic to be used in an atomizer or spray apparatus, together with its possibility as a means of administering iodine by inhalation.

Some years later when this amyl was derived from coal tar, its formula of C_5H_{12} led to the name of pentane, by which it is now generally known. If one puts a quantity of half strength tincture of iodine upon a cut or upon a wound he will at once recognize the roughness of that tincture, especially if he institutes a comparison under like conditions but using the milder iodized hydride with its *larger* iodine content. If anyone is so unfortunate as to have a boil he may yet be fortunate if he gain a clear, a definite, and a practical knowledge of the entirely different qualities of the alcoholic and the amylic, when their peculiar individual and counter-irritant capabilities are contrasted and studied through *personal* rather than *clinical* experience.

Modern ideas of normal healing are inclined to give much credit to the defensive powers pertaining to blood-serum and to antibodies. Those powers do play such leading parts in the matter that dilution or any other obstacle in the way of the exercise of their entire activity is something to be avoided when possible. On the other hand, animal wound-repair substances should be aided or concentrated but should never be weakened by extraneous foreign fluids. Under all the circumstances water might be graded as the worst possible diluent, alcohol perhaps is less so, but amyl hydride with its rapid evaporation is scarcely more than a brief or trivial interference with nature's methods. This hydride penetrates, evaporates, and discharges its burden of iodine exactly where it is required to build up a wall between germs and tissues. The latter are not attacked by it, but furnishing secretions the iodine is dissolved thereby and is carried in turn to a site of maximum efficiency. Meanwhile the harmless volatile amyl has gone into space, having served its purposes and departed.

Considering the present abnormal conditions of the market for alcohol and admitting the prejudices that have arisen against that drug, why not give this old solution a trial? The men of fifty years ago had liniments, tinctures, and all sorts of iodine-bearing preparations, yet they used this application with approval. It is stabile, does not change with light, nor does it precipitate. Its vial does require a good and a properly placed cork, since the contents are volatile. Its strength may be modified or mitigated for an individual patient, though it is more than doubtful if any alteration of the original formula will commend itself by trial.

The solution has been used in or upon severe septic wounds when the writer as an onlooker expected a jump and an outcry from the patient who was not incommoded in the least. On the contrary, the persons who submitted to its application upon laceration, boil, or ulcer described the after sensation as "good." How any iodine could feel "good" it is difficult to imagine, but that word was the one used by the patients themselves, who had had previous experience with the tincture. If internal use is desirable it is perfectly feasible to give it in capsule or in dilution.

The question that prompts the present paper is: Have we gone much beyond the men of a half century ago in the matter of iodine? The writer thinks that in clinic and operating room very possibly we have retrograded and therefore suggests the rehabilitation of an old method of skin and wound antisepsis. Sometimes much progress may be made when standing fast on ancient paths.

Placenta Previa and Cesarean Section.—Finkner operated on 15 cases of placenta previa by cesarean section, saving all the mothers and 13 of the 15 children.—*Correspondenz-Blatt für Schweizer Aerzte.*

Rats as Paratyphus Bacilli Carriers.—Herz and Trawinski found in the digestive tracts of 8 rats captured near an epidemic hospital bacilli of paratyphus A and B.—*Wiener klinische Wochenschrift.*

Medicolegal Notes.

Practising Without License—Use of Religion and Patent Medicines.—Under New York Public Health Law (Consol. Laws, c. 45) § 173, prohibiting the practice of medicine without a license, but excepting the religious tenets of any church, it is held that a member of the Spiritualist church, who combines faith and prayer with patent medicines compounded by himself, is not immune; the exemption giving him no authority to heal by agencies other than prayer or the practice of his religion.

On appeal from a conviction of the illegal practice of medicine the defendant had practised the religious tenets of his church. The court said if that was all that he had done he had acted within his rights; but it thought he had done more. On the stand the defendant characterized himself as a therapeutic and Spiritualist healer and dealer in patent medicines. He had patented them himself. He used a liniment, compounded of angle worms, turpentine, sweet oil, and benzine. He says that, while massaging the patient with this liniment, he indulged in silent prayer. He also prescribed for internal use a medicine compounded of wine, beef tea, and citrate of iron. The same medicine was used for every one. He argued that all this must be excused, because he had become a member of the Spiritualist church, and had been commissioned by that church as a spiritual healer. Some of the evidence which he offered on that subject was rejected. Enough was received, however, to prove that the church had recognized him as a healer, and that the practice of spiritual healing was a tenet of its faith.

The statute prohibits the practice of medicine without a license, but excepts from its prohibition "the practice of the religious tenets of any church." Public Health Law (Consol. Laws, c. 45) § 173. The Court of Appeals held in People v. Cole, 219 N. Y. 98, 113 N. E. 790, that the exception protected the practitioners of Christian Science, who taught as part of their religion the healing power of mind. Even then the court said that there were times when the question of their good faith must be submitted to a jury. But things were done by this defendant which no good faith could justify. He combined faith with patent medicine. If he invoked the power of spirit, he did not forget to prescribe his drugs. "It is beyond all question or dispute," said Voltaire, "that magic words and ceremonies are quite capable of most effectually destroying a whole flock of sheep, if the words be accompanied by a sufficient quantity of arsenic." Morley's Critical Miscellanies, III, p. 17. The law, in its protection of believers, has other cures in mind. The tenets to which it accords freedom, alike of practice and of profession, are not merely the tenets, but the religious tenets, of a church. The profession and the practice of the religion must be itself the cure. The sufferer's mind must be brought into submission to the infinite mind, and in this must be the healing. The operation of the power of spirit must be, not indirect and remote, but direct and immediate. If that were not so, a body of men who claimed divine inspiration might prescribe drugs and perform surgical operations under cover of the law. While the healer inculcates the faith of the church as a method of healing, he is immune. When he goes beyond that, puts his spiritual agencies aside, and takes up the agencies of the flesh, his immunity ceases. He is then competing with physicians on their own ground, using the same instrumentalities, and arrogating to himself the right to pursue the same methods, without the same training.

The meaning of the act is made plain when kindred legislation elsewhere are considered. In varying phrases immunity is granted to those who practice their religious tenets, but always in such a form as to confine the exemption to spiritual ministrations. The statutes are collated in the briefs in People v. Cole, supra. Thus, in Maine (Rev. St. 1903, c. 17, § 16; St. 1895, c. 170), Massachusetts (R. L. c. 76, § 9), and Connecticut (Gen. St. 1902, § 414), the exemption is specifically declared to extend to those who practice Christian Science. In New Hampshire (Laws 1915, c. 167, § 17), it is declared to extend to "those who endeavor to prevent or cure disease or suffering by spiritual means or prayer." In Illinois (Hurd's Rev. St. 1909, c. 91, § 11, p. 1474), the act does not apply to "any person who ministers to or treats the sick or suffering by mental or spiritual means, without the use of any drug or material remedy." Nearly the same language is used in the statutes of New Jersey (Laws 1915, c. 271, § 6), North Carolina (Laws 1903, c. 697), Colorado (Rev. St. 1908, § 6069), Virginia (Laws 1912, c. 237, § 11), and Michigan (Laws 1913, c. 368, § 8). There are like provisions in other states. Through all this legislation there runs a common purpose. The law exacts no license for ministration by prayer or by the power of religion. But one who heals by other agencies must have the training of the expert.

Assuming that to be the true view of the meaning of this statute, it was held that the defendant on his own confession had violated the law.—People vs. Vogelgesang, New York Court of Appeals, 116 N. E. 977.

License to Practice Osteopathy—Montana.—The Montana Supreme Court holds that Rev. Codes, §1605, including in its definition of practice of osteopathy all treatment by use of the hands or mechanical appliances, and so including the practice of chiropractics for the purpose of requiring qualifications and a license to practice, is not an attempt to confer a monopoly on the school of osteopathy. The court said that it is true that the statute defines the practice of osteopathy as a drugless treatment, because it is therein limited exclusively to treatment by use of the hands or mechanical appliances and requires acquaintance with the various sciences enumerated and the theory and practice according to the standards prescribed by recognized schools of osteopathy. But this does not give this school a monopoly of the practice. It leaves every person who in the judgment of the state board of osteopathic examiners has demonstrated that he possesses the knowledge and qualifications prescribed to engage in the practice and to earn his livelihood by this means. The legislation is not rendered objectionable by the fact that some persons choose to adopt another name and profess to belong to and to represent a different school. The statute merely discloses that one using the method of treatment therein described shall be deemed as practicing osteopathy, and that he must secure a license before he engages in the practice for compensation. If he does this, he has fully complied with the statute, and it is not material whether he chooses to style himself chiropractor or osteopath. In enacting the statute the Legislature was concerned about the qualifications which the practitioner must possess to the end that the public should be protected from fraud and imposition and not with the names of schools.—State v. Hopkins (Mont.) 166 Pac. 304.

Expert Evidence—Mortality Tables.—In an action for injuries a medical witness testified that from what he observed when he saw the plaintiff some months after the accident, and from what he observed from *x*-ray pictures, he should say the plaintiff was permanently injured. It was held that mortality tables were properly admitted in evidence over the objection that the plaintiff's injuries were not shown to be permanent.—Adamski v. Michigan Ry. Engineering Co., Michigan Supreme Court, 164 N. W. 402.

Prescribing Heroine—Physical Examination.—Under New York Public Health Law, §246, as added by Laws 1914, c. 363, and amended by Laws 1915, c. 327, providing that it shall be unlawful for any licensed physician to deliver any of certain drugs, except after a physical examination of any person for the treatment of disease, injury, or deformity, it is held that physicians, in treating narcotic drug addiction as a disease, need not make a physical examination of the patient each time the drug is delivered to him as a medicine; a physical examination enabling the physician to determine the amount of the drug a patient requires in his treatment from day to day, made within a reasonable time of delivery of the drug, is sufficient. A physician, who has the right to prescribe drugs in the treatment of disease, can deliver heroine to a messenger or agent for his patient, such as the patient's wife, without violating section 246; it being sufficient for the physician, under section 248, as added by Laws 1914, c. 363, and amended by Laws 1915, c. 327, to record the patient's name and also the name and address of the agent.—People v. Hoyt, 166 N. Y. Supp. 953.

Military Medicine.

NEW GERMAN GASES AND THEIR EFFECTS ON THE EYES.

For some months past, according to Teulière, in the *Journal de Médecine de Bordeaux* for November, 1917, the Germans have been employing some new gases in explosive shells. These are said to be tetrachloride of carbon and a chemical combination of sulphur, ammonia, and chlorine (the author terms it "bichloride of ammonium sulphide"). These gases are said to be heavy and colorless and to impregnate the earth. The majority compare the odor with that of mustard. The action is insidious, and is felt especially on moist surfaces, the effects being similar to chemical burns. Thus a perspiring man may be burned over the chest and in the armpits. In a particular case the track of a little rivulet of sweat, which had run down the abdomen to the scrotum, was burned, while the balance of the skin remained intact. Washing the face will start up the action of the gas. It is evident that the moist conjunctiva will be much exposed to such an action, although the gas is not of the so-called lacrymating or tear type. The lesions set up are of two grades of severity, benign and malignant. As soon as the shells have exploded there is an odor of mustard and a tingling of the eyes, to which little heed is paid. After a number of hours—ten in one case—an ocular reaction is in evidence—intense itching, marked redness of the conjunctiva, especially at the palpebral fissure. In the very benign case the condition goes no further. In others the conjunctiva becomes swollen, and chemosis may appear. The lids swell, and pus appears at the inner canthus. The iris is less affected than by the original gases, and dilates under atropine. There appears to be a very mild type of neuroretinitis. In the severe type of lesion the eye is as if burned by a corrosive mineral poison, the effects showing different degrees of intensity. The cornea may be directly burned and ulceration and hypopyon result. The depths of the eye do not appear to suffer in proportion from this type of burn.

During the use of the original gases the men were often unable to tell the source of the latter—whether gas wave or gas shell. In addition to the tear-producing type there were others which affected the eyes disastrously. The lacrymating gas caused the more violent initial manifestations, but otherwise the results were fairly constant. The author does not speculate on the nature of the older gases further than to imply that both asphyxiating and toxic forms could incidentally affect the eyes, while the lacrymating gases were used in the sole aim of temporarily blinding the adversary. While a destructive type of lesion does not seem to have resulted, the eyes often remained weak, and although decreased vision was at times complained of, due probably to a slight degree of neuroretinitis, the progress as regards ultimate recovery was favorable. The author states especially that he has never seen a case of permanent incapacity of the eyes from the older gases and that complete recovery has always occurred.

The newer gases are able in a certain percentage of cases not intimated by the author to cause destructive lesions of the conjunctiva and cornea, with resulting symblepharon, hypopyon, and corneal opacities, and in exceptional cases secondary iridocyclitis. The fundus does not appear to suffer in proportion, or more than under the action of the older gases.

METAL PROTECTION FOR THE SOLDIER'S HEART.

According to Filderman and Bonnette in the *Progrès Médical* for November 3, Delorme, the Inspector General of Army Surgeons, has strongly recommended to the Academy of Medicine of Paris the adoption of a cuirass for protecting the soldier from thoraco-abdominal injuries. It is not necessary that this cuirass be thick, for it is intended only to prevent injuries that are preventable. The idea is not new, for during the present war Adrian of helmet fame and others have made experiments with cuirasses. In December, 1915, 300 of the Daigre and Louppe models were tested, but their weight (20 and 26 lb. respectively) was so great that the soldiers did not use them. It was also objected that they were hard to get into, and once in place that they inhibited rapid and unforeseen movements. Adrian's cuirass was definitely called in in March, 1916. Like the other, it was too heavy and transformed the soldier into an ordinary porter. The idea of protection for the heart is radically different. Nearly every wound of this organ is fatal and many wounds are received therein. To protect the heart would be to give the man a chance for life. He would not, perhaps, succumb on the firing line but would go into the transportable class. If men have had their lives saved by such puny defenses as books and letters carried in a pocket which have served to deflect the bullet from a vital spot, should not some precaution of this sort be deliberately provided? It is on record that quite a number of articles of pocket wear have done this much for the wearer—pocket books containing letters or postals, a flexible book folded on itself, a watch, a cigarette case, a metallic mirror, a prayer book or testament, or a thick note book. The heart is in part protected by a natural grill, but the sum of defence is so poor that a bullet which could not break a finger might readily cause death. With the heart must be reckoned the great vascular trunks which communicate with it. This area is in the class with the cranial vault, the throat with its great vessels, and the spine.

In protecting the precordium we need only a light defence such as could be afforded by a disc of chrome-nickel steel 2 mm. thick. This disc can be cut in such a shape as to protect the heart and its great vessels and the weight will not much exceed a quarter of a pound. It should extend upward as far as possible without causing inconvenience. The disc should be enveloped in strong linen and fastened within the jacket. Naturally it is not symmetrical but covers the cardiac area and so is mostly to the left of the middle line. It lies to the left of the row of button holes and does not interfere with buttoning and unbuttoning the jacket. The defensive value of this shield is marked. Naturally, it cannot protect against rifle and machine gun bullets at close range, but is efficacious

against shrapnel bullets and the others on the rebound, and especially against small fragments of shells and grenades, also against revolver bullets when the range is not too close.

Treatment of Trench Feet and Allied Conditions by Passive Hyperemia.—Philip Turner applied Bier's method of treatment to cases of trench foot. In order to draw clear conclusions the cause of trenchfoot must be understood. It is thought by Smith, Ritchie, and Dawson to be essentially one of inflammation brought about by direct action of cold on the tissues, with histological changes chiefly in the blood-vessels of the affected parts and not due to any direct microbic action. They also point out that the essential difference between trench foot and true frost-bite is that in the latter the direct action of severe cold leads to the complete destruction of the vitality of more or less extensive masses of tissue, while in the former the effect of cold and wet, combined with certain factors which impede the circulation in the extremities, is to produce this inflammatory reaction. This is the generally accepted theory of these conditions. Turner offers his theory of the pathology of trench foot as follows: The condition is primarily caused by prolonged exposure to wet and cold, combined with other factors which impede the circulation. These set up the inflammatory changes described by Lorrain Smith. The vitality of the tissues is lowered to such an extent by this that septic organisms already present in or on the skin, possibly in fissures or excoriations, are enabled to set up more or less severe septic inflammatory processes resulting in the development of blisters, sloughs, and gangrenous areas. Needless to say, this view as to the part played by microorganisms is derived entirely from clinical observations, but some such explanation appears to be necessary to explain the more severe cases. This is a point of considerable importance, for if it is granted that septic organisms play an important part in the process, even though that part is secondary and indirect, their intervention must be taken into account in whatever line of treatment is adopted.

In his method of treatment prophylaxis is of the greatest importance, so that treatment must be directed to (a) cleansing of the foot and prevention of secondary infections, and (b) the treatment of the original inflammatory changes and also of any secondary infection which may have developed. For cleansing of the feet Turner uses ordinary soap and water, and the nails are cut and cleaned. The feet are then painted over with a solution of 1 per cent. picric acid in methylated spirit, and this application is repeated at first daily and later on alternate days. This solution penetrates the deeper layers of the epidermis and never causes dermatitis or irritation of the skin. The feet are then wrapped in sterile gauze and left exposed to the air until the patient finds they are more comfortable when covered by the bed-clothes. Bier's method is then applied.

As soon as the cleansing process has been carried out a constricting bandage is applied just above the knee. A Martin's elastic bandage cut in half provides a bandage of about the right length and strength. If this is not available, an elastic crepe bandage may be used, but these are not so satisfactory, as they stretch, and the pressure exerted may diminish or even disappear after a few hours. For the first day the bandage is kept on for 18 hours. It is then removed and reapplied after an interval of 6 hours. It is then again applied, and on the second and succeeding days is left on for 22 hours in every 24. The bandage should in all cases be applied just tightly enough to impede the venous return, but on no account must it obstruct the arterial supply. In many cases there will be no alteration in the appearance of the limb, but in some there will be noticed a slight increase in the swelling or the leg below the bandage may feel slightly warmer as the result of the congestion. The treatment should be painless and any complaint of pain—not slight discomfort—is an indication for the removal of the bandage. He only had one case in which this was necessary, and even here the bandage was subsequently reapplied without any further complaint of pain.

It has been pointed out that sometimes there is a temporary slight swelling of the leg below the bandage. This soon disappears, and in slight and moderate cases the swelling of the foot has usually quite disappeared in 24 or 48 hours. In severe cases it may persist for longer. Pain improves rapidly, and in 24 hours has either disappeared or has markedly diminished. Anesthesia improves steadily, but not so rapidly. In a moderate case with anesthesia of all the toes and of the greater part of the dorsum of the foot the sensation will probably be normal in four days, with the exception of blisters and gangrenous spots where the sensation is naturally still deficient. In cases of moderate severity blisters and the gangrenous areas shrivel, dry up, and eventually separate, leaving an unbroken delicate pink skin underneath. This process is very interesting, and not infrequently there is an extensive desquamation of the skin of the affected part, sometimes of practically the whole foot. In extensive cases, after the separation of dried blisters, gangrenous spots, and epithelial scales, there is left a surface of thin, pink, soft skin resembling a baby's foot. This is naturally very tender, and though the patient can walk in soft shoes, boots cannot be worn until the thin skin has become hardened and accustomed to pressure. He regards this desquamation and separation of dried gangrenous areas as part of the natural process of cure in these cases of moderate severity, and thinks that the treatment by passive hyperemia considerably accelerates the process.

When the symptoms have disappeared, usually after four or five days, the patient is allowed to walk in soft shoes; then after two days boots are worn, first for half an hour daily, and this time is increased until they can be worn two hours without discomfort, when the patient is discharged to the convalescent hospital. In moderate cases the procedure is the same, except a longer period is required for the same results. In fully 50 per cent of the cases, however, the feet are so tender that several weeks must elapse before the men can return to even light duty, rendering evacuation necessary. When the patients

are sufficiently convalescent to get up, Bier's treatment is still continued, the bandage being removed when they get up and is replaced when they return to bed, so that the bandage is applied 18 out of the 24 hours.

It may be asked whether the improvement in cases treated by Bier's method is really due to the Bier treatment and not to the rest, general treatment, and picric acid application. That it is due to the former is proved by the results in some cases where one foot has been severely, the other only slightly, affected. The bandage has only in these cases been tried for the severely affected foot, while the other treatment has been applied equally to both. In such cases one nearly always finds that the foot treated by Bier's method is in a couple of days better than the other more slightly affected foot, which has not been so treated. The treatment is simple and painless and requires no special apparatus beyond the bandage.

Red Cross Mission Is on Way to Italy.—The permanent Red Cross Commission for Italy is on its way to that country. The commission is in charge of Robert P. Perkins of New York. Dr. Joseph Collins of New York is a member of the commission. Upon its arrival the commission will take over the work which thus far has been under the direction of Major Murphy. The Red Cross War Council has just appropriated an additional $250,000 to meet Italian relief emergencies pending the arrival of the permanent commission, and Major Murphy has requested an additional $250,000 appropriation. Much work is to be done as the late Teutonic successes in Italy attended with their characteristic fiendishness, involved the destruction of a large number of military hospitals.

Ruling on Surgical Operations on Enlisted Men.—The Judge Advocate General of the Army has published a ruling upholding the right of an enlisted man to refuse to undergo a surgical operation unless the attending surgeon formally certifies that there is no danger to the life of the patient. This ruling is the result of trial by court martial of a private who refused to obey orders and upon conviction was sentenced to two months' imprisonment. It was found that no certificate stating that the proposed operation was devoid of danger had been filed and the prisoner was released. If the surgeon reports that an operation involves danger to the soldier's life and the man does not want to take the chance the army regulations prescribe that he must be honorably discharged from the army for disability.

Smallpox at Camp Meigs.—A report from Washington, under date of December 15, states that there are three cases of smallpox at Camp Meigs in the mechanical units of the Quarter Master's Corps. The camp is under quarantine. The medical officers do not regard the situation as serious or anticipate any spread of the disease.

Big Red Cross Drive.—A nation-wide campaign to increase the membership in the American Red Cross was begun on December 17 and will be continued until January 1. The end sought is the enrollment of 10,000,000 new members and the re-enrollment of the 5,000,000 old members. There will be an attempt made to increase the membership in Manhattan by 500,000 new members. The overhead cost for each new member is estimated at three cents, so if the goal for 10,000,000 new members is attained $9,700,000 will be added to the funds of the organization.

Jewish War Relief Fund.—Henry H. Rosenfeld, the assistant executive director of the American Jewish War Relief Committee, announces that the $10,000,000 fund for war relief pledged early in the year has been assured. Of the $5,000,000 which New York undertook to raise, $4,500,000 is in hand and it is estimated that New York's quota of $5,000,000 will be exceeded before the first of the year. Julius Rosenwald of Chicago will add $1,000,000 to the fund.

Summary of Health Conditions in Camps of the United States for Week Ending December 14, 1917.

1. *National Guard:* With the exception of the 34th, 35th, and 40th divisions, but few new cases of measles are reported from National Guard camps. In each of the divisions mentioned, with the exception of the 40th, the number of new cases is small as compared with the number reported for last week. In the 40th Division the number of new cases is 330, as compared with 279 for the previous week. Pneumonia following measles is also rapidly decreasing in amount in all but three of the divisions in which measles has been epidemic. In the three divisions referred to, 30th, 34th, 39th, an increase in the number of cases is noted, although the total number of new cases reported in each division is not high. For meningitis the number of new cases has increased in but two camps of the National Guard. The 35th Division reports 6 new cases as compared with 2 for the previous week, and the 30th Division reports 6 as compared with 1 for the previous week. The number of new cases reported in the 36th Division has decidedly decreased. The highest number of new cases reported in any other division of the National Guard is 3.

2. *National Army:* In the National Army a marked increase has occurred in the number of new cases of measles in the 87th and 90th Divisions, and a slight increase in the 89th Division. In all other divisions the number of new cases of measles reported is insignificant. Pneumonia conditions in all divisions of the National Army have decidedly improved during the week, except in the 90th Division, in which an increase of 36 new cases is reported over the report of last week. As regards meningitis, the 81st Division reports a marked increase in the number of new cases over the report of last week. The outbreak of this disease in the 89th Division continues to decline, but 8 new cases having been reported during the week. The highest number of new cases reported in other divisions of the National Army is 5. Seven divisions of the National Army report new cases of this disease during the week.

General Gorgas's Report on the Sanitary Condition of the Camps.—It is a painful revelation that Surgeon General Gorgas has made in his report on the various camps where the National Army is being trained to fight for the freedom of the world. Overcrowding, insufficient clothing, poor plumbing or none at all, hospitals without a water supply, the location of camps in centers of endemic meningitis—it all sounds most startlingly reminiscent of 1898.

MEDICAL RECORD.

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RESTORING GASTROINTESTINAL CONTINUITY AFTER PARTIAL GASTRECTOMY.

THE treatment of cancer of the pyloric portion of the stomach has passed through many stages during the past fifteen years and has gradually become more and more radical under the influence of two factors: first, the newer diagnostic methods have led to earlier diagnosis, so that the operator has been afforded better and more numerous chances for the complete removal of the growth; second, there has been constant improvement in technique and in the types of operation employed. Years ago, when there was cancerous involvement of the pyloric portion of the stomach gastrostomy or gastroenterostomy was performed, no attempt being made to remove the diseased portion of the stomach.

Simple gastrostomy or gastroenterostomy has been followed successively by pylorectomy with end-to-end union of the partially closed large gastric opening to the cut end of the duodenum; pylorectomy with closure of both the duodenal and gastric openings and the restoration of gastrointestinal continuity by means of an independent posterior gastroenterostomy; partial gastrectomy with lateral anastomosis of the upper portion of the jejunum to the full length of the gastric opening, the jejunum being passed through a slit in the transverse mesocolon and after completion of the anastomosis the anastomotic area being brought through this opening and the edges of the mesocolic slit sutured around the line of anastomosis as in posterior gastroenterostomy (Pólya or Krönlein method); and finally we have an operation described by Balfour in *Surgery, Gynecology and Obstetrics* for November, 1917, an operation similar in many respects to the Pólya but in which the jejunal loop is carried in front of, rather than under, the transverse colon, as in the original Wölfler's anterior gastroenterostomy.

In this operation the pylorus, lymphatic glands, and a sufficient portion of the stomach are resected in the usual manner and the duodenal stump is cauterized and inverted. Balfour's description of the subsequent steps is as follows: "The first loop of the jejunum is procured and a point about 14 to 18 inches from the duodenojejunal angle is marked. The jejunum is then carried up in front of the transverse colon and omentum and a segment of suitable size is chosen at the point already marked. This section of jejunum is lightly grasped with rubber-covered forceps and directed so that the proximal end of the loop will be approximated to the lesser curvature of the stomach. A series of interrupted silk sutures in the serosa is used for the first line posteriorly, beginning at the greater curvature. All these sutures are placed before any are tied, and the ends of the top and bottom sutures may be conveniently left as guides. The first suture line is about one-half inch below the clamp on the cut end of the stomach, and on the side of the jejunum about three-fourths of an inch from the summit of the loop. * * * The jejunum is now incised * * * and the crushing clamp removed from the stomach. (If it has been possible at any previous stage in the operation to place without difficulty a straight rubber-covered clamp at a higher level on the stomach, soiling by unevacuated gastric contents will be prevented.) Any actively bleeding vessels are ligated. The posterior row of the anastomosis uniting the posterior wall of the stomach to the inner cut edge of the jejunum is of chromic catgut. The stitches on the gastric side should be taken after the edge which has been crushed by the clamp has been trimmed with scissors. A second row of finer catgut may be used to advantage in the posterior line. The first chromic catgut suture is continued in front in the usual way to complete the closure. An interrupted silk suture line similar to that used posteriorly is placed anteriorly, particular care being taken to reinforce the angle of anastomosis at the lesser curvature. A few interrupted silk sutures are placed where necessary to further protect the anterior suture line and the suture at the lesser curvature, the stump of gastrohepatic omentum which contains the ligated gastric artery being utilized as a support to the gastrojejunal angle at this point." Balfour says that the advantages of the antecolic end (gastric) to side (jejunum) method are quite obvious, that in their experience it can be used in practically every case, and that it is simpler, safer and can be accomplished in much less time than can any other method. A study of the statistics of partial reactions of the stomach for cancer at the Mayo Clinic would seem to warrant the opinion that there is less operative risk from this than from any other operation that has been employed in similar cases.

That this method is superior to the Pólya in all cases is open to question; but there can be no question of its superiority in unusually extensive resections and when the stomach segment remaining is high and relatively fixed, for in these cases it is often difficult to return the anastomosis through the slit in the mesocolon, and there is danger of angulation and obstruction in the jejunum under these conditions.

THE PATHOGENESIS OF HODGKIN'S DISEASE.

THE etiology of Hodgkin's disease still remains unsolved despite the efforts that have been made by some investigators to assign it irrevocably to the class of infective granulomata. The work of Bunting and Yates on the so-called *Corynebacterium granulomatosis maligni*, in relation to the disease, while interesting and suggestive, has not been universally accepted by pathologists owing to the fact that certain features are inadequately explained on the basis of a pure infective lesion. It is undoubtedly true that the disease exhibits, both clinically and pathologically, many of the earmarks of an inflammatory process; but it likewise displays characteristics which are usually associated with a neoplasm. For this reason it has been grouped by some pathologists with the leucemias and lymphosarcoma as a malignant growth of the lymphatic system. The occurrence of nodules in the spleen, liver, bone marrow, and elsewhere, certainly suggests analogy to a metastasizing tumor; and the fact that a fatal termination eventually results from widespread dissemination further emphasizes the malignant aspect of the disease.

The weak spot in the argument of those who champion the infective etiology is that diphtheroid bacilli are not peculiar to Hodgkin's disease, but are found in tuberculous glands, simple inflammatory hyperplasias, leucemic nodules, and also have been reported as contaminating organisms in routine cultures. Aside from these various distributions of the bacilli, acceptable evidence is still lacking of the production of the human homologue in animals.

Recently a new interpretation of the disease has been advanced by Symmers (*Archives of Internal Medicine*, June, 1917), based upon the microscopic study of material from 47 cases. Symmers approaches the problem from the strictly pathological standpoint, and postulates the theory that the histological changes in the lymph nodes, spleen, and other parts of the lymphatic apparatus, constitute a systemic process, with multiple foci of disease arising in different localities at approximately the same time in response to the same provocative agent. In other words, the fully developed Hodgkin's disease, although possessing a histology all its own, and maintaining in this regard an unmistakable individuality, nevertheless partakes of the nature of an infective granuloma on the one side and of a systemic lymphosarcomatosis on the other. The irregular type of temperature so frequently observed in patients afflicted with the disease is probably due to absorption of the products of necrosis, plus those derived from the more deliberate disintegration of cells. This explanation of the temperature is analogous to that usually offered for the fever so commonly observed in patients suffering from hypernephroma, in which variety of neoplasm, necrotic and degenerative changes are almost constant. The contention also finds confirmation in the negative evidence offered by the lymphoid tissues in lymphosarcomatosis, where necroses are uncommon and variations of temperature are correspondingly infrequent. Symmers hazards no opinion as to the nature and origin of the etiological agent, but says that whatever this may be it causes preliminary hyperplastic changes in the lymphoid tissues and initiates changes in the bone marrow, characterized among other things by proliferation of the non-granular mononuclear cells of the lymphocytic type, eosinophiles, and eosinophilic myelocytes. These cells, together with myeloplaxes, are thrown into the circulation and filtered out by the lymph nodes, or deposited in them in response to chemotactic attractions, the fibrotic changes in the recipient tissue representing a purely local reactive process. The histological abnormalities beyond the lymphoid system proper, namely, in the liver, kidneys, etc., represent a reaction on the part of normally existing lymphomatous foci to the same toxic substance which is responsible for the disturbances in the bone marrow and for the myeloid transformation of the lymph nodes.

RUFUS.

THE red-headed person has figured largely in folklore and has at one time or another been made the target of much banter, good natured and otherwise. It has been said fair-haired people in their evolution toward Addison's disease pass through a red-haired stage, though Leonard Williams, writing on the Real Dermatology in the *Medical Press* for Oct. 24, 1917, denies that there is any relationship between red hair and Addison's disease, and cannot even recall the occurrence of a case of Addison's disease in a red-headed individual. It is said to be a fact, however, that certain dark races dislike and distrust the occasional red-headed member of their own race, regarding him as in a certain sense a degenerate. Still, the red-headed member of a dark race may be subnormal through having lived for several generations in a climate which, failing to provide the stimulus of the sun necessary to the production of the pigment peculiar to his race, has also been lacking in the stimulus requisite for his development in other directions. He may be as Williams points out a "minus" among dark skins.

Now, the red-headed among fair skins is most distinctly not a minus. He is generally "a live wire" in all directions, he is very much more frequently a "plus" or overplus than a minus, and, as Williams says, "his great energies tend to be uncontrolled, his emotions to be violent, his imagination to be vivid, and his hopes sanguine."

There is a good deal of folk-lore in connection with the red headed in Europe. Red-headed women in France are said to smell of musk. In Wales a red-headed woman is said to have a peculiar odor when it rains. In Germany, they tag the red-head people with the unflattering appellation, "Rothe

Haar Gott bewahr"—red hair, have a care. In Great Britain the saying is "Ginger for Pluck." All of this goes to show that the red-headed man is not in a transition stage, but that he is eminently his own man.

The red headed are credited with greater resisting powers to disease than their brothers and sisters with hair of a less striking hue. In addition, it has been stated on the authority of an Edinburgh physician, by name Beddoe, that red-haired people are less liable by far to insanity than the ordinary ruck of humanity. Sir W. Arbuthnot Lane also holds that persons with red hair are much more resistant to diseases than the generality of people, and he has propounded the view that a disease becomes less virulent in type when it gains entrance into the body of a redhead than when it attacks a person with hair of a more modest color.

Evidence then is conclusive with regard to the great vigor of the red headed, but notwithstanding the possession of this driving quality by those of ruddy poll, few of the world's greatest men have been red headed. Gambetta, among statesmen and orators, is an example, and Frederick Barbarossa among soldiers. There may have been and probably were red heads among the great poets, but the only one which Williams can call to mind is Swinburne, who by the way was not physically vigorous, but erotic and even, in some respects, degenerate. Perhaps red-headed people are more greatly distinguished, as a rule, by physical vigor than by the possession of exceptional mental powers, although some among them have been, like Swinburne, endowed with genius.

SEROTHERAPY OF ACUTE POLIOMYELITIS.

NETTER was the first to make use of serotherapy for acute poliomyelitis. He simply injected the blood serum of convalescents into the tissues of sufferers from the disease, after Lævaditi had demonstrated that such serum actually contained an antibody which could neutralize the virus of the disease. At first the results were indecisive, but with cumulation of cases the efficacy of the treatment could not be disputed. Very recently Salanier, a former pupil of Netter, who became specially identified with cord studies, has summed up the technique and results of this form of treatment in a Paris thesis.

Serotherapy is really seroprophylaxis, and earliest diagnosis becomes a factor of great importance in treatment. Acute poliomyelitis can usually be recognized at an early period, but the earliest manifestations are often violent, a fact which does not seem to influence unfavorably the treatment. These abrupt symptoms refer chiefly to motor manifestations, but there is a sensory component in the evolution of the disease which may be recognized in regions not attacked by motor disturbances. When these sensory manifestations are in evidence they furnish an indication for prompt treatment with the expectation of benefit.

In a few cases serotherapy was practised before the appearance of paralysis, and apparently aborted the affection. But appearance of paralysis does not mean that it is too late for treatment. On the contrary, during any time within the first three or four days the treatment may be of value. The author has notes of 45 cases with the following results: 8 complete cures and 6 others classed as almost complete; 13 sensible ameliorations and 4 with appreciable improvement. As against these figures must be charged up 10 deaths from extension to the bulb and 4 cases in which treatment was of no avail. In a good number of cases the paralysis was checked, and in some cases there was involution. Quite characteristic was the rapidity of the cure as the injections were pushed. After the fourth, even after the third injection, certain subjects with initial paralysis were able to walk.

In the New York epidemic of 1916 the mortality was practically 29 per cent. In a total of 24,000 cases in the United States during the epidemic period some 400 were treated with convalescent serum, and the results were quite analogous to those controlled by the author. Antibodies form as early as the eleventh day (exceptionally much earlier) and have been known to persist in the blood for 30 years. From 200 to 300 c.c. of blood may be taken from a donor, and from 6 to 8 injections should be given, one each day. The average amount of serum injected should be 20 c.c. During the New York episode 9 gallons of convalescent blood were taken, which yielded 13 quarts of serum.

PERFORATIVE GASTRIC AND DUODENAL ULCERS.

DESPITE the fact that we have an enormous home material of gastric and duodenal ulcers it is not without interest to read what is transpiring in the same field in relatively remote parts of the world in which duodenal ulcer, at least, is far less common than with us. From a report of the activities of the Government and city hospitals at Wasa, Sweden (*Finska Läkaresällskapets Handlingar*, June, 1917), we learn that 35 operative cases of these accidents were treated during the period 1905-1916. Lindström, the surgeon who reports the material, states that but 8 of the cases were of duodenal ulcer, all of which occurred in males. Vomiting is by no means pathognomonic of perforative gastric ulcer for it was absent in 13 cases and constituted the initial symptom in but 3. On the other hand, disappearance of hepatic dullness is of notable diagnostic value, this symptom having been in evidence in 87 per cent. Operation was performed on every case and there were 19 cases of suture (fine silk interrupted) of the rupture. The ulcer was adherent in 7 cases. When suture was impossible a large tampon was applied and followed with gastroenterostomy. There were 25 primary gastroenterostomies, by the Hacker or Mayo technique, with 8 deaths. In two very bad cases Murphy's button was used. The author is a partisan of pri-

mary gastroenterostomy and has compiled records of 134 perforation cases by Swedish surgeons with 33 deaths, regarded by him as good work. The advantages of this intervention are dwelt upon, but the cases with unfavorable ending are not analyzed. In but one of the author's series was there a primary pylorus resection after Billroth's second method. The patient recovered. In peritonitis the exudate is mopped up and drainage reduced to a minimum. During the past two years he has not drained at the lower part of the abdomen.

In the author's own material the deaths amounted to 43 per cent.—considerably higher than that of the combined figures as given above. Nine patients died of peritonitis in the early days following operation. Of the 20 patients saved one has since died of heart disease with absence of stomach symptoms. Nineteen patients are known to have resumed their habitual occupations, although with the exception of two they had been unfit for work for years as a result of the ulcers. Sixteen have absolutely no gastric symptoms.

Responsibility for the Biopsy Outrage.

In reply to the protests of the medical press and of individual surgeons against the horrible biopsy scheme of the New York City Health Commissioner, the latter has claimed that he was acting under the advice and at the request of the Public Health Committee of the New York Academy of Medicine. That this was not so is now affirmed in a published summary of the activities of the committee for October and November, the paragraph relating to which reads as follows: "6. Biopsy.—The attention of the committee was called to the fact that its approval of establishing an additional service in the laboratory division of the Health Department for the examination of suspected pathological tissues is being interpreted as an endorsement by the committee of the indiscriminate use of biopsy. The committee has formulated a brief statement to the effect that the original endorsement of the Health Department's new service was not intended as an endorsement of biopsy." This disposes effectually of the commissioner's pretense of support by the Academy of Medicine and leaves upon his shoulders the sole responsibility for all the suffering that has resulted from his obstinate advocacy of this universally condemned practice.

Acute Nephritis Due to the Spirochæta Icterohæmorrhagica.

At the present time it is beginning to look as if the parasitism and pathogenicity of this spirochete may come to rival those of some of our best known pathogenic organisms, such, for example, as Eberth's bacillus, which is able to set up focal infections undiscoverable save through laboratory technique. Recently it occurred to Sisto (*Il Policlinico*, October 28) to make routine examination of the urine of healthy soldiers and soldiers with urinary and other disturbances for the presence of the spirochete, and in ten cases of acute hemorrhagic nephritis he obtained one positive find. In this case the malady was of a severe type, with marked edema and evidences of uremia. The sediment of the urine was centrifuged for a long time and stained with the Renaux-Wilmaers and Giemsa stains. The spirochete was present in great numbers and corresponded in all ways with the *S. icterohæmorrhagica*. That nephritis may complicate the usual type of spirochetosis is well known, and the opinion has long been current that the spirochete in question is perhaps responsible for some of the war nephritides. Recently two French authors recognized this organism in the urine of three patients with nephritis, so that the author can make no priority claims. In all of the four cases guinea-pig inoculation gave negative results, so that the question of virulence is still open.

Etiology of Typhus Fever.

The pioneer work by Plotz, Olitsky, and Baehr on typhus fever has been translated into German and was published by Urban and Schwarzenberg with date 1917. Probably this labor was undertaken and completed before the United States and Germany became enemies. The German translation is reviewed in the *Correspondenz-Blatt für Schweizer Aerzte* for October 27. The impression made upon the reviewer was favorable throughout, but so many microorganisms have been made responsible for this disease that one must be a little sceptical. Plotz first published his technique in 1914 and it is by no means difficult; yet no one seems to have taken the trouble to check up the work of the Americans; or at least no one has come out for or against the latter.

News of the Week.

Death Rate from Pneumonia Increases.—The largest number of cases of pneumonia for any week thus far this season was reached during the week ending December 15. Out of 1443 fatalities from all causes during the week 263 were due to pneumonia; during the preceding week, out of 1417 deaths 220 were caused by pneumonia. The normal number of deaths from pneumonia at this time of the year is about 200 per week. While there is always an increase in the number of deaths from respiratory diseases as the winter progresses, this year the increase began earlier than usual and has continued at a much higher rate. While the city and State health authorities think there is no cause to fear an epidemic, they have been active in warning the public that pneumonia is an infectious and communicable disease, and to a large extent avoidable.

Many Blinded in Halifax.—A telegram from Sir Frederick Fraser, superintendent of the School for the Blind in Halifax, states that more than 500 men, women, and children were blinded by glass from shattered windows in the recent disaster. The telegram asked that a press campaign be organized for the purpose of securing funds for relief work among the blind since at least half a million dollars was urgently needed and four additional buildings should be added to the School for the Blind.

Two Hospitals Incorporated.—At a special

meeting of the State Board of Charities on December 12, the applications for incorporation of the Carson C. Peck Memorial Hospital, Brooklyn, and the Mercy Hospital at Cazenova Park, Buffalo, were approved. Action was postponed on the applications for incorporation of the Hebrew Convalescent Home at 235 West 120th Street, and the institution planned by the Committee for the Care of Jewish tuberculous. The site for the Carson C. Peck Hospital is at Albany and Troy Avenues and Crown and Montgomery Streets. The building is in process of construction, and when complete, with its equipment, will cost $460,000.

Lack of Milk a Serious Menace.—The Children's Bureau of the Department of Labor reports increased suffering among young children as a result of the exorbitant price of milk and urges that aside from humanitarian considerations it will be a great economic loss to the country if lack of milk is allowed to impair the health of its future citizens. Cities in Pennsylvania, Maryland, and Delaware have found their milk supply problems so serious that the Governors' Tri-State Commission has recommended that the distribution of milk be regarded as a public utility and fair prices be assured. Conditions in New York, Philadelphia, and Chicago have not improved since cold weather has curtailed the milk supply.

Rockefeller Foundation Makes Annual Appropriations.—According to the financial budget of the Rockefeller Foundation more than $10,000,000 will be disbursed in war relief work and medical research. Of this sum $5,050,000 represents contributions to the Red Cross, the Y. M. C. A., and Y. W. C. A., the Jewish Camp Welfare Committee, the Training Camps Commission, and other organizations engaged in welfare work for the American armies in France. About $3,000,000 is to be spent in the work of the International Health Board and the Medical Board in China. These expenditures include $1,076,000 to be used in continuing the investigation of hookworm, yellow fever, and malaria, $424,000 for the Tuberculosis Mission in France, $918,000 for schools in Pekin and Shanghai, $627,657 for medical schools and hospitals in China, and $300,000 for instruction and research in medicine and public health in America, including instruction in mental hygiene.

Building Fund for People's Hospital.—A gift of $5,000 from Louis Kohenberg and $3,000 from a benefit theatrical performance have been added to the building fund of the People's Hospital. The new building for this institution is to be erected at Second Avenue and Thirteenth Street.

Obituary Notes.—Dr. HENRY C. WATT died suddenly at his home in Colorado Springs, Colo., on December 1, aged 45 years. Dr. Watt received his medical education in England and was licensed in London in 1895.

Dr. ADOLPHUS HENRY CARTER, for many years a practitioner of Salt Lake City, Utah, died at Wiggins, Col., about November 23, aged 67 years. He was a graduate of the Northwestern Medical College, St. Joseph, Mo., in 1892.

Dr. JOHN L. SULLIVAN of Passaic, N. J., died in Roosevelt Hospital, N. Y., following an operation, on December 1, aged 52 years. He was a graduate of the Albany Medical College in 1889, and took postgraduate courses in Berlin, Vienna, and Prague. He was a member of the Board of Governors of the Passaic General Hospital.

Dr. JULES F. VALLE, a graduate of Washington University Medical Department, St. Louis, died of heart disease, after a lingering illness, at his home in St. Louis, on November 24, aged 58 years.

Dr. RICHARD WEST BOURNE died at his home in Mexico, Mo., on November 21, aged 97 years. He was a graduate of Jefferson Medical College in 1845. He continued in active practice until a year ago.

Dr. STEPHEN HULL SEARS of Yarmouth, Mass., a graduate of Bellevue Hospital Medical College, in 1875, died on November 24, at the age of 67 years. He formerly resided in Newport, R. I., where he was acting assistant surgeon of the United States Marine Hospital Service.

Dr. DAVID CLEAVELAND GORDON, retired, formerly of Virginia, died in Washington, D. C., on December 1, aged 81 years.

Dr. GEORGE F. HOUSE, a graduate of the Indiana Medical College, in 1880, died as the result of paralysis at the home of his daughter in Clayton, Ind., at the age of 70 years. He was formerly president of the Clayton Board of Health and Charities.

Dr. JOHN F. MCCOOEY of Woonsocket, R. I., died of peritonitis following an operation for appendicitis at St. Vincent's Hospital, Worcester, Mass., on December 1, aged 37 years. He was a graduate of the College of Physicians and Surgeons, Baltimore, in 1903.

Dr. DAVID A. KINCAID, a graduate of Bowdoin Medical School, in 1878, died after a long illness at his home in South Portland, Me., aged 64 years.

Dr. JOHN P. LOGAN of DeWitt, Mo., died in St. Joseph's Hospital, Kansas City, on December 4, aged 64 years.

Dr. CHARLES S. PAYNE, a graduate of the Buffalo Medical College in 1884, died at his home in Liberty, N. Y., on December 12, aged 57 years.

Obituary.

RAMON GUITERAS, M.D., F.A.C.S.

NEW YORK.

DR. RAMON GUITERAS died at the French Hospital in this city on December 13 of meningitis, at the age of 57 years. He was a graduate of the Harvard Medical School in 1883, and was a member of the Medical Societies of the County and State of New York, the American Medical Association, the New York Academy of Medicine, the Rhode Island State Medical Society, the American Urological Association, and the New York Urological Society. He was a visiting surgeon to the Post-Graduate and Columbus Hospitals and consulting surgeon to the French and City Hospitals. Dr. Guiteras was a noted sportsman and had hunted large game in Africa and many other parts of the world. He was for many years secretary of the Pan-American Medical Congress, and he had also several times visited Cuba and other Latin-American countries on confidential missions for the United States Government.

Correspondence.

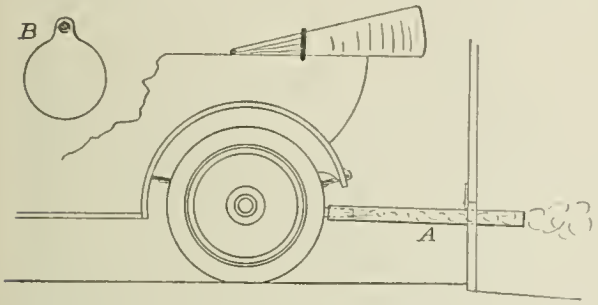
POISONOUS GASES IN A CLOSED GARAGE.

To the Editor of the Medical Record:

Sir:—The recent deaths from gas poisoning in a garage of Nat. M. Wills, the actor, and of Dr. Martin E. Benedict of Plainfield, N. J., emphasize most tragically the danger which exists under certain conditions.

The products of combustion in internal explosion motors, whether it be the carbon monoxide or other poisonous gases which they contain, have long been known to be acutely poisonous, and in certain cases fatal. Where these gases are exhausted into a confined space, such as the pit containing a pumping engine, or a small private garage, there is grave danger, unless precautions are carefully observed, of accidents such as the two cases mentioned.

The very general use of motor cars throughout the country has necessitated a great many small



A—Pipe in position. B—Pivoted cover for hole in door.

and inexpensive places for housing them. These are not usually heated, and it is generally necessary, in freezing weather, to run the engine of a car for a longer or shorter time before starting out. Of course, in very cold weather the temptation is to start the engine without opening the doors.

It has occurred to me that a very simple and inexpensive device will greatly reduce the danger, if not entirely eliminate it. The plan is to bore through the garage door, at a point about opposite the exhaust pipe of the car when in its usual position, a hole 2 or 3 inches in diameter, closed, when not in use, by a wooden drop-cover on the inside. A piece of light metal piping, of any kind, just large enough to be shoved over the end of the exhaust pipe of the car, is kept in the garage. When the car is to be started this pipe is first pushed out through the hole, and then drawn in and passed over the end of the exhaust pipe.

The diagram accompanying this will illustrate the idea better than words. W. C. Wood.

New York.

LETTER FROM CANADA.

(From an Occasional Correspondent.)

OPENING OF THE CONNAUGHT LABORATORIES OF THE UNIVERSITY OF TORONTO—FEEBLEMINDEDNESS IN ONTARIO—CANADIAN MEDICAL ASSOCIATION—ORTHOPEDIC WORK IN CANADA—ALBERTA MEDICAL ASSOCIATION.

Toronto, December 12, 1917.

The official opening of the Connaught Laboratories, which have been erected on a farm covering fifty acres of land presented by Colonel Albert Gooderham to the University of Toronto, for the purpose of research in preventive medicine and the preparation of serums and vaccines, took place on October 25 last. The ceremony was performed by His Excellency the Governor General of Canada. The occasion was an important one in Canadian medical annals, as it marks the establishment in the Dominion of an institute on the lines of such well-known foundations as the Pasteur, the Lister, and the Rockefeller institutes. The occasion will be remembered, also, by the pronouncement of the Premier of the Province of Ontario, Sir William Hearst, who announced on behalf of the provincial government that it was the intention next session to vote the sum of $75,000 to endow research in preventive medicine in the new laboratories, and that the income from this fund would be devoted entirely to research, since the laboratories themselves were self-supporting. Sir William also announced that a further sum of approximately $25,000 had been given for the same purpose, and that the income derived from this also would be expended in research work. The foundation, therefore, already amounts to about $100,000. A lecture on "War Activities of the Rockefeller Institute for Medical Research" was given by Dr. Simon Flexner, who outlined a few of the important contributions to science made by members of that institute.

The opening of the Connaught Laboratories completes the arrangements for research work commenced in May, 1914, when laboratories were established under the direction of Major Fitzgerald in the University of Toronto for the preparation of biological products, including diphtheria and tetanus antitoxin, antimeningitis serum, antirabic and smallpox vaccines. Arrangements were made by the Boards of Health of Ontario and Saskatchewan for the distribution through local boards of health, and at greatly reduced prices, of the vaccines prepared in these laboratories, and later on similar arrangements were made in other provinces. In February, 1916, a further step was taken by the Ontario Board of Health, which commenced to distribute free of charge throughout the province diphtheria antitoxin, tetanus antitoxin, meningitis serum, rabic vaccine, and smallpox vaccine. In view of the enormous demand for tetanus antitoxin for use among the troops, especially in Flanders, the work of the laboratories was increased by the addition of a special laboratory for the production of tetanus antitoxin, which was equipped by Colonel Gooderham, and established in 1915, under the direction of Dr. R. D. Defries. A grant of $5,000 was made at the time by the Canadian Department of Militia and Defense, on the condition that the entire output of antitoxin should be available for the use of the department, if required. At first, the work of preparing vaccines and serums was somewhat hampered by the lack of housing facilities for the animals required. The farm presented to the university by Colonel Gooderham, however, now makes it possible to continue the work under most satisfactory conditions.

An extensive inquiry into the practice of medicine in the Province of Ontario was recently conducted by Mr. Justice Hodgins. The Ontario Government has now appointed Mr. Justice Hodgins to investi-

gate the methods of dealing with the imbecile, the feebleminded, and the mentally defective in the province, with power to make suggestions which, in his opinion, will improve the present conditions. The prevalence of venereal diseases will also be considered, particularly in their relation to feeblemindedness.

It was decided at the Montreal meeting of the Canadian Medical Association that the 1918 meeting should be in Winnipeg, under the presidency of Dr. James McKenty of that city. It has been thought advisable, however, to make a change in this arrangement and to accept an invitation that has been received from the Ontario Medical Association to meet with them at Hamilton during the week commencing May 27, 1918. The occasion will be of unusual interest, as in addition to the Canadian Medical and the Ontario Medical Associations, the Canadian Public Health Association and the Canadian Association for the Prevention of Tuberculosis will meet at Hamilton during that week.

Some time ago an orthopedic hospital was established at North Toronto by the Military Hospitals Commission, which is in charge of all orthopedic work in connection with the Canadian Expeditionary Force. The hospital has accommodation for 440 in-patients and is equipped with all the necessary apparatus for the treatment of soldiers who have been incapacitated during the war. The work is under the immediate direction of Dr. Edward Bott. Individual attention is given to each case and, when necessary, a special appliance is devised or adapted to suit the requirements of a particular case. A device is attached to each appliance to enable the patient to measure his accomplishment, and this, it has been found, is a tremendous aid toward overcoming the natural depression of a man who has lost, temporarily at least, the use of a limb; the patient becomes interested in the progress he is making and is encouraged to put forth his best efforts. Records are kept of the progress of each case. A factory for the manufacture of artificial limbs has been established in connection with this hospital and a number of disabled men are being trained to make these limbs. Later on, when a number of men have been sufficiently trained in this work, it is possible that factories will be opened in other places. Various types of arms and legs are being manufactured and a new type of arm has been devised and is now being perfected by the commission; this, it is thought, will prove to be the most satisfactory kind of arm as yet manufactured. These limbs are supplied to soldiers by the Canadian Government and the cost of repairs, or renewal of a limb, will be borne by that Government as long as the man lives.

A school for masseurs and masseuses has been established in Hart House, which was erected on the campus of the University of Toronto by the Massey estate. This, in accordance with the wish of Lieut. Col. Vincent Massey, has been converted by the Hospitals Commission into a training center for workers in orthopedics and standard methods are being evolved there in accordance with recommendations made by Major R. Tait McKenzie, professor of physical therapy in the University of Pennsylvania, who recently made a survey of all Canadian military convalescent hospitals. Standardized equipment is being devised by workers at Hart House and arrangements for its manufacture have been made. Major McKenzie's work at Heaton Park Hospital, England, is already well known and the results he achieved are most encouraging: during the first six months of treatment by physical therapy, nearly 50 per cent. of the patients were able to return to the firing line and a further 30 per cent. were made fit for service at home or on the lines of communication.

In addition to orthopedic treatment, a disabled soldier is given vocational training while he is undergoing treatment and being fitted with the necessary limb. Training boards were established some time ago throughout the Dominion, with a personnel consisting of a medical officer, a vocational officer, and a third member who is *au courant* with industrial and commercial activities in that particular part of the country. The board is, therefore, in a position to form an opinion as to the man's capacity from a medical and vocational standpoint and the monetary possibilities as far as he is concerned in the various lines of work open to him. All this, together with the man's wishes and previous occupation, is taken into careful consideration, and whenever possible an occupation similar to that in which he was previously engaged is chosen, since it is difficult for an adult to take up successfully an entirely new kind of work in which he has to compete with men who have been doing it for years. As a rule the vocational training is commenced during convalescence and occupation has been found to be of the greatest benefit, no matter what the man is suffering from. By its means the patient is taken out of himself and his troubles and is given a new interest.

Convalescent hospitals have been established by the Military Hospitals Commission throughout the Dominion and at each of these equipment has been installed for the reeducation of physically disabled soldiers and those suffering from shock. A new hospital is in course of construction at Ste. Anne de Bellevue on a site adjacent to Macdonald College, on the banks of the Ottawa River, about twenty miles from Montreal. This will make it possible to take advantage of the splendid facilities for vocational training offered by Macdonald College, which includes a school of agriculture and a school of household science in addition to the Normal School for Teachers of the Province of Quebec. The plans are also being prepared for a military hospital which is to be constructed, on the lines of the Ontario Hospital at Orpington, in the County of Kent, England, in High Park, Toronto. This hospital will provide accommodation for one thousand patients. Hospitals are also being built at Kingston and London, Ontario.

The twelfth annual meeting of the Alberta Medical Association took place at Calgary on September 26 and 28, last. Among the questions that came up for discussion at that meeting was the prevalence of goiter in western Canada. In a symposium on the subject, Dr. Ritchie of Cochrane made certain statements which met with strong disapproval, and a resolution was passed by the association as representative of all the urban and rural districts of the province to the effect that goiter was not any more prevalent in Alberta than in any other part of Can-

ada, and that there was absolutely no reason for anxiety concerning the spread of the disease. Resolutions were passed also in favor of the establishment of a separate Government Department of Public Health with a competent deputy minister in charge, and in favor of an educational propaganda with a view to controlling and limiting the spread of venereal diseases. The presidential address was delivered by Dr. W. A. Lincoln of Calgary. The 1918 meeting will be held at Edmonton under the presidency of Prof. D. G. Revell of the chair of anatomy in the University of Alberta.

Progress of Medical Science.

Boston Medical and Surgical Journal.

December 6, 1917.

1. Methods of Preparing and Using Radioactive Substances in the Treatment of Malignant Disease and of Estimating Suitable Dosages. William Duane.
2. Orthoarteriotony (A New Form of Pharmacodynamic Energy): The Biochemic Explanation of Its Action, together with a Contribution to the Interpretation of Its Physiological Mechanism. Cläes Julius Enebuske.
3. Tendon Suture. Torr Wagner Harmer.
4. A Method of Testing the Vasomotor Reflexes of the Skin and of Recording the Same. Edward A. Tracy.
5. Speech Correction: A New Medical Study and a New Educational Movement. Walter B. Swift.

5. Speech Correction—A New Medical Study and a New Educational Movement.—Walter B. Swift gives a brief account of the work done under his supervision in the advancement of speech improvement, or correction, in the laryngological department of the Harvard Graduate School of Medicine. He has conducted graduate and undergraduate courses and the work has been arranged under four heads: medical, psychological, treatment, and educational. The medical courses consist in medical instruction, with special reference to speech. For example it is shown how enlarged tonsils interfere with early speech development, how cleft palate makes speech indistinct, how paralysis of the tongue muscles makes certain utterances impossible. The courses dealing with the psychological aspect take up the mental functions related to speech, considering their origins and the relations of eye and ear registrations of psychological interpretative processes and mental collaboration. Under the treatment aspect the courses take up the eradication of speech defects. The courses dealing with the educational aspect cover the relationship of speech disorder to the public schools. The educational aspect includes the training of the speech nurse. He further states that the more immediate aims of the two speech clinics in Boston are, first, to show teachers how to correct speech disorder in the public schools; second, to found other speech clinics under other medical heads; third, to establish other teaching centers as affiliated branches of the original home clinics. These Boston clinics are dominated by the research spirit. Every patient is fitted into some research problem. Every student is given an investigation. This accounts for the extraordinary productivity of the two clinics during the last few years. During last year about 120 papers were read by Swift and his assistants, and during the year before that 110. Yet they state that they have done nothing that others could not have done with the same training and opportunities. He tells that last year 103 teachers studied the methods and systems of the clinics, and now these methods are being put into practice in the public school systems of the various cities and classes will be formed for the correction of speech disorder under medical supervision. Physicians who have studied in these clinics have later established clinics of their own, affiliated with the home clinics, with aims of mutual aid. In carrying out the clinical method the patient's history is taken in the ordinary way and he is given a thorough examination — physical, mental, psychiatric, psychological, and educational — before the more exhaustive examination of the functions of his speech mechanism. Then treatment is outlined and he is drilled individually or in a class. At the same time he is fitted into an investigation and a minutely detailed record of progress is put down as data for some future use.

New York Medical Journal.

December 8, 1917.

1. Tonsilloscopy and Curettage of the Tonsils in Adults. Thomas R. French.
2. The Field of the Various Methods of Cardiac Diagnosis. Harold E. B. Pardee.
3. Post Partum Hemorrhage. Herbert Thoms.
4. The Importance of an Antecedent State of Uneasiness as the Cause of Certain Normal and Abnormal Types of Behavior. Meyer Solomon.
5. Treatment of Syphilis with Arsenobenzol Polyclinic. Charles H. J. Barnett.
6. A Case of Nasal Sarcoma Cured by Radium. Otto J. Stein.
7. Post Bellum Medical Problems: Conservation of the Race. Joseph H. Marcus.
8. The Ophthalmologist and the General Practitioner. Marcus J. Levitt.

4. The Importance of an Antecedent State of Uneasiness as the Cause of Certain Normal and Abnormal Types of Behavior,—Meyer Solomon calls attention to the importance of states of "uneasiness" of varying intensity and duration which may be the basis of much that is apparently contradictory or not easily understood in the attitude of human beings. He describes this state of uneasiness as having an onset, or iniital stage, which culminates in a fastigium, acme, or height of the period of restlessness, only to be followed by the decline or disappearance of what may be called the attack. While the attack or period of uneasiness is on, the condition may be variously described by different persons. The individual feels restless, disturbed, under stress and strain and tension. There is a peculiar general state of uneasiness dominating the mind. Janet describes it as a feeling of incompleteness, of insufficiency; at other times it may seem, according to Adler, a feeling of inferiority, of insecurity, or of uncertainty. The feelings of strangeness may actually lead to dual or multiple personality. Solomon considers that the types described by Janet and Adler are to be found chiefly in the decidedly unstable and neuropathic persons. In the common forms this uneasy condition may be observed both in healthy persons as well as in patients. The person is ill at ease, fussy, cannot concentrate on the task before him, and is generally disturbed. While this state may be found in the most of humanity, it is not lasting and very infrequent, but in those in whom they occur they are often and prolonged and are a cause of much annoyance and trouble. In the really severe forms, occurring in so-called psychasthenia and in allied states of mental unrest, the attacks are so pronounced that they literally wreck the life of the person. The causes of this condition are legion. Among them may be named chronic ill health, in fact organic disease of any type, especially when of a generalized nature, so that it has its effect upon the nervous system, and hence more especially in organic diseases of the nervous system, such recurrent states are particularly apt to make their appearance. Also in the great physiological epochs, such as puberty and adolescence, pregnancy and puerperium, the menopause and the senium. Instability of the nervous system in individuals otherwise in good health, who have neuropathic constitutions or irritable nervous systems, which Adler would class as organ inferiorities. This irritability may be in the voluntary or involuntary nervous system or both. Persons suffering from epilepsy, vagotonia, migraine, hay fever, so-called true or genuine asthma, and the like are especially liable to these periods of unrest. Then comes actual suffering from some psychoneurotic or mild psychotic condition, such as those labeled neurasthenics, hysterics, psychasthenics, cyclothymics, and the like. Next there is met those with conscious mental conflicts of all types, financial problems, and kindred troubles. Then the individual with too little or too much to do, too much isolation, not enough rest, sleep, food, or relaxation will experience to some extent this "uneasiness." If the person is aware of the cause or causes of the trouble he often makes an attempt to handle it himself and obtain relief from himself through religion, or Christian Science, or quietude, or excitement. Men may seek all kinds of physical amusement, while others attempt to lose themselves in intellectual pursuits or to drive a hobby. Alcoholism may be the result of this state of "nerves," or gratification of the sexual passion may be the outcome. Solomon states that all this is of interest not merely from the purely scientific standpoint but it has a distinctly practical, therapeutic application. Where pathological avenues of escape have been entered upon,

or where domestic unhappiness, attacks of depression, and the like result from this condition, the therapeutic application is of the greatest importance. He considers that in some predisposed individuals outbreaks of the major psychoses begin in this way. Individualization must be the keynote, and a study of the particular person must be made carefully. The cause or causes of the uneasiness must be determined and removed if possible, and harmless or desirable, or even definitely helpful, means of attaining relief from the states of uneasiness substituted for any harmful habits that may have been established. Analysis and reeducation are thus in order while other psychotherapeutic methods may be of service in certain persons.

Journal of the American Medical Association.

December 8, 1917.

1. The Treatment of Some Cases of So-Called "Pernicious" Anemia: A Regimen that Has Been Found Helpful. Lewellys F. Barker and Thomas P. Sprunt.
2. Wound Infection Among Lathe Workers: An Investigation into Some of the Factors Causing Wound Infection in Industrial Surgery and Methods of Obviating Them. Marvin D. Shie.
3. The Fractional Test Meal: A Study of 377 Fractional Test Meals, of Which 139 Are in Proved Pathologic Conditions. Charles P. Horner.
4. Prolapse of the Female Urethra. John W. Keefe.
5. The Preservation of the Menstrual Function in Double Suppurative Disease of the Tubes and Chronic Metritis. John Osborn Polak.
6. Cholecystectomy Without Drainage. A. Murat Willis.
7. Pigmentation of the Hind-Gut: A Pathologic and Experimental Study. W. Landram McFarland.
8. When is Cancer Operable? J. Walter Vaughan.
9. Relation on Vital Capacity of Lungs to Clinical Condition of Patients with Heart Disease. Charles W. McClure and Francis W. Peabody.
10. Salvarsan and Neosalvarsan Myelitis: Report of a Fatal Case. G. W. McCaskey.
11. Edema as a Danger Signal in the Starvation Treatment of Diabetes. Alfred C. Croftan.
12. Has the New-Born Child with Sutured Cord a Better Start in Life? George Rendleman and Fred J. Taussig.
13. The Repair of Cleft Palate: A Technique and the Reasons for It. Harry M. Sherman.
14. Premature Detachment of Placenta, with Delivery of a Live Baby by Cesarean Section. David S. Hillis.

1. The Treatment of Some Cases of So-Called "Pernicious" Anemia: A Regimen That Has Been Found Helpful.—Lewellys F. Barker and Thomas Sprunt. See MEDICAL RECORD, June 9, 1917, page 1014.

2. Wound Infection Among Lathe Workers.—Marvin D. Shie, while serving in the emergency hospital of a large manufacturing plant for a time, came in contact with such a large number of infections and cases of furunculosis that the matter claimed special notice. On some a pinprick, if left unattended, developed into a severe lymphangitis; a slight scratch in twelve hours into a linear mass of pus; a slight abrasion into a suppurating ulcer, and a laceration into a mass of necrotic tissue and pus. There were dozens of cases of multiple furunculosis, some patients developing as many as fifty boils at once on their arms and legs and faces. From fifty to sixty patients were seen daily, and of these from 8 to 10 per cent. had furunculosis, and 5 per cent. had wound infections of various sorts. When this was investigated further, it was discovered that of all the 1200 or more men in the machine shops, none had multiple furunculosis save those who worked on lathes, and furthermore that 90 per cent. of the infections occurred in men working on lathes. The new machine shop was given over to the manufacture of 8-inch shells, and housed about 400 lathes, while the old machine shop was used in the manufacture of machinery of various kinds, and housed only about twenty or thirty lathes. The cases of infections and furunculosis in these two shops varied directly as the number of lathes in each. As a result of an investigation into the situation, Shie reports that it was found that (1) In a large manufacturing plant the vast majority of cases of wound infections and furunculosis were found to be localized among lathe workers in the machine shops. (2) The peculiar features of lathe work are the use of cutting mixture and oil, and the manner in which these circulate and are used repeatedly, thus making them extremely liable to contamination. This contamination rendered them open to suspicion as factors in the causation of the wound infection and furunculosis. (3) These suspicions were borne out by bacteriologic investigation and animal inoculation, which showed the causative factor to be pyogenic organisms which were present in vast numbers in the cutting mixture and less numerous in the oil. Marked results were obtained. (4) Abundant portals of entry for these organisms were found on the arms of workingmen in innumerable small cuts and punctures made by flying chips of steel from the lathes. (5) The methods of prophylaxis possible are: (*a*) by heat; (*b*) by chemical disinfection, and (*c*) by a combination of the two. Various chemical disinfectants were tried, and the cresol group was found to be the most effective and the least expensive. (6) By use of chemical disinfection (cresols), wound infections have been reduced from 5 per cent. to less than 0.5 per cent. in the plant under consideration, and furunculosis has almost disappeared.

4. Prolapse of the Female Urethra.—John W. Keefe. See MEDICAL RECORD, June 16, 1917, page 1060.

5. The Preservation of the Menstrual Function in Double Suppurative Disease of the Tubes and Chronic Metritis.—John Osborn Polak. See MEDICAL RECORD, June 16, 1917, page 1060.

8. When Is Cancer Operable?—J. Walter Vaughan. See MEDICAL RECORD, June 16, 1917, page 1062.

9. Relation of Vital Capacity of Lungs to Clinical Condition of Patients with Heart Disease.—Charles W. McClure and Francis W. Peabody. See MEDICAL RECORD, June 16, 1917, page 1076.

12. Has the New-Born Child with Sutured Cord a Better Start in Life?—George Rendleman and Fred J. Taussig. See MEDICAL RECORD, June 9, 1917, page 1016.

The Lancet.

November 17, 1917.

1. An Introduction to a Debate on the Value and Limitations of Sanatorium Treatment. T. D. Lister.
2. Tartar Emetic in Treatment of Malaria. A. W. Falconer and A. G. Anderson.
3. The Mortality from Post-choleraic Uremia: A 70 per cent. Reduction through Intravenous Injections of Sodium Bicarbonate. Leonard Rogers.
4. Epitheliomatous Neoplasms of the Dorsal Aspect of the Hand. Charles Greene Cumston.
5. Perfusion of the Heart with Nicotine. D. T. Barry.

5. Perfusion of the Heart with Nicotine.—D. T. Barry has carried out experiments in order to investigate the action of nicotine on the heart, and has used the frog's heart for the work. The heart was systematically perfused with nicotine in varying strengths and a large number of observations made on more than 100 hearts of *Rana temporaria*. Some hundreds of graphic records were obtained. The results of these observations showed that nicotine in weak solution, 0.1 and 0.2 per cent., which has been neutralized, perfused through the hearts of frogs gives results which are fairly uniform, though certain variations occur. The first effect in a majority of instances is pure acceleration of the beat which is usually seen in less than half a minute from the introduction of the drug. This gives way to slowing, a phase in which increased force of the contractions is also seen. When acceleration is not in evidence increased force is usually exhibited alone within the first half of a minute, or both may occur together. The stimulation of accelerator fibers is soon followed by depression, and this double action is believed to be true of nicotine on the different elements responding to it. Slowing of the beat leads to a definite stop lasting one or a few minutes, but this is not common with solutions of less than 0.2 per cent. After a period of quiescence the heart resumes its beat with a rhythm which may be irregular or regular, the amplitude of contraction being usually greater than before. The contractions are now often reversed, viz., apex to base sequence, and this is more common after stronger solutions of nicotine, 0.5 to 1 per cent. With 0.5 to 1 per cent. solutions cessation of beat occurs sooner than with weaker solutions and lasts longer. With a solution of less than 1 per cent. it resumes beating spontaneously after arrest, with nicotine perfusion kept up, though this is not always so. The slowing of the beat and arrest for a while is due to stimulation of the vagus endings. The failure of atropine to counteract this points to stimulation of postganglionic fibers. This resembles its effect on the sympathetic side causing acceleration. The augmentor fibers are also stimulated by nicotine, and the succeeding depression is shortlived or may be much delayed. Evidence is given of their activity in certain stages of nicotine effect, when inhibitor

and purely accelerator factors seem to be suppressed. The activity of augmentor fibers to the ventricle seems to be possessed of a certain degree of independence, in consequence of which they may constitute the chief factor in independent ventricular rhythm. The work done by the heart can be increased by nicotine stimulation. This is in part nervous and in part muscular in origin. The delay in the passage of the contraction wave from auricles to ventricle is reduced by nicotine, in some instances independently of acceleration, and is frequently seen to lead to a reversed rhythm. The usually subordinate ventricle mechanism is stimulated to predominance in the cycle. Though all of the phenomena mentioned have been observed many times the only one which may be said to be unfailing in its appearance is slowing and arrest of the beat in proportion to the strength of nicotine used. Very strong doses of atropine do not abolish this.

British Medical Journal.

November 17, 1917.

1. The Fitzpatrick Lectures on Medicine in England during the Reign of George III. Arnold Chaplin.
2. The Relative Germicidal Efficiency of Antiseptics of the Chlorine Group and Acriflavine and other Dyes. H. D. Dakin and E. K. Dunham.
3. Detection and Treatment with Emetine Bismuth Iodide of Amebic Dysentery Carriers among Cases of Irritable Heart. Margaret W. Jepps and J. C. Meakins.
4. Spontaneous Evacuation of a Shrapnel Bullet in the Lung by Expectoration. R. Murray Leslie.

3. Detection and Treatment with Emetine Bismuth Iodide of Amebic Dysentery Carriers Among Cases of Irritable Heart.—Margaret W. Jepps and J. C. Meakins in their report to the Medical Research Committee state that amebic dysentery was found to be either a direct or aggravating cause of irritable heart among soldiers returned from the Mediterranean Force. Their investigation was in the determination of cases of carriers among these soldiers and an attempt to cure them. From October, 1916, to February, 1917, an examination of the stools of all cases suffering from irritable heart from the Mediterranean Force admitted to the Hampstead Military Hospital was made, while no selection of men was made with reference to the presence or absence of a history of dysentery. Microscopic examinations of stools were made in the usual way and six careful examinations of at least each man was done before he was discharged as uninfected. Sixty-five cases were examined. The *Entamœba histolytica* was detected in twenty-four cases, the *Entamœba coli* in thirty-two cases, the *Lamblia intestinalis* in twenty cases, the *Chilomastix mesnili* in three cases, and the *Trichomonas hominis* in one case. The treatment by the use of emetine bismuth iodide was carried out by the employment of the drug in three different ways. When given in a powder this drug causes nausea and vomiting, so it was administered in tablet and pill form and was either mixed or coated with some material supposedly insoluble in the stomach. In all twenty-three courses of treatment were given with these preparations. No nausea or vomiting was produced, but in eight cases severe diarrhea and abdominal cramps occurred. Some looseness of the bowels was observed in all cases where the drug appeared to have any action. In the treatment with the stearine-coated tablets there were eight cures out of twelve cases treated, or 66 per cent. With the second, the stearine-coated pills with resin ointment basis, there were no cures, while with the third, another form of stearin coated tablets, there was only one cured out of four cases treated, or 25 per cent. Then the emetine bismuth iodide was given in cachets of 3 grains each to eleven cases. Ten cases, or 91 per cent., were cured after twelve daily doses. Jepps and Meakins found as the result of this detection and treatment that (1) additional infections with intestinal protozoa may be detected at the sixth and later examinations: (2) infections of *E. histolytica* in which no cysts measuring over 10μ in diameter are found in the stools are far from uncommon; (3) the use of emetine bismuth iodide has cured a large proportion (95 per cent.) of the amebic dysentery carriers; (4) the best method of administration of this drug is in the form of the loose powder in cachets in daily doses of 3 grains. At least 36 grains should be given in all; (5) symptoms of irritable heart in amebic dysentery carriers are reduced in a large number of those patients who have been cured of the amebic infection; (6) infection with intestinal protozoa has no marked effect on the differential leucocyte count.

La Presse Médicale.

October 11, 1917.

The Question of Bread, French Bread.—Legendre states that the subject of bread is the topic of the day in its twofold aspect—economical and agricultural. The wheat yield this year is between 30,000,000 and 40,000,000 quintals while from 90,000,000 to 95,000,000 are required to feed the people until the next harvest. There are not enough of other kinds of bread grain to make up this deficit. The wheat harvest of other countries are below the average. Imports of wheat and rice are uncertain because of the submarines, scarcity of ships and heavy freight charges. Unless some decided step is taken there will be no bread by the end of January, 1918. The measures to remedy this state of affairs include the following: Maximum extraction of the starch from wheat, addition to wheat flour of other flours, reduction of consumption to the minimum consistent with health, avoidance of waste in every form. All of these measures are of course already under way but are not as yet beyond criticism. Wheat comprises three parts, envelope, kernel and germ. The kernel consists of starch and gluten while the germ, rich in protein, has a food value at least equal to that of the kernel. A special layer of the germ beneath the envelope is rich in diastase. In theory the yield of starch should be 85 per cent. but as a matter of fact milling extracts only from 65 to 70 per cent. of white flour. The rest of the grain consists of a number of by-products—seconds, thirds, fine bran, coarse bran, each containing less and less starch. When wheat reaches the mill it is usually mixed with foreign substances—straw, dirt and other forms of debris along with portions of weeds. Rye may be ergotized, maize fermented. It is true that, thanks to modern milling, wheat is cleansed during the process, but only clean wheat should be milled. It is absurd to speak of the results of bolting without regard to the quality of the grain and the latter may be estimated by the weight of the crop for each hectolitre, which should average 74 kilograms. Wheat is made into three principal forms of bread, white, "brown" and whole wheat. Reckoning both nutritive value and cost "brown" bread should be superior to white bread while whole wheat bread should surpass brown bread. The utilization of whole wheat bread is about 88 per cent. Millers state that brown flour does not keep, bakers that it is hard to work with and consumers find it sour and unappetizing. Hygienists regard it as deleterious to the health (dyspepsia, eruptions) and economists state that it favors waste. In regard to the use of bran for cattle the Government is in the position of a farmer who owns only a calf and a small quantity of flour. In such a case the animal must make some other shift. A saying was once coined, "the bran gives the weight." Man needs the starch in the by-products of wheat and while the cattle may need these cellulose straw may be substituted. The recommendations of the author are much like those of Rubner. The wheat should be milled into flour and by-products and the seconds and thirds mixed with the flour in a ratio of 20 to 25 per cent.

La Presse Médicale.

October 22, 1917.

Tachyphylaxis and Its Role in Therapeutics.—Busquet refers to the original discovery in 1880 that an initial injection of peptone into a dog's vein rendered the blood incoagulable; but that after the blood had recovered further injections of protein no longer produced that result. Long afterwards it was learned that an injection of propeptone insufficient in itself to affect the blood sensibly protected the latter against the action of peptone even after an interval of but a few minutes. In 1911 Gley and Champy named this rapid immunization tachyphylaxis. Peptone is not the only substance to behave thus, for the same phenomenon may be produced with intestinal extract, placenta extract and in fact an entire series of such bodies. Attempts have

been made to explain the mechanism of this behavior as follows: As far back as 1883 it was known that blood coagulating substances when thrown into a vein produced their results instantly but that the blood once more became incoagulable because of the formation in the liver of antithrombine. Various experiments have shown that an anticoagulating substance, heriedine, can be made to immunize an animal against the toxic action of certain animal extracts. Various drugs used by the intravenous route are able to cause a tachyphylactic reaction. Here belong salvarsan, peptone, nucleinate of soda and chaulmoogra oil. A rabbit can be immunized against a poisonous dose of salvarsan by a preparatory injection, the principle involved being that of tachyphylaxis. In 1916 the author showed that while a first injection of sodium nucleinate in a dog's veins had a pronounced hypotensive action an injection five times as strong given after tension had become normal no longer produced hypotension. This phenomenon also appears to depend on tachyphylaxis. We have every right to believe that the latter readily occurs in mankind. Intolerance is often seen toward the first dose of salvarsan in syphilis, of nucleinate of soda in paresis, which is not encountered in later attempts. In regard to possible therapeutic applications we may first consider blood transfusion. Defibrinated blood is known to be toxic, even to the animal donor itself. This results from the action of the fibrin ferment in causing intravascular coagulation. This should be prevented by the injection of a small immunizing dose of blood. Next in order comes the intravenous exhibition of gland extracts. Might not a first injection immunize the subject against the therapeutic action of later injections? Probably not, for these glands have specific properties while their action as organ extracts is a general one, not at all specific. Suprarenal substance has a toxic action as an organ extract which immunizes against further injections. But this substance has nothing to do with the adrenaline and its vasoconstrictor action. The initial toxic action does not prejudice the use of the remedy—in fact by eliminating any further toxic action it distinctly favors it. Another class of remedies favorably influenced by tachyphylaxis comprises the colloids of the metals and metalloids.

Hygiea.

September 15, 1917.

The Carrel Method of Wound Treatment.—Gramén tested this method with certain modifications of detail upon one hundred patients with suppurating processes in the Maria Hospital, Stockholm. The results generally speaking were good. In the treatment of appendicitis or other forms of intraperitoneal abscess the method was combined with the Mikulicz tamponade which was removed 1½ to 2 days after intervention. Afterwards ordinary irrigation was employed through drains inserted during the operation. Worthy of special mention is a case of empyema which was closed with sutures after Carrel treatment. As a result a pneumothorax rapidly decreased.

Contribution to Our Knowledge of Embolism and Thrombosis of the Mesenteric Vessels.—Hedlund reports two cases, the first being one of thromhosis of the superior mesenteric vein following operation for tubal abortion. She was seized with all the symptoms of ileus and a portion of the jejunum was resected. The only mechanical obstacle was an infarct in the intestinal wall which had narrowed the lumen of the bowel. The symptoms were not relieved and autopsy revealed the extension of the thrombotic process at the site of the resection. The second patient was seized with abdominal symptoms in the midst of an attack of pneumonia. Operation could not have been ventured. Autopsy revealed the presence of a liter of pus in the abdomen with fibrous adhesions. A section of the ileum (15 cm.) was gangrenous. There was arteriosclerosis of the superior mesenteric artery with extensive circulation disturbances in the corresponding mesentery.

Hydronephrosis with Old Blood Clots.—Gramén reports a case of successful operation for this condition, the cause of which was probably an accessory renal vessel which ran from the anterior aspect of the ureter to the anterior aspect of the lower pole of the kidney. The hydronephrosis sac contained a mass of rounded coagula the size of a small pea, evidently of different ages. The condition was beyond an explanation. Nothing resembling it could be found in literature.

An Exhaustion Phenomenon in the Areas of Sense of Smell and Taste.—Backmann made numerous experiments the basis of which was saturation of room air with some powerfully odoriferous substance. After subjects had been confined in the room for a stated interval the senses of smell and taste were tested for the same or other substances by Zwaardemaker's method, the concentration being progressively increased. A direct ratio was established between degree of exhaustion and concentration of test substance and even quantitatively there was marked agreement between the exhausting and the test perfume.

Correspondenz Blatt für Schweizer Aerzte.

October 20, 1917.

Indirect Trauma and Aneurysm of the Arteries of the Base of the Brain.—Hedinger has recently studied aneurysms in this locality with reference to certail pial and subpial hemorrhages. The aneurysms are chiefly the result of inflammatory processes and the rupture occurs by preference in the third decade of life, often in the midst of robust health. These arterial changes are with certain exceptions of syphilitic nature. Among these exceptions are cases due to indirect traumas, which even in sound arteries have led to sudden fatal hemorrhage. The author does not refer to free meningeal hemorrhage in these connections but to what he terms intrameningeal lesions, in which the blood escapes between the pia and arachmoid or beneath the former. The author describes a personal case in a woman of 47 with a bad personal history of disease (years of migraine, post typhoid thrombophlebitis of the lower extremities, removal of large uterine fibroma). She fell down an entire flight of stairs, bumping repeatedly her neck and shoulder which later pained her severely, giving rise to suspicion of linear fracture of a vertebra. She made a good recovery, save that her migrain caused a temporary return of these pains. After an intense spontaneous attack of the latter she was found dead in bed. At autopsy she was seen to be in good general condition. The uterus and adnexa had been removed. The left parietal bone showed a partial fissure. There was but little bloody fluid in the subarachnoid space but abundant fluid and clotted blood upon, within and beneath the pia. The basal arteries were abnormally fragile and a rupture was found in a wide sacciform dilatation in the left vertebral just before the branching point of the basilaris. A similar case is quoted from literature.

Commotion Psychosis.—Binswanger relates a series of cases of which one may serve as illustration. A soldier aged 25 of neuropathic stock (brother chorea, sister infantile paralysis) had been cured of gastric ulcer before the war. Mentally his record was fair, no imbecile reactions in association tests. Was of the affective type, cheerful and jolly, his occasional "jags" were not of pathological type. Very early in the war a bullet struck him beneath the eye. He was not stunned. Knew how to protect himself, was thought to be dead by his own men, but announced himself at roll call, weak and feverish. In the hospital he passed the first ten days in delirium with amnesia. Somatic and psychic states then rapidly came to equilibrium. Retrograde amnesia was present at first. The nature of this 10-day psychosis is obscure. As fever was considerable (maximum 38.88°) it could be imagined as febrile delirium. The alternatives would be commotion or exhaustion psychosis, the first from the impact of the bullet, the latter from the ordinary hardships of war acting upon a neuropathic soil. Eight months later, after an operation upon the wound, the temperature suddenly arose with a violent delirium which necessitated the use of the straitjacket. It was learned that patient had passed from the period of anesthesia directly into a psychotic state—that he had come out of the ether like a raving maniac. After the first 2 days he had lucid spells. The diagnosis was epileptoid excitation with delirium. It appeared he was 3 hours in coming out of the ether, which showed that his attack had really begun as a period of stupor. The subsequent history threw considerable light on the case, for without further psychosis the man developed severe cortical attacks between which he was chiefly out of sorts.

Book Reviews.

A Text-Book of Materia Medica for Nurses. Including Therapeutics and Toxicology. By George P. Paul, M.D., C.P.H. (Harvard) State Director, International Health Board, Rockefeller Foundation. Third Edition, Thoroughly Revised. 12mo of 295 Pages. Cloth, $1.50 net. Philadelphia and London: W. B. Saunders Company, 1917.

This Materia Medica for Nurses has been written very carefully, and will serve as an excellent book for reference. It comprises a classification of drugs according to their action upon the various systems of the body—the drugs in this connection being mentioned by name only. Then in alphabetical order the drugs commonly used are given, with the various facts to be known well cited so that one can at a glance see the derivation, incompatibility, dosage, action, therapeutic indications, administration, pretoxic signs and toxicology.

To one teaching this subject, this arrangement necessitates a choice of teaching the drugs as they come in the alphabetical order with no grouping as to action, or of having the nurse look up each drug as it is studied. And it is very hard to impress them upon the memory unless some practical working classification is given.

Practical therapeutic measures and vaccine therapy are clearly discussed. Very good tables are arranged with drug dosage, the making of solutions, weights, equivalents, etc. Notwithstanding the difficulty of arrangement of material, the book answers the purpose for which it was written in a very satisfactory manner.

Diseases of the Skin. By Richard L. Sutton, M.D., Professor of Diseases of the Skin, University of Kansas School of Medicine; Former Chairman of the Dermatological Section of the American Medical Association; Member of the American Dermatological Association; Assistant Surgeon, United States Navy, Retired; Dermatologist to the Christian Church Hospital. With 833 Illustrations and Eight Colored Plates. Second Edition, Revised and Enlarged. St. Louis: C. V. Mosby Company, 1917.

In a review of the first edition of this work we expressed an appreciation of its excellence, pointing out a few omissions which a second edition would doubtless include. The author has added no less than 140 new illustrations, and the gross number of pages is increased by over one hundred. Most of the omissions noted by us have been incorporated, and there are other new topics, as well as revision of some of the old ones. We still believe that not enough attention is paid to the parasitism of the body louse in connection with typhus and other diseases. The literature of the subject is enormous, and a number of cuts would have been instructive, *e.g.* one of a "louse-proof suit."

The Book of Home Nursing. A Practical Guide for the Treatment of Sickness in the Home. By Frances Campbell (Mrs. George E. Campbell), Graduate of Hospital of St. Barnabas, Newark, N. J. Price, $1.00 net. New York: E. P. Dutton & Company, 1917.

Frances Campbell has written this book, not for the woman-dweller in the city where trained nurses are to be found on the other end of every telephone wire, but for the woman of the farm, town, and small city, who so often has to exercise her strength, judgment, and natural ability in the care of her sick without any technical knowledge to sustain her efforts.

The book is fairly alive with the spirit of the author,—a kindly, sensible, and keenly humorous spirit which must have brought a widening outlook and influence to the patients fortunate enough to have possessed its owner in the sick-room.

No attempt has been made to present the knowledge offered with any literary style. Because of the absence of all such effort, Frances Campbell just talks to one in a homey, confidential way, and soon one realizes that a mass of nursing facts have been presented and surrounded with a charm of interest, which bids fair to dispel any desire to remain in ignorance of such important knowledge. She carefully refrains from intruding on the physician's domain, and the chapter devoted to the care of children possesses especially valuable information.

Altogether this book deserves a wide circulation not only for the women for whom it is written, but for every woman, who in times of physical stress and sudden emergency, should have a clear understanding and knowledge of the means and methods of giving assistance in the restoration of the normal balance of health and strength.

St. Luke's Hospital Medical and Surgical Reports, Volume IV. 1917. New York: The Riess Publishing Company, 1917.

This volume of St. Luke's Hospital reports contains some valuable matter. Among the papers published therein are the treatment of uterine fibroids by Dr. Robert Abbe, Medical Treatment of Chronic Intestinal Stasis by Dr. W. A. Bastedo, Foreign Bodies in Giant Cells by Dr. F. C. Wood, and Blood Transfusion and Regeneration in Pernicious Anemia by Drs. K. M. Vogel and U. P. McCurdy. There are several excellent illustrations. A feature of the book is a description by Drs. F. C. Wood, Karl M. Vogel, and I. W. Famulener of the methods of laboratory technique employed at St. Luke's Hospital. The publication of these methods is a new departure in hospital reports and promises to be of great service to other laboratory workers as well as furnishing an example to be followed with profit by the editors of other volumes of this kind.

Everyman's Chemistry. The Chemist's Point of View and His Recent Work Told for the Layman. By Ellwood Hendrick. Price $2. New York: Harper & Brothers, 1917.

This is the second volume in the new "Modern Science Series," which is to be a collection of books presenting "the latest and most authoritative pictures of modern advance in scientific and sociological fields." If the projected series is to contain many books of the character of the one before us its success is assured from the start, for one seldom comes across a book dealing with a scientific subject, and dealing with it scientifically and authoritatively, in which the matter is presented in such a colloquial and humorous fashion as to keep the reader entertained while he is being instructed. Indeed the only objection we have to offer against the book is that one is so entertained by the style and manner of presentation of the subject that he is tempted to go on reading more than he can assimilate. And there is a great deal to assimilate, since the book covers in outline the whole of inorganic and organic chemistry from the composition of air and water to and through the fearfully compounded and cacophonously denominated coal-tar products. The author, though not a chemist by profession, is one by education, and enjoys a well-merited reputation among chemists for a broad knowledge that covers the entire field of that science. During the recent meeting of chemists in this city his accounts of the proceedings, published each day in the New York *Times*, were read and enjoyed by chemists and lay folk alike. The book which he has written is not a treatise on chemistry for the use of practical students of that profession, but is designed for the man in the street who wants to have a saving knowledge of chemistry without spending the time, which is not his to spend, in mastering the subject by studying dry text-books or blowing himself up in a laboratory. The author takes this man, thirsting for knowledge, aside and fills his mind with the solid facts of chemistry so camouflaged with humor and colloquialisms that the man thinks he has been enjoying an after-dinner chat and is surprised to find that he has really been to school and acquired a store of useful knowledge. The medical man of an older generation, whose chemical course consisted of a lecture three days in the week during one college term, and this lecture the last one of the day when everyone was tired and sleepy, will find this book exactly what he needs to make up for his deficiencies and to give him a nodding acquaintance with a science without some knowledge of which much that he reads in his journals and medical books is almost unintelligible. The book should be read a chapter at a time, a task which will prove to be a pleasure, the temptation to skim along rapidly in order to enjoy the author's jolly style being stoutly resisted. If he does this, when he closes the book he will have the immense satisfaction of feeling that at last he understands something of one of the most interesting, and still most mysterious, of all the branches of learning revealed to mortal man.

Medical Bacteriology. By John A. Roddy, M.D., Associate in Hygiene and Bacteriology, Jefferson Medical College; Chief Assistant, Department of Clinical Medicine, Jefferson Hospital; Professor of Hygiene and Bacteriology, Philadelphia College of Pharmacy; sometime Serologist to the Philadelphia General Hospital, etc. With 46 Illustrations, of which eight are printed in colors. Price, $2.50. Philadelphia: P. Blakiston's Son & Co., 1917.

Something over one-half of this book is devoted to a description of bacteria and the techniques for their demonstration. This section would rank with first or second year undergraduate textbooks or even among those of a preparatory course for medical studies. The second section, on the other hand, belongs under diagnosis and therapeutics, and hence to the last two years of the medical curriculum and to postgraduate study. The author, however, does not in his preface claim that the book was written with this end in view. On the other hand, he is very modest in his estimate of what his work should accomplish. But few volumes are so planned that they will be of service for so many years of student life. With this end in view the book should perhaps have been larger.

The Principles and Practice of Dermatology. By William Allen Pusey, A.M., M.D. Professor of Dermatology in the University of Illinois, Emeritus, etc., etc. With 54 Plates and 466 Illustrations. Third Edition. New York and London: D. Appleton & Co., 1917.

This edition contains over 10 per cent. more matter than the preceding one which appeared in 1911, but this is accounted for in part by a 20 per cent. increase in the text figures. The author enumerates 26 new subjects which are incorporated into this edition. When writing of subjects of which he is conversant Dr. Pusey has no superior; but in matter which has to be borrowed he is sometimes unfortunate, as when he states that espundia is incurable. Escomel, who first described this condition, cures it with antimony. The readers of this book also are entitled to a more accurate sketch of the history of syphilis. Professional historians and scholars do not accept the American origin of the disease; Sudhoff and the expressions of opinion of Osler and Garrison, for example, are adverse to this view. The credulity of physicians was never better shown than when they fell (so to speak) for Block's frame-up (to quote Dr. Downing). Those, however, are minor faults, or rather blemishes, and really do not detract from the excellence of the work as an authoritative guide to the practice of dermatology.

Surgical Contributions from 1881-1916. By Rutherford Morison, M.B., F.R.C.S. Edin., F.R.C.S. Eng. Consulting Surgeon Royal Victoria Infirmary, Newcastle-on-Tyne; Professor of Surgery, Durham University, etc. Volume I. General Surgery. Vol. II. Abdominal Surgery. Price, $10 per set. New York: William Wood and Company, 1917.

Volume I. contains 31 reprinted articles which appeared originally in various British medical periodicals. The text is accompanied by 41 plates. The work is dedicated to the author's former house surgeons whose photographs in miniature face the title pages. These number 32. The papers have a wide range and quite a few are general in scope, while six have to do with affections of the extremities, three with surgery of the blood vessels, while the balance are pretty well scattered. Of great interest to American readers are accounts of surgical visitations to the United States in 1892 and again in 1914.

Volume II. is much larger than the first of the set, since it contains 953 pages. It comprises 36 reprinted papers, some of which are very long. The two papers on intestinal obstruction aggregate about 100 pages. Many of the articles are general in scope but there are special papers on diseased uterine adnexa, strangulated hernia, hysterectomy, appendicitis, gallstones, operative cure of ascites, deciduoma malignum, pelvic surgery, gastric and duodenal ulcer, general septic peritonitis, surgery of the colon, etc., etc. In combining what is known as "straight surgery" with major operative gynecology Dr. Morison suggests Lawson Tait of other days and Howard Kelly among contemporaries, not to speak of numerous others, past and present.

Pharmacology and Therapeutics for Students and Practitioners of Medicine. By Horatio C. Wood, Jr., M.D., Professor of Pharmacology and Therapeutics in the University of Pennsylvania; Second Vice-chairman of the Committee of Revision of the U. S. Pharmacœpia. Second Edition. Price. $4.00. Philadelphia and London: J. B. Lippincott Company, 1916.

This second edition of Dr. Wood's comprehensive work brings the material offered up to the present standard, especially all drugs in which there has been gained a rapid advance of scientific knowledge. The articles on veronal, digitalis, pituitary, salvarsan, etc., have been practically rewritten, while twenty or more drugs not included in the first edition have been added, such as apiol, chrysarobin, homatropine, aspidosperma, etc.

Dr. Wood states that he has also introduced into this volume one innovation which the U. S. Pharmacœpia has adopted from the British, that is the term "mil" for the thousandth part of a liter. He explains that this is a much more convenient and accurate term than the "c.c." previously used.

This work is contained in nine chapters, beginning with preliminary considerations, then taking up in the order given the following: Drugs used to affect secretion, drugs used to affect nervous system, drugs used to affect circulation, drugs used to affect the alimentary tract, drugs affecting metabolic processes, drugs acting on causes of disease, extraneous remedies, and concluding with drugs of minor importance.

Every physician, pharmacist, and student knows how difficult it is to acquire a delight for the study of drugs, unless the taste is inborn. This the author has largely overcome by the manner in which he has presented his material. Simple, direct, with not a word more than is necessary to provide grace and coherence to his style, Dr. Wood has lived up to the reputation already established by the older members of a family famed for its charm of utterance and keen insight into all things scientifically medical.

Rational Sex Ethics. A Physiological and Psychological Study of the Sex Lives of Normal Men and Women, with Suggestions for a Rational Sex Hygiene. W. F. Robie. A.B., M.D., Superintendent Pine Terrace, Baldwinville, Mass. Sometime Fellow at Clark University. Boston: Richard G. Badger; Toronto: The Copp Clark Co., Limited.

A work of this type and character is always a difficult one to discuss, for the reason that it has to be studied from so many different viewpoints. This book, however, is valuable because of three distinct reasons: First, the material offered has been obtained from practically normal people; second, this same material has been thoroughly studied, digested, and then presented to readers absolutely divorced from any suggestion of hysteria or emotionalism; and third, the author has written in a healthy, sane, direct manner, placing sex ethics on a purely natural basis.

One other point which demands considerable notice is the fact that, not having taken the woman's point of view as to her sex life chiefly from hearsay or from that which hysterical patients might tell under the influence of a physician's presence and dominance, the author has obtained the history of a woman's normal sexual balance from a healthy woman herself—his wife.

Whether all readers will agree to work out these absorbing problems to the same conclusions that the author has done is a matter of little importance. The important fact is that Dr. Robie has offered a light along that path which all must tread, and whether it is trod in decency and in order according to the present day viewpoint, will depend much on the amount of education in sex matters the individual has obtained, aside from the natural will-power possessed as well as moral obligation to be considered.

Each crystal of truth regarding the fundamental basis of life, sex, but adds to a noble working out of the germ of all life, sex. Dr. Robie has offered his part in the solution in a splendid, high-minded, broad-spirited way, that should go far towards placing sex ethics on a rational basis.

Society Reports.

SOUTHERN MEDICAL ASSOCIATION.

Eleventh Annual Meeting, Held in Memphis, Tenn., November 12-15, 1917.

(*Concluded from page* 1050)

SECTION ON PUBLIC HEALTH.

CHAIRMAN, DR. ARTHUR T. MCCORMACK OF BOWLING GREEN, KENTUCKY.

Popularizing Public Health.—Drs. C. E. TERRY and F. SCHNEIDER, JR., of New York City, stated that one of the first ways in which health officers felt the disturbing influence of the war upon disease prevention organization was with regard to public health nurses. With the creation of an American army abroad a large military nursing service had to be created with great haste. The Red Cross issued a call to its nurses. Among those responding were many public health nurses, women doing infant mortality, tuberculosis, and contagious diseases work in our cities. The withdrawal of these nurses produced a seriously acute situation. The matter came to a head and the mature judgment of the authorities was that public health nurses would be more useful left in their existing occupations. The Red Cross went further than this. Seeing the special importance of public health work in war time, the organization turned over eight nurses to the State Department of Health in Massachusetts, these women to be employed on new child conservation work. In the saturation and resaturation of our public with a realization of health truths, and with a knowledge of the importance of health work, the family magazine had unparalleled possibilities. In addition to the magazine stories, the Seventh Baby Campaign had pushed this experiment in constructive journalism a step further. A field force of trained and experienced public health nurses had been assembled, and two traveling laboratories with experienced laboratory men had been provided. This field force was now engaged in making surveys of infant mortality in particular, and public health work in general, in communities between 10,000 and 40,000 population throughout the country. Careful inventories of local conditions were made, and reports were submitted giving findings and outlining a practical program for public health progress. The field work was conducted only upon the request of local authorities, and with their cooperation. The subjects covered were infant mortality in particular, that is, the number and causes of infant deaths and existing efforts to prevent them; milk supply, water supply, sewers, and sewage disposal, privies and fly-breeding, waste disposal, and organization and budget of the health department.

Distribution of Vaccines and Serums by the State.—Dr. C. A. SHORE of Raleigh, North Carolina, stated that diagnostic work was most useful when done near to the patient, and therefore the establishment of municipal laboratories was always to be encouraged where practicable. In his own state of North Carolina they had no great cities, but a large number of flourishing and prosperous communities with a population between 20,000 and 40,000. Each of these little cities, and many of the counties, should have their own laboratory for diagnostic purposes and for the control of its water and milk supplies. The State Laboratory should serve the sections not otherwise provided for, and in addition should have a much wider field of usefulness and a direct public health service in making and distributing those vaccines and serums which had been accepted as reliable, curative, or prophylactic agents. The next work taken up in their laboratory was the distribution of typhoid vaccine. This was given free to all registered physicians, and they had been sending out annually for three years an average of 400,000 doses. They estimated that at least 100,000 citizens were immunized against typhoid fever each year. He believed in the free distribution of diphtheria antitoxin. It was only then that we could hope for its use in all cases of diphtheria.

Intensive Community Work in Tennessee.—Dr. E. L. BISHOP of Nashville stated that health had been said by some one to be the physiological functioning of a community. Class education was of importance in that we hoped to reach the masses through the masses. Of the latter the family physician was of as much if not more value than any other factor. No one expected him to be a trained sanitarian, but where postgraduate work was offered him in a practicable way he would form an important link in our chain of education. He believed it also to be a part of the field man's duty to attend all county medical society meetings during his stay, to secure their endorsement, and to take part actively in each meeting where opportunity offered. He would always be made room for. Special attention should also be paid to any social service organization or club of like nature. We should try to secure organized effort from a community standpoint, and to establish such a sanitary sense that health work would ever afterwards be seen as an affair of community interest, and not through the tubular vision of the individual perspective. Unless this be done, no matter how well the result showed on paper, we would have fallen short in attainment and would have secured but temporary improvement.

Health Education in Rural Districts.—Dr. L. A. RISE of Columbia, South Carolina, said that two counties in South Carolina this year had been induced to appropriate money through the legislature for a campaign for better health in their rural districts. Notwithstanding the phenomenal rise in the price and scarcity of labor and material in his State, they had been able to make a fair showing, and to stir up an enthusiasm for civic betterment along the line of disease prevention which would cause a demand on the part of the rural population in these counties for a continuation of this work next year. They had largely stressed the prevention of intestinal diseases by approved methods of sanitation, but they had also devoted a part of their work to the prevention of tuberculosis, and diseases of childhood. Lectures in schools, both negro and white, had been given in practically every community. In his county and community fairs they had had health exhibits which had taught valuable lessons in disease prevention to thousands.

Medical Inspection of Schools in North Carolina.—Dr. GEORGE M. COOPER of Raleigh, North Carolina, said that the purpose of medical inspection was two-fold: (1) To inculcate a knowledge of hygiene and sanitation in the minds of the children at an impressionable age. That was teaching applied hygiene. (2) To discover the children who had preventable or curable defects, and to have the trouble treated before permanent danger occurred. The problem in a nutshell was to find the defective children and get them treated. Twenty per cent. of all the money expended for education in the United States was wasted, according to the United States Public Health Service and the National Educational Association, because of preventable physical defects of the children. This meant an annual loss of millions of dollars. About one-fourth of all the men examined thus far for the National army under the draft law had been rejected on account of physical defects. Of the rejections more than one-half had been due to the easily preventable conditions if treated not later than the early years of school age. These defects included eye, ear, throat, and teeth troubles. For the purpose of aiding in the treatment of all children whose parents were financially unable to procure the service, the State Board of Health had a fund of $10,000 per year available, matched dollar for dollar by the counties, thus constituting a fund of $20,000 per year for this purpose. If every teacher and every medical inspector did his or her full duty in a sympathetic manner, numbers of children would have the benefit of first-class dental and specialists' services who would otherwise never get it.

The Relative Value of the Public Health Nurse in the Solution of the Tuberculosis Problem.—Dr. W. L. HEIZER of Frankfort, Kentucky, stated that the chief advantages of starting a health campaign in a county, which had done little before, by employing competent public health nurses, were: the natural inclination of a community to spend a less amount of money, a false economy, to accomplish a public service; the popular appeal to the public by the ministrations to the sick;

the prenatal care in selected cases; a quick appreciation of the value of public health work by reason of its publicity secured as result of appeals for aid to churches, fraternal roganizations, the city and county government; when a nurse was employed by a county health and welfare league, as was the policy of his commission, or a similar organization with a large county membership, it was a logical and certain means of crystallizing such an awakened public health sentiment to the formation of a permanent county, city or state health department with efficient officers and sufficient equipment and assistance, to make real work permanent, constructive and effective.

The Normal College as a Factor in the Dissemination of Public Health Knowledge in the South.—Dr. U. F. JONES of Hattiesburg, Mississippi, asked what could be done to bring about a closer relation between the health department to make the knowledge and practice of public health a part of the everyday life of a community, and to conserve the loss in a community due to preventable disease? The school was the agency endowed by every circumstance for the accomplishment of the task. The normal schools were among the few largest factors in the educational scheme of his county. The normal school was not doing justice in training its teachers in health work unless it had a clinic for the diagnosis of such defects as they would constantly find in their own schoolrooms, clinics showing defective teeth and large tonsils, malnutrition, defective vision, etc., physical defects which should be remedied during school life.

Physical Status of Juvenile Delinquents.—Drs. ELIZABETH BASS and MAUD LOEBER of New Orleans gave this paper, which was based upon clinical and physical examinations of children in the reformatories of New Orleans. They said that many of the children who were sent to reformatories would make better men and women if even superficial attention were given to them before their commitment by a physician attached to the juvenile court, to be followed up in each instance, according to the opinion of the court, either by the child's natural or rightful guardian, or should the court deem commitment proper, by the custodian of the municipal or state institution. Their suggestions, therefore, would be: (1) A conscientious routine physical and clinical examination, with recommendations on the case to the court before commitment. (2) Penalty exacted of the natural guardian in cases of neglect to care for the physical defects of the child or children in their care. (3) Physical and clinical records kept of each child at the time of admission into reformatory, and observations recorded once each month thereafter, or more frequently, should the case require it. (4) Each reformatory attending physician should have as his assistants specialists in the various branches of medicine, as staff officers, to regularly visit and treat cases needing attention in his specialty. (5) A resident trained nurse. (6) That the diet and mode of life in an institution be passed upon by that institution's attending physician.

Dr. OSCAR DOWLING of Shreveport, La., said that the prison system in vogue was an insult to our intelligence and a disgrace to our civilization, which we called Christian, and there was no feature of the whole system more in need of reform than that which pertained to the juvenile criminal. Although not complete, there were sufficient data to show the close and intimate relation of mental states to abnormal physical conditions. That some defect or bodily pain was the cause of actions often mistakenly called criminal was clear. Then, logically, the cause should be discovered and the remedy applied. Every court should take cognizance of pain or mental defect as a predisposing cause of crime. No jury would convict an insane person. Institutional life at its best for the well was not an environment which gave ideal results, and life in an institution for the physically defective, even with the utmost vigilance, could not be other than trying in the extreme. He heartily approved the recommendations contained in the paper, each one of which was important and imperative. He believed they were practical and could be put into immediate effect wherever public opinion would make the demand. He believed full publicity as to the details of juvenile court proceedings and institutional life would stimulate public sentiment to the degree that the demand would be made.

SECTION ON MEDICINE.

CHAIRMAN, DR. J. S. MCLESTER OF BIRMINGHAM, ALA.

Chairman's Address: Chemical Analysis of the Blood as an Index to Treatment. — Dr. JAMES S. MCLESTER of Birmingham, Ala., said that the question was frequently asked, did the chemical analysis of the blood, which was of admitted interest in the research laboratory, offer anything of real practical value to the clinic? Unquestionably it did. One needed only to point to nephritis and diabetes. But of still greater importance was the wonderful field for clinical research which had thus been opened, and when he considered the possibilities through these methods of solving old problems and gaining insight into new things, he was tempted to say that as yet the surface had hardly been scratched. But what of its value to the clinic today? The non-protein-nitrogen of the blood in which was included all nitrogenous waste products, was increased with loss of kidney efficiency. The kidneys determined the height of the waste products in the blood and, conversely, the accumulation of such waste products gave evidence of loss of kidney function. Diet was normally of no influence since independently of protein intake the non-protein-nitrogen maintained a fairly constant level, but with diseased kidneys the diet became a determining factor and a high non-protein-nitrogen content of the blood could usually be reduced by proper feeding. Estimations of the non-protein nitrogen alone, however, were of small clinical value, serving as they did chiefly as a basis upon which other values might be reckoned. Urea formed in health about one-half of the non-protein nitrogen, the upper values of each being approximately 15 and 30 mgm. respectively, in 100 gm. of blood. With the increased non-protein nitrogen of kidney incompetency he found a relatively greater increase of urea, so that with 50 mgm. of non-protein nitrogen, for instance, we were likely to find 30 or 35 mgm. of urea. A consideration of these figures, and particularly of the change produced in them by appropriate diet, gave information which was of definite clinical value; but Ambard's coefficient, which was intended to express by mathematical formulæ the mutual relationship of blood urea and urine urea, was coming to be regarded as an unnecessarily complex piece of reckoning. Attention had frequently been called to the increase in blood uric acid which accompanied chronic interstitial nephritis, this increase being parallel with that of the other waste products. Recently Myers and Fine had reported a number of cases of early chronic interstitial nephritis showing increase of blood uric acid with no corresponding accumulation of urea and creatinin and little or no disturbance of phthalein output. They expressed the opinion that an increase in the blood uric acid alone might frequently be taken as evidence of early renal incompetency, and were inclined to the belief that this test would give positive evidence of chronic kidney disease before the appearance of the classical albumen and casts. While in early nephritis estimations of the blood sugar and uric acid were of value, at the other end of the clinical process they found creatinin accumulations offering prognostic information of great value and grave significance. In health and even in kidney disease of moderate degree, creatinin maintained the remarkably constant level of 1 to 2 mgm. in 100 c.c. of blood, but when uremia was impending, this substance in rapidly increased values above 2 mgm. might be looked upon with great concern. Chase particularly had called attention to the prognostic value of creatinin estimations and to their therapeutic application. Joslin had stated that in 45 per cent. of his diabetics an increase in body fat preceded the onset of the disease, and that in 60 per cent. of the fatal cases death was caused by disturbances of fat metabolism resulting in acidosis.

Report of the Committee on Uniformity in the Wassermann Reaction.—Dr. WILLIAM LITTERER of Nashville and Dr. CHARLES WATTERSTON of Birmingham, Ala., drew the following conclusions: (1) A uniform technique and a uniform antigen in the hands of men trained in laboratory work, will give uniform results if

adhered to closely in every detail. (2) Before the results obtained with the Wassermann test are uniform, a method of standardizing the antigen must be found and the men performing the test must agree as to technique.

Syphilis of the Heart and Aorta.—Dr. BRYCE W. FONTAINE of Memphis, Tenn., stated that the records of the Memphis General Hospital for the years 1916 and 1917 inclusive showed a total admission of 219 cases of cardiovascular disease, among which were 43 whites, 176 negroes, 183 males and 36 females, between the ages of 4 and 77 years. Among these patients disease of the cardiac valves headed the list with the occurrence of mitral insufficiency in 133 of the cases, and aortic insufficiency in 24. Next in point of number were aneurysms of the aorta and the peripheral arteries of which there were 18. Such a study showed in the cases of mitral disease 37 or 27.8 per cent. infected with syphilis; in the cases of aortic disease 11 or 45.8 per cent.; and in the cases of aneurysm 11 or 61.1 per cent. From this could be seen how very prominent and common a factor syphilis was in the production of diseases of this character. This fact was suspected more than 50 years ago, and Wagner recorded a very accurate macroscopic appearance of syphilitic aortitis as early as 1866. This author recognized a process in the aorta resembling in some respects atheromatous changes, but in many ways it was unlike atheroma. His experience accorded very closely with that of others, particularly Pearce, in that perhaps 55 per cent. of his cases of aortic insufficiency in adults under 35 showed a positive Wassermann reaction, and an absence of all other etiological factors except syphilis, in the production of the disease. In every case of aortic insufficiency in a young adult, in addition to the physical and other examinations, there should be made a radiographic examination of the chest, for this might be the only means of differentiation from chronic aortitis or aneurysm.

Syphilis of the Stomach and Intestines.—Dr. SIDNEY K. SIMON of New Orleans stated that syphilitic ulcers of the stomach probably represented a breaking down of the gummatous deposits in the mucosa and submucosa. Some of the authorities believed that the obliterating endarteritis, found, as a rule, in luetic granuloma, played an important role in the causation of ulcers. The ulcers had the appearance of a ragged crater on a hardened, infiltrated base, and, unlike the peptic ulcers, were multiple in their distribution over the gastric surface. Again, in contrast to the peptic ulcers, bleeding was a rare phenomenon in the syphilitic type. Syphilitic involvement of the upper intestinal tract was undoubtedly rare. However, instances of such involvement had been described in the literature. Gutman recorded a case in a woman, age 40, presenting a clinical picture somewhat resembling typhoid, with diarrhea, fever, emaciation, etc. On autopsy, the small bowel from the jejunum down showed numerous annular constrictions, corresponding to deep ulcerations on the mucosa. An obliterating endarteritis was present, but no tubercles or giant cells could be detected. Howers had met with an instance of intestinal syphilis in a man, aged 23, who gave a distinct luetic history. Clinically, he complained of a persistent diarrhea with bloody stools and abdominal pain and distention aggravated at night. The patient subsequently died of an influenzal pneumonia, and at autopsy circular constrictions were found in the bowel as a result of cicatrized ulcerations. In the case of the lower bowel, and particularly of the rectum, there could be no doubt of the occurrence of definite syphilitic lesions. It had been his experience that syphilitic ulceration of the rectum was by no means an infrequent manifestation of the disease. Dysenteric symptoms were present, sometimes in an acute form, and a striking analogy was suggested in such well-known conditions as amebic or bacilliary dysentery, or even to malignant disease of the rectum.

Diagnosis and Treatment of Oral Infections. — Dr. THOMAS P. HINMAN of Atlanta, Georgia, said that ever since the relation of oral infection to systemic disease was discovered, an effort had been made on the part of the profession to eradicate the foci that occurred on fully functionating teeth without destroying the masticating power of the individual by extracting the offending organs, and in some instances these curative means had been successful. However, where there had been a great rarefaction of the cancellous structures supporting the teeth, and large foci were present, and the patient suffering with a severe disease traceable to these foci, then extraction and curettage were imperative. Where there were a number of foci in the mouth, it was almost impossible to determine which one was the source of the trouble; therefore, it was imperative that all should be eliminated. Where the teeth were infected, the tonsils were very frequently involved, and in examining the mouth, the tonsils should always be included. A simple examination could be made by depressing the tongue with a dental mirror placed well back at its base and pressed against the tonsil at its lower border; then, by drawing the mirror upward, in this manner milking the tonsil, any infection would become apparent, as pus would show on the surface of the mirror. While this was rather a crude method, it was effective. There were three means of eradicating apical dental foci, and these were: (1) Extraction of teeth and curettage; (2) excision of the root end and curettage, and (3) electromedication through the canal.

Oral Sepsis and the Anemias.—Dr. M. L. GRAVES of Galveston said that anemia constituted but one of the numerous clinical manifestations of sepsis or infection, whether it originated in the mouth or elsewhere. It was a fairly constant symptom in all the grave infections and to a more moderate extent in the less severe ones. Sufficient was known at present to entitle us to more than a suspicion that William Hunter was correct in believing that pernicious or infective anemia should be laid at the door of mouth infection. His own experience tended to confirm this belief, particularly in two recent cases of pernicious anemia. Rigid examination failed to reveal any focus of infection in one patient save the mouth, which showed a bad glossitis and pyorrheal abscesses about all the few remaining teeth. After the administration of 5200 c.c. of blood by citrate transfusion, at intervals, the use of salvarsan intravenously, the administration of HCl and good food and rest, only very temporary improvement resulted, until all of the infected teeth were removed, when the patient made such rapid and marked improvement that he had now resumed a laborious occupation with the appearance of health and a blood exhibit approximating the normal. Cases of secondary anemia, associated with arthritic disease, had responded but poorly to blood tonics, such as iron; but some of them, and one in particular, in a recent experience had responded rapidly to an autogenous vaccine made from the removed tonsils containing abscesses, and the symptoms had improved in a notable way, while resistant to all other treatments, including antistreptococcic serums and stock vaccines. These experiences had led him to the belief that mouth infections were frequently the cause of acute and chronic illnesses, with or without anemia, and to the insistence that every focus of infection be removed in the effort to restore health.

Oral Sepsis and Arthritis.—Dr. J. HEYWARD GIBBES of Columbia, S. C., said that a proper investigation of the gingivæ, teeth, and alveolar processes must include roentgenographic studies. The important relationship of chronic pyogenic infections to a large group of the arthropathies had been conclusively demonstrated, and the first step in the management of these cases should consist in a systematic search for foci of infection. No one portal of entry for infecting microorganisms should be allowed to obscure the importance of investigating all possible sources of infection.

Oral Sepsis and the Cardiovascular System. — Dr. ALEXANDER G. BROWN of Richmond, Va., drew the following conclusions: (1) Focal infection of the mouth, chronic alveolar abscess, chronic pericementitis, acute and chronic infection of tonsils and other oral, nasal, and other cavities adjacent, produce serious, grievous, and dangerous diseases of the heart, endocarditis, myocarditis, pericarditis, and pancarditis. (2) Often unrecognized because of its slow, insidious progress, grave maladies of the heart are produced secondary to gross, filthy, offensive, criminal disease of the mouth. (3) Oral focal infection is the cause, occasion, origin of disease of important organs of the body which must be recognized by the medical profession, which must be impressed upon the laity, and which must in the future diminish

and decrease as the profession instructs and the laity heed the instruction that the care of human mouth and accessory cavities from focal infection, or the early eradication of oral infection, when present, is an insurance against the occurrence of many dreadful systemic maladies. (4) Thorough mouth inspection should be made on every new patient coming for treatment or diagnosis. (5) Old patients, with recurrent diseases, whose condition we may feel we know, should receive careful and painstaking buccal, nasal, and aural inspection, searching for any possible storage of septic bacteria. (6) Dentists must be impressed with the necessity of complete and accurate removal of every focus of primary infection, or else secondary metastases cannot be improved or cured. (7) The roentgen ray is necessary for detecting foci in roots of teeth, whether crowned or not, in bone of lower jaw; but the evidence of gum infection, tonsillar infection, salivary gland infection, must be determined by inspection and study by the diagnostician.

The Relation of Oral Sepsis to the Nervous System.—Dr. E. Bates Block of Atlanta said that he had under his care several cases of epilepsy in which pyorrhea alveolaris or apical abscesses existed, and no other cause for epilepsy could be found after carrying out the usual methods of investigation, and in view of the absence of other discoverable causes and the results obtained, he was inclined to think them due to this focal infection. It must be said that other causes such as syphilis, brain diseases, worms, adherent prepuce, intestinal stasis, etc., were far more frequent causes of this disease. He would not like to be understood as claiming that pyorrhea alveolaris was a cause of epilepsy, but he thought the subject was worthy of further thought and study. He had recently had under his care a young woman, who had five boils on the posterior surface of the thigh, followed in four weeks by spinal myelitis involving the corresponding portion of her spinal cord. The question naturally arose why, with so many cases of oral sepsis, there should be so few cases of nervous diseases produced by it if it was indeed the cause of these diseases. If there was free drainage and the pus was freely discharged, it would seem to be a very different proposition from the cases in which blind abscesses existed or where the peridental membrane was destroyed and toxic absorption was great. With an intact peridental membrane there might be no toxic absorption at all. Although focal infections might be the cause of other diseases, the mere removal of the focal infection did not necessarily cure the secondary disease, as the infection might already have extended beyond the point of focal infection, and the best results were obtained by the prophylactic effect of the removal of the focal infection, or in cases where the secondary disease was produced by the toxins from the point of focal infection.

The Relation of Chronic Infection to Thyroid Deficiency.—Dr. Harvey G. Beck of Baltimore stated that during the past three years, since he had made it a matter of routine to examine all patients suffering with chronic ailments in reference to disturbances of the functions of the glands of internal secretion, he had been impressed in the course of his investigation with two important facts: (1) That glandular insufficiency was of common occurrence and frequently overlooked. (2) That chronic infections were almost invariably associated with glandular syndromes. These infections were usually focal in character and seemed to occur with the same relative frequency in insufficiency of the thyroid, pituitary, gonads and adrenal. Rheumatism showed a special tendency to involvement of the thyroid. Vincent had shown the incidence of 50 to 80 per cent. of swelling and tenderness of the gland in the course of acute rheumatic fever. Billings emphasized the frequency with which thyroid intoxication occurred in young women patients with focal infection in the form of alveolar abscesses, tonsillitis, and sinusitis, while Reede had observed thyroid enlargement in 50 cases under 12 years of age, coincident with chronic gingivitis. He also cited a case in which goiter symptoms were relieved after removal of two abscessed teeth, and another case in which goiter, arthritis, and pyorrhea followed tonsillectomy, from which the patient recovered after treating the pyorrhea and extracting an abscessed incisor. Seventy-eight of the 100 cases in his series at the time of examination suffered with chronic infections, mostly focal in character; 94 either showed evidence or gave a history of infection antedating the onset of symptoms. In several instances well marked symptoms of thyroid deficiency developed after protracted acute fevers. Symptoms appeared in two cases following typhoid, one malaria, one puerperal infection, and one repeated attacks of rheumatic fever. Oral sepsis and inflammatory diseases of the gall bladder and appendix played an important rôle in the relation of chronic focal disease and hypothyroidism, comprising 63 per cent. of the 255 infections present in the series. The remaining 37 per cent. formed a miscellaneous group and included among others pelvic infection, pyelitis, arthritis, amebic dysentery, anal fistula, syphilis, tuberculosis, etc. Oral sepsis embracing tonsillitis, root abscesses, pyorrhea, sinusitis, etc., represented 36 per cent. of the total infections and occurred in 56 of the cases. Chronic appendicitis was observed in 32 cases, and cholecystitis and cholelithiasis in 24. In several instances symptoms of both appendicitis and cholecystitis existed in the same individual.

The Wild Rats of the Southern States as Carriers of Spirochæta Icterohæmorrhagica.—Drs. James W. Jobling and A. A. Eggstein of Nashville, Tenn., stated that their work had shown that hemorrhagic icterus was present in their community, and that about 10 per cent. of the wild rats harbored the causative organism. This percentage of carriers among rats was relatively high and justified them in calling attention to the danger attached to work which brought the individual into more or less intimate contact with the habitats of these animals. This warning would certainly apply to soldiers receiving trench training in the South. In this country and in Europe the mortality had not been as high as that observed in Japan. This might be due to the fact that in Japan the organism had become more virulent because of a more rapid passage from man to man, the rat acting as the intermediate host. This was shown to be true when the organism was passed through several generations of guinea pigs, and the same would probably apply when the organism became accustomed to growing in human beings. It was possible that we now saw the evolution of a new epidemic disease.

Fundamentals in Vaccine Therapy. — Dr. Estill D. Holland of Hot Springs, Arkansas, said that where and when to use vaccine was not so definite, but the newer fields in which he had been using it with good results were in some cases of infectious arthritis, arthritis deformans, eczema, and psoriasis. He had had good results in some cases of psoriasis and he now had on hand an old man with an extensive eczema who would not respond to any other treatment than a mixed stock vaccine. This patient had been with him three times before; every time he arrived he was nearly crazy with eczma; he could not wear a coat or a shirt that touched his neck; his arms were raw to the shoulders and his legs to the knees and his eyes nearly shut. He put him on a stock vaccine, the same as used in arthritis, and he was wearing a stiff collar in six weeks and did not have a trace of eczema on him in two months time. He had also had some good results in injecting the sciatic nerve with vaccines in sciatica, but this he did not consider due to an immunizing effect of the vaccine, but to the consequent trauma of the vaccine reaction in and around the nerve. Stock vaccines should be used in all chronic cases where the disease continued, but in a less active state, and that autogenous vaccines were indicated in acute cases where each exacerbation was as active and pronounced as the previous one.

SECTION ON PEDIATRICS.

Chairman, Dr. William Weston of Columbia, South Carolina.

Classification and Treatment of the Acute Diarrheal Diseases in Infancy. — Dr. John L. Morse of Boston, Massachusetts, said that diarrhea from an excess of fat in an artificial food was not at all uncommon. When the disturbance was a mild one the stools were not much changed in color, but contained many small, soft curds and some mucus, and were somewhat more acid in odor and reaction than usual. Sometimes they were grey

and shiny and in other instances, when there was an excess of neutral fat, they were creamy in consistency and color. Sometimes they looked like curdled milk. In other instances they were bright yellow and had an oily appearance. They were seldom green, unless there was also a disturbance in the digestion of sugar. In the worst cases, they were watery, strongly acid, and caused marked irritation of the buttocks. When this happened, the fat was in combination with the alkaline salts, especially sodium. As the result, there was a considerable loss of alkaline salts in the stools. A relative acidosis was thus produced, with an excess of ammonia in the urine. The symptoms of acid intoxication might then develop. A high fever was not uncommon in these severe cases. The prognosis depended upon the severity of the symptoms, but was in general good, unless there was a marked acid intoxication. The treatment consisted in the complete elimination of fat from the food. It was not enough to diminish it; it must be cut out entirely. In most instances it was advisable to give a cathartic in the beginning and to starve for from 12 to 24 hours. In the cases with acid intoxication, bicarbonate of soda should be given in some way and a food containing considerable amounts of sugar, preferably in the form of glucose or maltose. In the less severe cases protein was usually well tolerated and the caloric value of the food, which was much reduced by the withdrawal of the fat, could be made up by increasing the amount of carbohydrates. Fat could usually be cautiously added again in a few days. How rapidly it could be added could only be determined by observation of the symptoms and examination of the stools. Diarrhea was more often due to an excessive protein in human milk than to an excess of either fat or milk sugar. The protein was most likely to be excessive in the early days of lactation and at the time of menstruation. An excess of protein might also be due to excitement, anxiety and nervousness, or to fatigue or lack of exercise. The diarrhea was usually not serious. The baby was ordinarily not very sick, and the temperature was but little, if at all, elevated. The stools were loose or watery, and often contained fat curds as the result of the increased peristalsis and the consequent interference with absorption. The stools were usually brownish-yellow in color, but might be green. They often contained mucus. The odor was not characteristic; the reaction was alkaline or feebly acid. They were not irritating to the skin. The most important element in the treatment of infectious diarrhea was the diet. The character of the diet depended upon the variety of the microorganism which was causing the disease. These microorganisms could be divided, as far as the determination of the diet to be used was concerned, into two groups: 1. The various forms of the dysentery bacillus and the other organisms, except the gas bacillus, which caused the disease. 2. The gas bacillus and allied organisms. The other organisms, although of many different varieties, were grouped with the dysentery bacilli, because as regards their growth and the production of toxic substances from protein and carbohydrate media, they behaved in the same way.

Malaria in Infants.—Dr. Morgan Smith of Little Rock, Arkansas, stated that malarial infection was less frequent in the infant than in the child or adult. This was not due to any natural protection possessed by the suckling, but to the vigilance on the part of the mother to protect her baby from the bites of all insects. Until the runabout age was reached, the infant took its day naps and slept at night under a cheese-cloth canopy or other similar protection. The discovery of a bite on her baby incited the mother to renewed efforts for its protection. Living under the same conditions, the infant was as liable to malarial infection as the other child or adult, and the closer the observation the more convincing became this statement. Malaria, whether occurring in the infant, older child or adult was a serious disease, and demanded the most prompt recognition and treatment. A positive diagnosis could not be made except by blood examination. A negative blood examination did not exclude malaria; not one, but many and frequent specimens of blood, taken at different stages of the disease, should be made. A therapeutic diagnosis should not be made unless it was impossible to make a diagnosis by blood examination. The treatment of malaria in the infant did not differ from that employed in the child or adult.

Some Observations on Rheumatic Fever in Childhood.—Dr. James D. Love of Jacksonville, Fla., stated that the physician recognized rheumatic fever before the symptom-complex was nearly completed and before the rheumatic cachexia was established. The physician who was most apt to make a tardy diagnosis of rheumatic fever was he who regarded joint symptoms as an essential manifestation of the disease. He could not too thoroughly impress the fact that while at one time or another the rheumatic child would likely display evidence of joint involvement, this was by no means necessary, and should be regarded as merely an incident in the course of the malady. Hutchinson aptly remarked that had rheumatic fever been primarily studied in children it would never have been called acute articular rheumatism. In addition to recognizing the protean manifestations of rheumatic fever, we must particularly bear in mind the extreme vulnerability of certain tissues to the action of rheumatic streptococcus. We might thus be able to detect an insidious invasion of this organism before the customary symptoms were displayed and before our patient had sustained irreparable damage. He knew of no more reliable danger signal than the so-called growing pains of childhood; trivial in themselves but suggestive to the trained physician of the gravest possibilities. These growing pains were usually an expression of muscular or fascial rheumatism, and few greater responsibilities devolved upon us than of educating the public as to the significance of such pains. Of more than casual importance was the suggestion of Williams that the growing pains of girlhood were more significant than those of boyhood The explanation was that the less strenuous life of young girls rendered them less prone to pains induced by overexertion and muscle strain. The general management of rheumatic fever must be influenced by our very inability to detect cardiac lesions in their incipiency. A given case of the disease might be progressing in a manner seemingly satisfactory, yet none of us could state positively that structural damage to the heart was not already in insidious process of development. Bearing in mind that an organ at comparative rest was less subject to infection than when fatigued, it was obvious that a prolonged period of rest in bed must be insisted upon for all our children suffering from even slight attacks of rheumatic fever. Certainly in view of the imminent possibility of cardiac involvement, any case of rheumatic fever called for absolute rest for at least two weeks.

Present Attitude Toward Protein and Fat.—Dr. Oliver W. Hill of Knoxville, Tennessee, said that when possible one should gradually increase the bovine protein as the educative process progressed, until a quantity equal to or somewhat greater than that found in human milk had been reached, for the reason that after all our principal problem was to get the child to assimilate a sufficient amount of protein to cause a consistent gain in connective tissue and muscular strength. We must always be guided by the digestive powers of the patients under consideration, and not by what the books said of calories and percentage. Protein had been grossly misunderstood from the standpoint of normal physiology. It was as much influenced by the individual tolerance or susceptibility as was either of the other food elements. We were learning something of the position of this element and were recognizing the fact that after all was said that we knew, and much that we must conjecture, more depended on the management of the case and the manipulation of the food than on the food itself as to how we succeeded, because a given protein, whether cow's milk or human milk, was practically the same under all circumstances as to chemical constitution, digestibility, etc. Most failures of feeding were not due to the food but to the feeder.

The Rôle of Carbohydrates in Infant Feeding.—Dr. O. H. Wilson of Nashville, Tennessee, stated that granting one had the proper appreciation of the dangers and difficulties of fat, the adaptation and dosage of the carbohydrate was the determining factor in finding the proper food. Carbohydrate was the only element we could qualitatively modify. Normal babies could take with equal benefit either of the three forms of sugar.

Lactose seemed possibly to suit very young babies better. Cane sugar suited older babies as well as any form. Malt sugar was indicated when others failed to produce a sufficient gain, or when malassimilation of fat was evident. The adjustment of the carbohydrate to a difficult feeder was an individual proposition, differing with each case. Starch waters were valuable chiefly through their colloidal action. Any attempt to give enough to displace sugar was disastrous. If a baby had the same trouble taking care of sugar that he himself had had trying to assimilate the confusing, contradictory, indigestible literature on the subject, he was sure he would cut it out altogether.

Eczema in Infancy.—Dr. F. P. GENGENBACH of Denver, Colorado, read this paper, of which the following is a summary: Eczema is a dermatitis due to many internal and external causes, some of which are still unknown and are included in the broad term predisposition. The principal internal cause, aside from the so-called predisposition, is a food intoxication or sensitization, usually combined with faulty elimination. The external causes include all forms of irritation whether mechanical, chemical, or bacterial. The treatment consists in the discovery and removal of the cause or the causes and the relief of the symptoms.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

VIRGINIA STATE MEDICAL EXAMINING BOARD.

June, 1917.

(*Continued from page* 1014.)

BACTERIOLOGY.

1. In the diagnosis of typhoid fever, in what stage of the disease would you expect the greatest help from blood culture, and from agglutination, respectively, and why?
2. Mention some of the more common pathogenic organisms contaminating milk, and state the method of procedure when such contamination is suspected.
3. What are the principal means of body defense against organisms which find lodgment in the tissues by wounds or otherwise?
4. What organisms most frequently infect the urinary tract, and what are believed to be the most frequent routes of such infection?
5. Why is an autogenous vaccine usually more effective than a stock vaccine?

PATHOLOGY.

1. Give the etiology and morbid anatomy of acute endocarditis.
2. What pathological lesions are suggested by the persistent elevation of blood pressure above normal during pregnancy?
3. Give the pathology of nephrolithiasis.
4. Discuss the pathology of arteriosclerosis.
5. Discuss the changes brought about by pyrexia in the: (1) circulatory, (2) respiratory, (3) urinary systems.

THEORY AND PRACTICE OF MEDICINE.

1. Give etiology, symptoms, and treatment of acute catarrhal pharyngitis.
2. Give etiology, symptoms, and treatment of pyelonephritis (acute).
3. What is meant by "vocal resonance"? Describe the same (as compared with the normal) in the following conditions: (1) Emphysema, (2) incomplete consolidation, (3) complete consolidation, (4) pleurisy with effusion.
4. Name three cardiac murmurs, and state *when* (with reference to heart sounds) each is heard, and *where*, with maximum intensity.
5. Make a diagnosis of empyema (purulent pleurisy).
6. Give in the order of their appearing the several sets of lesions due to acquired syphilis.
7. Define hematoma, hematemesis, bradycardia, alopecia.
8. Name the most common causes of neuritis, and outline treatment for a case of intercostal neuritis.
9. Describe the lesions of pemphigus and acne vulgaris.
10. Describe the circulatory symptoms of arteriosclerosis.

EMBRYOLOGY AND OBSTETRICS.

1. What is (*a*) Menstruation? (*b*) Menopause? (*c*) Vicarious Menstruation?
2. Describe the fetus at the end of the third month.
3. Describe the changes in the fetal circulation at birth; how long does it take to complete this process in a normal case?
4. What is meant by a justominor pelvis?
5. Give your management of a normal case of labor.
6. Give your management of a brow presentation.
7. In what cases of labor should the exaggerated lithotomy position be used and at what stage?
8. Make a diagnosis of, and treat a case of chorea gravidarum.
9. What diseases might be mistaken for puerperal infection?
10. Give causes, symptoms, and treatment of mastitis.

ANSWERS.

BACTERIOLOGY.

1. In *typhoid fever, blood cultures* are possible quite early in the disease, and are most frequently obtained in the first two weeks; the *agglutination test* is available in the third and fourth weeks of the disease, and rarely appears before the second week. The latter test depends upon the presence of antibodies; and it takes some time for these antibodies to be produced.

2. The *more common pathogenic organisms contaminating milk* are: Staphylococcus pyogenes aureus, streptococcus pyogenes, bacillus coli communis, bacillus typhosus, and the bacteria of cholera, tuberculosis and diphtheria.

When contamination is suspected, the milk should be pasteurized by being heated to 60° to 70° C. for thirty minutes; this will kill all or nearly all of the pathogenic bacteria that are likely to be present. The milk should then be consumed within eighteen hours, so that there will not be time for the development of any spore-forming bacteria, which may have survived the pasteurization.

3. The principal means of body defense against microorganisms which find lodgment in the tissues are: The bactericidal properties of some of the secretions, the bactericidal power of the blood serum, the phagocytic action of the leucocytes and other cells, the germicidal action of the lymph nodes, and the elimination of microorganisms through the secretions and excretions.

4. The organisms which most frequently infect the urinary tract are the staphylococcus pyogenes aureus and albus, streptococcus pyogenes, colon bacillus, tubercle bacillus, gonococcus, and typhoid bacillus. They may enter from outside (instruments, urethral infection), from the circulation, and by passage from intestine into bladder.

5. *Autogenous vaccines* are usually more efficacious than *stock vaccines*, because there are many strains of any given type of organism, and also individual differences of the type; so that a *stock vaccine* is less likely to contain the exact strain of bacterium which is producing the disease. Further, the passage of a micro-organism through the body of an individual frequently modifies the biological characters of such organism; such modifications would be absent from the organisms from which the *stock vaccine* is derived.

PATHOLOGY.

1. ACUTE ENDOCARDITIS. *Etiology:* Simple endocarditis is associated with rheumatism or scarlet fever. Malignant endocarditis is also associated with rheumatism, scarlet fever, and also with pneumonia or septic processes. Micrococci are often found. Chronic endocarditis may follow an acute endocarditis, or may be the result of syphilis, old age, high arterial tension, gout.

Morbid Anatomy: In the simple form there will be found a cloudiness, followed by edematous thickening of the valvular endocardium; superficial erosions, and the formation of small granulations; deposits of layers of fibrin and corpuscles from the blood, the whole process resulting in the formation of small warty vegeta-

tions. These vegetations are most marked at a slight distance from the free borders of the valves—*i.e.*, those parts which come into opposition during closure. In course of time they are transformed into fibrous tissue. According to Poynton and Paine the infective organisms are conveyed to the base of the valves by the capillaries, and thence pass to the subendothelial tissues by the minute nutrient channels in the valvular substance; others hold that the organisms are derived from the blood circulating over the surface of the valves. In the malignant form the initial changes are similar, but there are some important differences, inasmuch as ulcerations may completely replace the vegetations. The differences are: (1) The vegetations when present are larger and fungating. (2) The underlying tissues are necrotic and show loss of substance and round-celled infiltration. (3) They contain masses of micrococci, while in simple endocarditis the organisms are scanty. The two forms cannot be distinguished by the organisms producing them; either simple or malignant endocarditis may arise from a pyogenic infection. (4) When the vegetations become detached they form *septic* emboli, giving rise to metastatic abscesses. (5) The ulcerative process causes great destruction of the valves, and may even lead to perforation of the curtains. (6) The subsequent or permanent changes in the valves, if the patient survive, are much more marked. (7) If the vegetation touches the mural endocardium as it flaps to and fro, the part touched becomes affected by contact.

As regards the side of the heart most affected—*Congenital* endocarditis attacks the right side of the heart (but note that many congenital cardiac lesions are due not to endocarditis, but to developmental faults); simple endocarditis attacks the left only; the *malignant* attacks *both sides*, though the *left* is much more implicated than the right side.

The vegetations are upon that side of the valve opposed to the blood-stream—viz., at the aortic valve the vegetations project into the ventricle, at the mitral valve into the auricle.

As in pericarditis, the myocardium almost always shares in the inflammatory affection.—(From Wheeler and Jack's *Handbook of Medicine.*)

2. Persistent elevation of blood pressure above normal during pregnancy suggests toxemia and possibly eclampsia.

3. *Nephrolithiasis.*—"Renal calculi are formed in the renal tubules, and may find their way into the pelvis, ureter, or bladder. They may lodge and increase in size in the substance of the kidney or calyces. Though usually small in size, a calculus may occupy the whole pelvis, with branches running into the calyces. The commonest stones are formed of uric acid, next being those of oxalate of lime, then urates, phosphates, and cystine. A stone lodged in the parenchyma may give rise to no symptoms. Pyelitis soon follows lodgment in the pelvis, and the ureter may be blocked more or less, so causing hydronephrosis or pyonephrosis. Complete blockage produces suppression. Perinephric suppuration and discharge of the calculus through a fistula in the loin may occur. The calculus may pass into the ureter, causing renal colic. It then either slips back into the pelvis or reaches the bladder, where it may remain as a vesical calculus or be passed *per urethram.*"—(*Aids to Surgery.*)

4. "*Arteriosclerosis* is a chronic degenerative and inflammatory disease of the vascular system, resulting in an overgrowth of the connective tissue of the arteries, followed by calcareous deposits. The changes may extend to the capillaries and veins. As a result of the impairment of the arterial circulation, there occur fibroid degenerations in other organs, resulting in loss of elasticity in the walls of the vessels, increase of arterial tension, narrowing of the caliber of smaller arteries, and impairment of the nutrition of the organs supplied. . . . The atheromatous changes are most frequent in the aorta. Rokitansky gives the relative order in which atheromatous degenerations occur as follows: aorta, splenic, femoral, iliac, coronary arteries of the heart, arteries of the brain, uterine, subclavian, brachial, ulnar, and radial arteries. The internal surface of the affected vessels is irregularly thickened with gelatinous and translucent, dense and fibrous, or calcareous deposits. If the calcification is extensive, the vessel is changed into a hard, stiff tube. Often the surface of the thickening or deposits is destroyed, presenting the so-called 'atheromatous ulcers,' which may be covered with masses of thrombi. The above conditions are the result of inflammatory change in the intima of the affected vessel which appears three or four times as thick as normal, due to the swelling of its elements, the new growth of connective tissue, and the deposit of round cells. Fatty degeneration of the inflammatory products is the common sequence. The result of the changes in the arteries is a loss of elasticity thus hindering the propulsion of the blood current and raising the arterial tension, ultimately leading to hypertrophy of the left ventricle. These changes finally involve the coronary arteries and lead to alterations in the myocardium. The nutrition of various other organs is likewise impaired when the intima of their respective arteries is involved in the degenerative process.—(Hughes' *Practice of Medicine.*)

5. CHANGES BROUGHT ABOUT BY PYREXIA. (1) *In circulatory system:* Increase in rate of heart beat and pulse; pulse is softer and dicrotic, or full and bounding; the arteries are dilated; blood pressure is lowered; cardiac muscle may degenerate; there is generally a leucocytosis. (2) *In respiratory system:* Respirations are quickened, and the evaporation in the lungs is increased. (3) In *urinary system:* Diminution of the water, chlorides and phosphates of the urine; increase of the urea, uric acid, creatinin and potassium salts of the urine; sometimes the urine contains albumin; and the kidneys may undergo cloudy swelling.

THEORY AND PRACTICE OF MEDICINE.

1. *Acute catarrhal pharyngitis* is due to "exposure to cold and wet, infective microorganisms, local irritants, such as hot liquids and noxious gases, rheumatism, gout, and the eruptive fevers.

Symptoms.—The onset is sudden, usually with rigors followed by fever, thirst, headache, anorexia, coated tongue, foul breath, dryness of the throat, painful deglutition, hoarseness, and a constant desire to clear the throat, due to the increased length of the uvula. Extension to the Eustachian tube and middle ear gives rise to deafness and earache. The nasal tone of the voice is almost pathognomonic. Inspection of the pharynx reveals an intensely red and swollen condition of the mucous membrane. The tonsils and larynx may also be involved. Secretions are first lessened, but soon become increased and assume a thick, tenacious, opaque character. *Treatment:* Twenty-four hours' rest in bed is by far the best medicine for an ordinary cold. Cases resulting from exposure are benefited by the application of bicarbonate of sodium by insufflation. Opium alone or combined with ipecac or camphor will often abort an attack. Pain may be relieved by the administration of salol, gr. iij, phenacetin, gr. iij, and powdered camphor, gr. j, four to six times daily. Tincture of the chloride of iron in doses of 2 to 10 minims may be given. Sodium salicylate, gr. x to xv every hour, for six hours, is of great benefit. Tincture of aconite or potassium citrate may be given to control the fever. The bowels should always be freely opened early in the treatment. Locally the application of a 4 per cent. solution of cocaine or cocaine lozenges will afford considerable relief. Ice pellets in the mouth and heat or cold applied externally also produce benefit. Gargles or sprays of alum (gr. viij to f ℥j), ammonium chloride (gr. xx to f ℥j), or potassium chlorate (gr. x to f ℥j), often relieve the swelling and congestion. The severe cases are nearly always secondary affections, and their treatment is that of the primary diseases."—(Hughes' *Practice of Medicine.*)

2. *Pyelonephritis* "is usually due to extension of sepsis from the bladder in cases of stricture, enlarged prostate, and spinal injuries. It may be due to calculus in the kidney or ureter, or stricture of the ureter. Organisms spread upwards along the mucous membrane or lymphatics of the ureter or along strings of mucus, and cause pyelitis. The bacteria further invade the lymphactics around the renal tubules and give rise to abscesses. Acute inflammation causes death from uremia, but if the process is chronic pyonephrosis is the result. In acute cases a rigor follows an operation on the urinary passages, associated with fever and vomiting. The patient gets into a typhoid condition, and dies

in two or three weeks from uremia. In chronic cases the onset is insidious. There is some pain in the loin and an irregular intermittent temperature. The urine is alkaline and contains pus and casts. The case terminates in death from toxemia. *Treatment:* The cause must be attended to and the bladder regularly washed out, while a large quantity of fluids should be drunk. Hot fomentations and cuppings over the loins relieve the pain, and urotropin is the best internal antiseptic."—(*Aids to Surgery.*)

3. *Vocal resonance* is the transmission of the vibrations of the patient's voice to the ears of the physician during auscultation. In *emphysema* it is diminished; in *consolidation* it is increased; in *pleurisy with effusion*, it is diminished.

4. *Three cardiac murmurs*: (1) That of mitral regurgitation, a systolic murmur, heard loudest at the apex. (2) That of mitral stenosis, a presystolic murmur, heard loudest at the apex. (3) That of aortic regurgitation, a diastolic murmur, heard loudest at the left of the sternum on a level with the fourth left costal cartilage.

5. In *empyema* we find limited motion on the affected side, edema and redness in the intercostal spaces, dulness on percussion, absence of breath sounds, diminished fremitus and resonance, chills, sweats, high fever, dyspnea, and expectoration of offensive sputum; exploratory puncture brings pus, and there is a high leucocytosis. In pleurisy with effusion, hemothorax, and bronchiectasis there will be found no pus, and little or no fever, no leucocytosis.

6. *Lesions of acquired syphilis:* In the *first stage* the chancre is the important lesion. The *second stage* is characterized by: Swelling and induration of the neighboring lymph nodes, sore throat, mucous patches; the skin lesions or syphilides, which are characterized: By not itching; by being of a coppery or raw ham color; by being painless; by polymorphism, macules, papules, pustules, etc., being present at the same time; by being generally symmetrical. In this stage may also appear: Iritis, periostitis, and alopecia. The *third stage* is marked by: Anemia, gumma formation, periosteal nodes, headaches, endarteritis and various other diseases.

7. *Hematoma* is a circumscribed collection of blood beneath the skin; it appears as a soft, fluctuating swelling.

Hematemesis is the vomiting of blood.

Bradycardia is a slowing of the heart's action.

Alopecia is baldness, partial or complete.

8. The *most common causes of neuritis* are: Wounds, injuries, compression of nerves, exposure to cold or wet, gout, rheumatism, syphilis, extension of inflammation, lead poisoning. *Treatment of intercostal neuritis:* Rest to the affected side; blistering along the course of the affected nerve; potassium iodide or sodium salicylate may be administered; morphine, hypodermically, may be needed in severe cases; quinine sulphate is often of value.

9. *Pemphigus.* "The affection is considered to be a trophoneurosis. The blebs are situated in the epidermis and probably arise from a sudden effusion from the vessels of the corium as the result of dilatation. The contents of the blebs or bullæ are yellowish or colorless serum, of a neutral or alkaline reaction; the older the fluid, the more alkaline it becomes. In the late stages of a bleb the fluid becomes puriform. In rare instances blood is contained in the bleb. The papillary vessels are dilated and the papillæ, corium, and subcutaneous tissue are edematous and infiltrated with leucocytes."

Acne vulgaris. "An inflammation of the sebaceous gland structure and surrounding tissues. There first occurs retention of the sebaceous secretion, which is soon followed by hyperemia and exudation about the glands and in the gland-wall, and infiltration of the connective tissue, followed by suppuration. If the inflammatory action be severe, destruction of the gland with a resulting cicatrix occurs."—(Hughes' *Practice of Medicine*).

10. *Circulatory symptoms of arteriosclerosis.* "In the early stages, there is lessened elasticity and contractility of the vessels and consequent imperfect and irregular distribution of blood. The heart passes through all the stages from efficient hypertrophy to final dilatation and decompensation. Mor or less dyspnea and palpitation of the heart are usually present on exertion; epistaxis and other hemorrhages are not uncommon; later edema and other signs of cardiac failure supervene. In general appearance the patient may be ruddy, full-blooded, or he may be pale and anemic looking—which is due to imperfect distribution of the blood, and not to poor blood, at least in the beginning. In the early stages major diagnostic importance attaches to visible and palpable evidence of thickening and tortuosity of the superficial arteries, to increased blood pressure (160 to 180 mm. of Hg. or more), to the physical signs of hypertrophy of the left ventricle, a dull, prolonged, somewhat muffled first sound at the apex of the heart (augmented muscular element), an accentuated aortic second sound, and a sloping ascent, broad apex, and slow decline of the pulse wave, especially apparent in tracings. Ultimately the common signs of dilatation ensue; indeed, these may be the symptoms presented by the patient when he first comes under observation. Involvement of the coronary arteries may lead to angina pectoris, the fibroid heart, aneurysm of the heart, thrombosis with sudden death, etc."—(Kelly's *Practice of Medicine.*)

EMBRYOLOGY AND OBSTETRICS.

1. *Menstruation* is a periodic disturbance in the female characterized by a bloody mucous discharge from the uterine cavity; it lasts during the period of a woman's sexual activity, but is temporarily suspended during pregnancy and early lactation. It usually appears between the 13th and 15th year, at the period of puberty; it usually ceases at about 45 years of age, but the period is variable. *Menopause* is the period when menstruation ceases; it usually occurs between the fortieth and fiftieth years. *Vicarious menstruation* is the flow of blood from some organ (other than the uterus) recurring at the monthly periods and taking the place of menstruation. It may occur from the hemorrhoidal vessels, the lungs, the skin, under the nails, the mammary glands, ulcerated surfaces, and many other parts.

2. "At the end of the third month the entire blastodermic vesicle has grown to the size of a goose's egg. The embryonic body is about 3 to 3½ inches long. Sex is perceptible; also eyelids, fingers, toes, and traces of nails. The umbilical vesicle atrophies."—(King's *Obstetrics*).

3. *Changes that occur in the fetal circulation at birth:* The hypogastric arteries dwindle and close, the foramen ovale becomes obliterated, the ductus arteriosus and ductus venosus become obliterated, the umbilical vein becomes impervious, and the Eustachian valve atrophies. "The ductus venosus and the umbilical vein are obliterated within a week, the ductus arteriosus within a few weeks. The foramen ovale may not close for several weeks or even months; the umbilical arteries are obliterated in their upper portions within five days."—(Polak's *Obstetrics.*)

4. A *justo-minor pelvis* is one in which all the diameters are proportionately shortened; the shape of the pelvis is normal, but the size is diminished.

5. *The patient* should receive a full bath before labor begins and all bed-clothing and personal clothing should be clean. If there are any pathological discharges from the genitals, the vagina should be thoroughly scrubbed with tincture of green soap and hot water, followed by a mercuric chloride douche (1:2000); this followed by a douche of sterile water. The physician's hands should be scrubbed for ten minutes with tincture of green soap and hot water, followed by alcohol, and immersion in mercuric chloride (1:1000). All instruments should be boiled for ten minutes or immersed in mercuric chloride 1:1000 for half an hour. Examinations should be made when necessary to determine the position, presentation, size of the fetus, etc.

During the first stage a rectal enema of soapsuds with turpentine (5i) should be given and when the os is dilated to the size of a silver dollar, the patient should be placed in bed, lying upon the side toward which the fetal back looks. If the pain is severe, chloral hydrate (gr. 15) may be given every half-hour for three doses.

During the second stage, examinations should be made only when necessary. In multiparæ, the membranes may be ruptured with the finger or with some

aseptic instrument. Care should be taken not to injure the child's scalp or the lower uterine segment. The pain may require the administration of chloroform or ether, but not to the extent of complete anesthesia. The expulsive force of the abdominal walls may be increased by directing the patient to pull upon a sheet firmly secured to the foot of the bed. Attempts may be made to prevent laceration of the perineum by making firm backward and upward pressure against the occiput during the pains; by restraining voluntary expulsive efforts during the pains; and by securing expulsion of the head between the pains. The head should be supported when born; the eyes should be cleansed with sterile water; and if the cord is coiled about the neck, it should be loosened or slipped over the head. Delay in delivery of the shoulders may be overcome by stimulating the uterus by friction through the abdominal wall or traction. The cord is ligated and cut when pulsation has ceased, and the child is placed by the mother's side with its face turned away from the maternal discharges.

During the third stage, 51 of fluidextract of ergot is administered and irritation of the uterus by friction through the abdominal wall is practised for ten to fifteen minutes. If the placenta is not expelled by this time, the uterus is firmly grasped between the thumb and four fingers and compressed. Firm pressure is then made from above downward and backward in the direction of the pelvic canal. This usually causes delivery of the placenta. A vulvar pad of salicylated cotton and carbolized gauze and an abdominal pad and binder are then applied.—(*Pocket Cyclopedia.*)

6. *Management of brow presentation:* If recognized before the onset of labor, postural treatment may be tried. This consists in placing the woman on that side toward which the fetal face is directed, so as to secure flexion of the fetal head. Failing in this or if only recognized too late for the above to be tried, cephalic or podalic version may be attempted; or forceps may be applied, chiefly to act as a rotator. If the above do not succeed, symphyseotomy may be performed, and the child delivered by forceps. When all other methods fail, if the child is dead craniotomy is indicated.

7. The *exaggerated lithotomy position* may be used in the second stage of labor in cases of contracted pelvis with but slight disproportion between the size of the fetal head and the pelvic outlet. It is also adopted sometimes in cases where version is performed.

8. *Chorea gravidarum.* "When gestation occurs in women already suffering from chorea the disease may rarely be checked. Usually it continues during part or all of the gestation, and may, indeed, last after labor. Frequently the disease is intensified. When mild the movements may be only unilateral; in severe cases they are bilateral and may continue during sleep or induced narcosis. They are often increased as the result of fetal movements or of a physical examination. Chorea may lead to marked deterioration of health, sleeplessness, loss of flesh, paresis, and to various mental disturbances. In severe cases premature expulsion of the ovum may be caused. Recovery from the disease is rare until pregnancy has terminated. The fetus may die *in utero*, or it may reach term and be born weakly or well developed. In some cases it may develop chorea in early childhood. The disease must be chiefly distinguished from hysteria. Some authorities hold that true chorea is rare, and that it is mistaken for hysteria and for maladies des tics. Sometimes chorea and hysteria may occur together. *Treatment.* The general and medical treatment of the disease is the same as in the non-pregnant state. Mild cases may be improved or cured and carried satisfactorily to term. In severe attacks anesthesia may be necessary to control the movements. When the movements are violent, sleeplessness is marked and health deteriorates; the uterus should be artificially emptied."—(Webster's *Obstetrics.*)

9. *The following diseases might be mistaken for puerperal infection:* Typhoid, acute miliary tuberculosis, meningitis, tonsillitis, pneumonia, influenza, appendicitis, tuberculosis peritonitis, acute yellow atrophy of the liver, and cholecystitis.

10. ACUTE MASTITIS. *Etiology:* Infection, generally due to handling; cracked or sore nipples and overactivity of the gland with retained secretion are predisposing causes. *Symptoms:* The breast is swollen, painful, and tender, and, owing to the soreness of the nipple, the breast is not relieved of its secretion, so that it is distended. If suppuration follows, redness, edema, and fluctuation occur over the site of the abscess. The abscess may be—(1) supramammary, the pus lying between the skin and breast; (2) intramammary, or the common form, in which the pus is in the substance of the breast; (3) submammary, which is beneath the breast, and may spread from the deep lobules, but more frequently is due to disease of the underlying ribs. *Treatment,* before suppuration occurs, consists in supporting the breast with a bandage, emptying the gland regularly with a breast-pump, and applying a belladonna plaster over the gland to stop the secretion and allay the pain. When pus is present an incision should be made at once, or the abscess may burrow extensively and riddle the breast. The incision should be made in a line radiating from the nipple, so as not to cut the ducts: it should be free, and all pockets opened up with the finger. Then a large drainage-tube is inserted and shortened daily, as the wound heals by gravitation. If necessary, several incisions are made.

Prophylactic measures consist in not touching the breasts (by doctor or nurse or patient) without thoroughly clean hands; by washing and drying the nipple before and after nursing, and by proper attention to hygienic conditions before labor, and the nipple and breasts being preserved from pressure.

(*To be concluded*)

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading, but it must be with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

PRACTICE OF MEDICINE. By HUGHES DAYTON, M.D. 325 Pages. Illustrated. Price, $1.50. Published by Lea & Febiger, Philadelphia and New York.

MEDICAL RESEARCH AND HUMAN WELFARE. By Dr. WILLIAM WILLIAMS KEEN. 160 Pages. Price, $1.25. Published by The Riverside Press, Cambridge, Houghton Mifflin Company, Boston and New York.

LA MALARIA, PARASSITOLOGIA PATOLOGIA E CLINICA-EPIDEMIOLOGIA, PROFILASSI IMPORTANZA SOCIALE. By Prof. VITTORIO ASCOLI. 1127 Pages. Illustrated. Published by Unione Tipografico-Editrice Torinese, Turin, Italy.

THE SURGICAL CLINICS OF CHICAGO. Vol. I, No. 5. October Issue. 1103 Pages. Illustrated. Published bimonthly, by W. B. Saunders Company, Philadelphia and London.

DISEASES OF WOMEN. By HARRY STURGEON CROSSON, M.D., F.A.C.S. 1160 Pages. Illustrated. Published by C. V. Mosby Co., St. Louis.

MEDICAL WAR MANUAL, No. 2. By Lt. Col. T. H. GOODWIN, R.A.M.C. 112 pages. Illustrated. Published by Lea & Febiger, Philadelphia and New York.

LE COURAGE. Par les Docteurs LOUIS HUOT et PAUL VOIVENEL. 356 pages. Price, 3 fr. 85. Published by Felix Alcan, Paris.

TALKS ON OBSTETRICS. By RAE THORNTON LAVAKE, M.D. 157 pages. Price, $1.00. Published by C. V. Mosby Company, St. Louis.

PHYSIOLOGICAL CHEMISTRY WITH EXPERIMENTS. By C. J. V. PETTIBONE, Ph.D. 328 pages. Price, $2.50. Published by C. V. Mosby Company, St. Louis.

PHYSICAL DIAGNOSIS By W. D. ROSE, M.D. 499 pages. Illustrated. Price, $4.00. Published by C. V. Mosby Company, St. Louis.

SURGERY AND DISEASES OF THE FACE AND JAWS. By VILRAY PAPIN BLAIR, A.M., M.D., F.A.C.S. New Third Edition. 733 pages. Illustrated. Price, $6.00. Published by C. V. Mosby Company, St. Louis.

TRANSACTIONS OF THE AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION. For the Year 1916. Volume XXXII. 349 pages. Printed for the Association, Philadelphia.

Miscellany.

A Lady of Accomplishments.—The following advertisement appears in the *Correspondenz-Blatt für Schweizer Aerzte* for October 6: A lady of 31 years wishes a position in a physician's office as reception room functionary. If necessary she can do plain or fancy cooking for a single physician. She is qualified to carry out electrolytic, epilation, and phototherapy. Testimonials and photograph will be submitted on request.

Icterohemorrhagic Spirochetosis.—The literature of this subject is becoming very extensive, as shown by the fact that the periscope of the *Annali di Medicina Navale e Coloniale* for March-April, 1917, contains no less than 31 abstracts of articles on this subject from journals published in a variety of languages. From Italian sources we learn that the disease was at first mistaken for picric acid poisoning and pappataci fever. It can be readily set up and studied in the guinea pig, transmission being accomplished by injection of the blood of human patients. There is no reason to doubt that the affection described by Japanese and English writers exists in Italy. There is no known affection which gives the same syndrome. The mode of transmission is still obscure and the urine in the trenches has been accused. The spirochete perishes soon in the cadavers of its victims.

One Italian author regards the disease as much milder than the Japanese form, less complicated, with frequent absence of recurrence. He also sees differences in the spirochetes themselves and hardly believes that the disease is transportable from the Orient to the Occident. In occidental cases hemorrhage is often lacking. Again there is an occasional association of icterus with relapsing fever, which is also a spirillosis. Bianchi states that the diagnosis is readily made by guinea-pig inoculation, so that the microscope and cultivation are not required. He does not find that the virus passes through a Berkefeld filter. Cultures have been obtained from infectious guinea-pig blood. Other writers speak of a silent type of blood infection which can furnish carriers. Meningitis may complicate the disease and the spinal fluid is found to be infectious in such cases.

The diagnosis may be missed at first. In any case with meningeal symptoms even subicterus of the conjunctiva could be very significant. The rat and the marmot may act as reservoirs for the spirochete. It is not yet proved that so-called epidemic jaundice and Weil's disease of older clinicians are the same as the spirochetosis in question, although inoculation of guinea pigs in Weil's disease have given positive results. Sampietro has made an elaborate study of the two affections, and while he finds that Weil's disease is a spirochetosis notes dissimilarities in the clinical pictures. Weil himself asserts that various epidemics of the disease known by his name have not represented the latter affection. The spirochete, recently found by German bacteriologists, is certainly not the cause of Weil's disease. German veterinary surgeons have described a disease occurring in dogs which symptomatically quite closely resembles Weil's disease in man.

Therapeutic Hints.

Acne.—Richard W. Müller advises the following curative measures for relief of this stubborn condition, due treatment being given at the same time for any constitutional condition:

Jalap	āā 0.02 gm.
Scammony	
Squill	
Calomel	
Amygdalin soap	q.s.

M. Sig.: Divide into 12 pills.

For six days one pill is to be taken every morning on an empty stomach, then to be followed by a second pill half an hour later, with breakfast half an hour after the last pill. While taking these pills no salty food can be eaten, and the mouth and teeth must be kept scrupulously clean. For women the medication must not begin until five days after menstruation. On the seventh day 30 to 40 grams of castor oil at night.

The following spraying lotion is applied to the face by means of a steam vaporizer, mornings and evenings: Infusion of chamomile flowers, 10 grams to 1 quart of water. Put 60 grams of this infusion in the vaporizer and add 5 grams of bicarbonate of soda, or sulphoborate of soda, if the acne is not pustular.

If the condition is pustular, one or two dessertspoonfuls of the following mixture should be used instead of the above:

Copper sulphate	10
Zinc sulphate	35
Camphor	5
Saffron powder	2
Sterilized water	1000

After the evening spraying, the following cream is to be applied to the face:

Glycerite of starch	100
Ichthyol	10
Resorcin	1
Sulphur	4
Camphor	2
Tincture of quillaya	2
Carbonate of magnesia	20

Rose water, q.s. to make a thick cream.

Spread upon face and cover with a sterilized gauze.

Next morning the cream is to be removed, rubbing lightly with a piece of fine linen or absorbent cotton, then apply white vaseline, if there are blackheads. The spray is then to be applied; or if the skin is greasy, a mixture of one teaspoonful of bicarbonate of soda to a cup of hot boiled water is applied instead. Five to ten drops of ammonia in the same quantity of water will also answer the same purpose.—*Hygiene of the Face.*

Sedative for Nerves.—In women during the menopause, nervous symptoms are always present and distressing to the patient. Hare suggests this formula for relief of the same:

℞ Ammonii bromidi.....ʒij (8.0)
Potassii bromidi.....ʒiv (16.0)
Spirit. ammon. aromat....fʒvj (24.0)
Aquæ camphoræ...q.s. ad fʒvj (180.0)

M. Sig.—A dessertspoonful (8.0) to a tablespoonful (16.0) every four hours.—*Practical Therapeutics.*

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Original Articles.

THE KING'S EVIL AND ITS RELATION TO PSYCHOTHERAPY.*

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WHEN a physician looks back over a long period of activity or glances through the old text-books in his library, one of the striking facts which is forced upon him is the great variety of methods of treatment which have met with success for a time and have later fallen into disrepute and been partly abandoned. In the history of every one of these methods there has been first an announcement of its wide applicability and great usefulness; then a period of trial with resulting enthusiasm and general adoption; then a time of doubt and criticism involving much heated controversy, and finally the settling of definite limitations within which it may be of service. It is realized that the first claim of great success was exaggerated, that subsequent emphatic condemnation was unjust, and that the method had a limited field of usefulness under certain conditions; one of the most important of which has been the personal influence of the originator of and of those who urged the method.

As examples we may cite bloodletting, so universally used in the time of our forefathers; the use of electricity in all forms of nervous diseases advocated by Erb from 1885 to 1895; hypnotism; the suspension treatment for spinal cord diseases used and urged by Charcot from 1885 to 1895; the division of eye muscles urged by Stevens and Ranney for everything from headache and epilepsy to dysmenorrhea in 1896; and the use of tuberculin proposed by Koch from 1900 to 1910.

In each one of these there have been positive results of great benefit to patients. In all there have been disastrous failures—and even in carefully selected cases, where the method seemed peculiarly indicated, success has not always been achieved.

The explanation of the varying results seems to me to be found in the personal influence of a strong mind upon a weaker one; the persuasion that a definite result would follow a given method imposed by a firm will upon a receptive patient. Success has been most often attained by a man of strong positive active character who has believed firmly in the efficacy of the method and has forced his personal belief upon others.

I put out of consideration the charlatans, who from Mesmer down, have consciously played on the fears and fancies of the timid; and the quacks who by advertisement and all kinds of chicanery grossly deceive the public. I refer to men of scientific ability and good standing who know that they accomplish results, and yet from modesty ignore or from insufficient insight are unaware of their personal power in dominating and guiding the fortunes of their patients. As a recent illustration I may cite the rest cures of Weir Mitchell, a great success in the cases he himself treated personally, largely due, as I know from many of his patients, to the power he had to inspire admiration and confidence, to direct their thoughts into new channels, to raise their minds from petty cares and annoyances to broader interests, and to instil a higher type of mental occupation, suppressing introspection and inculcating a new view of life, its duties and opportunities. These, rather than the mere gain of weight and strength, were the essential elements of the rest cure, which rarely succeeds in spite of such gains where the personal element is lacking.

I think we may also cite the results of Christian Science—on which men would not spend their money if they did not get some return—as a further example of the personal element in handling many minor ailments successfully. It is also a matter of fact that since Mrs. Eddy's death the sect is rapidly declining in influence.

If any good has ever come out of psychoanalysis and psychotherapy I am confident that it has been due only to the personal influence of the man and not to any good in the method. But as I do not wish to raise a heated controversy, which is inevitable when this method, now in vogue, is criticised, I will turn to a very remarkable proof of the personal element in therapeutics, not often mentioned at the present time, namely, the cure of the King's Evil by the touch of the King.

English authorities[1] affirm that the custom of curing disease by touch originated in A. D. 1050 with Edward the Confessor. The French[2] claim that the practice was common in France five hundred years earlier, being used by Clovis in A. D. 496; Robert the Pius in A.D. 1000, is also known to have touched for the King's Evil. It had, however, a much more ancient origin. Pliny[3] in his natural history asserts that Pyrhus, King of Epirus, who lived B. C. 300, cured diseases of the spleen by the touch of the great toe of his right foot, the patient lying on his back on the ground. Tacitus[4] relates the story of the cure of both deafness and blindness by Vespasian by touch. The early Christian Fathers, following the example of Christ, cured disease by the laying on of hands; and all through the first ten centuries miracles of healing by touch and anointing

*Read before the Practitioners' Society of New York, December 7, 1917.

are recorded by the church chroniclers. That the power, however, was inherent in royalty, that it was a part of the divine right of kings, was not generally acknowledged in England until the days of Edward the Confessor and in France till the time of King Philip I, 1061 to 1108; but from the eleventh century down to the nineteenth century almost every sovereign in Europe exercised this power and thousands of persons were touched by the King.

The method of healing varied somewhat with different kings. Edward the Confessor is said "not only to have touched, but also to have stroked the

1, Angel of Henry VII (gold); 2, Reputed touch-piece of Charles I (bronze); 3, touch-piece of Charles II (gold); 4, touch-piece of James II (gold).

swollen parts with hands wet in water until worms came out from the openings under the softened scab along with bloody matter removing all the noxious plague, after which at an interval of a week the persons went away cured." Edward I (1270), in touching each person, made over him the sign of the cross and then presented him with a coin, which was at first a penny of copper, but later was made of gold and was worn as an amulet.

In the household accounts of the kings of England, from his time down through the reign of King Charles II, there are records of the expenditure of considerable sums of money each year for these coins. Some of these records are as follows: "On Monday, April 4th, 1278; for 73 persons sick of the King's Evil, 6s. 1d.

"On Monday, April 11, for 192 sick men cured of the King's Evil, 16s.

"At Easter for 288 sick persons cured of the King's Evil, 24s. 4d."

The records show that in one month 533 persons were touched by Edward I. In three weeks in 1316 145 were touched by Edward II; and Edward III touched between 400 and 500 persons in each year of his reign. At the same period in France Charles V and VI were accustomed to cure in the same manner and hundreds of persons were touched by them.

Edward IV had a new coin minted for the purpose of a gift to the sufferers; and it is in his time that the coin was first called an angel, because on one side the figure of the Archangel Michael is shown pursuing the dragon, while on the other side is a ship with a mast in the form of a cross and the legend: "Per crucem tua salva nos Chr. Redempt." The value of this coin of gold was 6s. 8d.*

Henry VII introduced an elaborate church ritual into the method of healing, and this was kept in the prayerbook of the Church of England in one form or another down to the time of George I. The ritual covers four pages of the prayerbook. The records show that it was used on all church festivals, when the King touched hundreds of persons as well as on many private occasions.

At the Reformation under Henry VIII the practice of touching fell into disrepute, only 59 persons being touched by him in three years from 1530 to 1532. But it was revived by Queen Mary and was continued by Queen Elizabeth, who in the early years of her reign touched a large number of sufferers. At this time Dr. William Tooker, the chaplain of the Queen, revised the office in the prayerbook and published it in English,[5] and he also wrote a book in which details of the method used by Elizabeth are given. In Queen Elizabeth's reign the first medical treatise on the subject was written by William Clowes, surgeon of St. Bartholomew's Hospital,[6] for the Queen insisted that she would touch only those who had been examined by her physicians and were actually suffering from the King's Evil. It may have been because of this restriction that during the greater part of Queen Elizabeth's reign she would not touch at all; but she resumed the practice during the last three or four years of her reign and then had a new angel coined which bore the inscription "A Dno factum est estud et est mirabi." This coin was valued at 10s.

In 1604 there arose a great controversy between the French and English clergy concerning the cures, the French claiming that the excommunication of the English sovereigns by the Pope had deprived them of the power of healing by touch, while the English pointed triumphantly to the cures by Henry VIII and Elizabeth as proof of the contrary.

It is certain, however, that Henry IV in France, who was Elizabeth's contemporary, was much more successful than she was in curing. At all the great church festivals he healed, with great ceremony, persons coming to Paris from all over Europe to be cured. It is stated that on one occasion he touched 1,500 persons. They knelt in rows and the King's

*One of these coins may be seen in the collection of the New York Numismatic Society.

physician passed behind each row and held the head of the sufferer in his hands while the King drew his hand downward from the forehead to the chin and then across the face, thus making the sign of the cross and saying: "Le Roy te touche et Dieu te guérit." Laurens, the King's physician, wrote a book,[7] in which he states that tumors diminished in size, and that ulcers dried up; and that out of a thousand no less than five hundred were cured in a few days.

James I, who as a Scotch Presbyterian had little faith in Catholic practices or modern miracles, rarely touched for the evil; yet it is on record that during a visit to Lincoln in 1617 he did touch 50 persons in the Cathedral and 53 at the priory of St. Catherine. On the angel which was coined in his reign the words "et est mirabi" were omitted.

In Shakespeare's play of "Macbeth" (Act IV, Scene 3), King Duncan is supposed to represent James I and in the fourth act is described as touching the sick; this being the only reference to the practice in Shakespeare's plays. The passage is as follows:

Malcolm: Comes the King forth, I pray you?
Doctor: Ay, sir: there are a crew of wretched souls
that stay his cure: their malady convinces
The great assay of heart; but at his touch,
Such sanctity hath heaven given his hand,
They presently amend.
Macduff: What's the disease he means?
Malcolm: 'Tis called the evil:
A most miraculous work in this good King;
Which often, since my here-remain in England,
I have seen him do. How he solicits heaven,
Himself best knows; but strangely-visited people
All swollen and ulcerous, pitiful to the eye,
The mere despair of surgery, he cures;
Hanging a golden stamp about their necks,
Put on with holy prayers; and 'tis spoken
To the succeeding royalty he leaves
The healing benediction. With this strange virtue
He hath a heavenly gift of prophecy,
And sundry blessings hang about his throne
That speak him full of grace.

Charles I, like Queen Elizabeth, required the certificate of a medical examination before he would touch a sufferer, and in his reign the practice of healing was usually restricted to the two weeks about Easter and Michaelmas. He is said to have cured cases of blindness which all through these times was ascribed to scrofula. Even when confined in prison Charles cured the daughter of an apothecary, and after his death cures were ascribed to cloths dipped in his blood.

Cromwell made no attempt to touch for the Evil.

While Charles II was in exile in Belgium many Royalists visited him in order to be touched; on one occasion as many as 260; and the ceremony was carried out with the ritual of the prayerbook. The records of the time give many cases in detail. And after the restoration hundreds flocked to the King, 600 being touched during the first year of his reign. After that it became customary for him to touch every Friday, the candidates being examined by the royal surgeons on Thursday. John Browne, surgeon to King Charles and to St. Thomas' Hospital, has left in his book *Charisma* many details of cases and even asserts that two patients came to the King from America, one from Virginia, one from Portsmouth, New Hampshire. He had a register kept which shows that in nineteen years 90,798 persons were touched by the King. That Browne with his shrewd knowledge should believe in the supernatural efficacy of the royal touch is hardly to be credited and is evidenced by this statement in his book: "Thus every unbelieving man may rest satisfied that without he brings faith enough with him, and in him, that His Majesty hath Virtue enough in his Touch to Heal him, his expectation will not be answered: Whereas the Man of Faith who confides in the same, will as readily find the benefit of the same. And although this method does not always answer expectation, yet its effects are wonderful and its cure most frequent." With this point of view it is not strange to find that Browne insists on certain forms of diet and on medical remedies as very necessary to the cure. The latter can hardly have had much effect according to our ideas of therapeutics.

James II continued the practice of touching, but after the Revolution it fell entirely into disrepute. Macauley writes: "William had too much sense to be duped and too much honesty to bear a part in what he knew to be an imposture." Queen Anne, however, is known to have touched 30 persons at Bath on one occasion in 1702, 200 on another occasion in 1712, among others Dr. Samuel Johnson when he was a boy. The coin or angel given him by the Queen can be seen in the British Museum. Dean Swift brought a protégé to be touched by her, and Daniel Turner, her chief surgeon, testifies in his book, "The Art of Surgery," to a cure of scrofulous glands.

In the prayerbook there is an elaborate ritual which was reproduced in four editions after the accession of George I, but no one was touched by him and he refused many applications to heal. The exiled Stuarts, who for many years lived in France as pretenders to the English throne, were, however, staunch Catholics and from time to time touched for the King's Evil, and records show cases of healing by them from 1715 to 1786.

Thus we see that in England, from 1050 to 1786, every king touched for the evil with considerable success. It is incredible that such a custom should have persisted, and that such large numbers of people should have been touched, and that such confidence in the cures should have been felt, if there had not been ample evidence of the success of the kings in curing the evil.

We could easily cite a similar record from the history of the kings of France. That the belief in the cure was equally strong there is shown by all the documents. Incidentally it may be interesting to note that Louis XI (1461) was deprived of the prerogative because of his many evil ways. Dr. Billings[8] tells a story of the King that after he had an attack of apoplexy he sent for St. Francis of Paula, who was very celebrated for his miraculous cures, but who suffered himself from scrofula. The King, who was a terrible miser, made a bargain with the saint, that if St. Francis should cure his paralysis he would touch him for his scrofula. It turned out that neither could benefit the other in any respect. This was taken as confirmation that the King had lost the power on account of his criminal character.

Louis XIV, XV and XVI also practised touching in France, but at the Revolution an investigation of 2,400 patients touched by Louis XVI showed only five cures. When Charles X was crowned in 1824 Dupuytren brought 124 persons to him to be touched. This is the last record of the practice.

What was the condition known as King's Evil? In all the records it is regarded as a state characterized by swelling of the glands of the neck, commonly called in those days scrofula.

We know that swelling of the glands of the neck occurs under different conditions. It may be a result of a general infection as in diphtheria, measles, or scarlatina; or secondary to catarrhal conditions of the nasopharynx, to adenoids and tonsillitis, or to ulcerations in the mouth; or to wounds in the scalp; or even to lice in the scalp. These are acute cases, temporary, which result in spontaneous recovery when the cause is removed. The more common swellings are tuberculous and are chronic in course, with much spontaneous variation, at times being large, at other times subsiding, and not always going on to suppuration and discharge. Even in the last case after discharge of pus a recovery without treatment may ensue. Hodgkin's disease causes the largest and most persistent swellings and here as well as in cases of malignant tumors recovery is unknown. Lastly a luetic enlargement of the glands may be mentioned which may recover spontaneously. These are the conditions formerly included in the term scrofula. It is evident, therefore, that a spontaneous recovery from this symptom is not uncommon, but was erroneously ascribed to the royal touch, just as at the present time many spontaneous recoveries are ascribed to methods which a scientific physician regards with a large degree of scepticism.

Now in the case of cures of the King's Evil, in cures by the miracles of Lourdes and of St. Anne de Beaupré, and in those of the many affections in which success by questionable methods is attained, it is necessary to recognize the element of confidence in a person as an active agent in the cure. How this element can act we do not know; that it does act we cannot deny. But when we remember that even a slight passing emotion is sufficient to change the electrical resistance in the hands to such a degree as to be measurable by a galvanometer, as demonstrated by Jung and Peterson, we cannot deny that strong emotions, such as were inevitable in preparation for seeing the King, the excitement of the crowd, the impression made by a ritual service of some length, the actual thrill caused by contact with royalty, and the sustained expectation secured by possession of the angel or amulet, might easily set up chemical changes in the system of a stimulating and possibly beneficial kind.

The influence of mind on body, of hope and courage and conviction in giving strength and aiding effort is never to be overlooked; and he is a poor practitioner who does not utilize this influence in the treatment of his patients.

REFERENCES.

1. Raymond Crawford: The King's Evil, Oxford, 1911.
2. Mézeray: Histoire de France, Ed. 1643, Vol. I, p. 634.
3. Pliny: Nat. Hist., Vol. VII, chap. 2.
4. Tacitus: Hist., Vol. IV, chap. 81.
5. Wm. Tooker: Charisma, 1597.
6. Clowes: Treatise on The Evil, 1602.
7. A. Laurens: De Mirabile Strumas, 1609.
8. The King's Touch, Charake Club, Vol. II, p. 60.

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FOCAL SEPSIS AS A CAUSE OF DISEASES OF THE RESPIRATORY AND GASTRO-INTESTINAL SYSTEMS.*

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When we consider how universal is mouth infection and the frequency of demonstrable lesions of the tissues of the mouth in persons who are, clinically, in apparent good health, we may be pardoned if we fail to accept without question the results which are claimed of the wonderful cures by treatment of these tissues. The same may be said of other foci.

We may well inquire whether or not on account

Fig. 1.—Dissection of the mandible, showing the intimate relation of the teeth to the cancellous tissue with the opportunity for spread of infection.

of focal infection, teeth are being needlessly sacrificed and tonsils slaughtered; appendices removed and gall-bladders drained unnecessarily; genito-urinary organs operated upon without sufficient cause; portions of the gastrointestinal tract removed or short circuited unjustifiably. We may safely answer: yes.

However, in the light of the accumulated evidence of competent and trustworthy witnesses should we ask if many such cases which might be benefited by judicious surgical interference or other appropriate treatment, are not being neglected, we would also reply in the affirmative. While some have become over-enthusiastic, others have been ultra-conservative. Fads find their place in medicine. Time is required to form a just estimate when there exist apparent contradictions. Our knowledge of focal infections is in a chaotic state.

Infective organisms may remain in the tissues for years without producing appreciable symptoms, either focal or systemic, and later through some exciting cause produce acute disease, or they may pro-

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duce chronic focal and systemic manifestations; or produce systemic conditions when the focal manifestations may be obscure.

Gastric ulcer and other infectious conditions of the gastrointestinal tract have been attributed to focal infection from the mouth. The following résumé of a case is illustrative of an obscure condition of gastrointestinal disease in which relief followed removal of infected foci:

FIG. 2.—Lateral view of a lower tooth showing the cancellous tissue. There had been some resorption of the margin of the bone but the remaining bone is apparently in a healthy condition.

a b c

FIG. 3.—Photomicrograph showing from left to right the tooth, the peridental membrane, and the alveolar process with some of the cancellous tissue near the margin of the alveolar process. *a*, Tooth; *b*, peridental membrane; *c*, alveolar process.

Male, aged forty-two years. Declining health for several years. Unable to work since July, 1915. Gave history of having had pain in region of gall-bladder and vomiting of bile. Greatly emaciated. Had been variously diagnosed chronic gastritis, cholecystitis, tabetic crisis, carcinoma and gastric ulcer. Entered Los Angeles County Hospital, July 8, 1915. Wassermann negative. Fluoroscope failed to reveal abnormal conditions of abdominal viscera. Exploratory laparotomy. Gall bladder drained. No improvement. After several months a number of decayed teeth and roots removed. Improvement rapid. Discharged March 3, 1917.

a b c

FIG. 4.—Cross-section through a periapical tissue. *a* Tooth, *b*, peridental membrane; *c*, cancellous tissue.

FIG. 5.—Gum-festoons over the necks of the teeth.

Three cases of chronic empyema-tuberculosis patients, each of whom had had rib resections, entered the Los Angeles County Hospital within a few months. Each suffered from pyorrhea. Two of the cases ceased to drain following treatment of mouth

Fig. 6.—Photomicrograph showing section of a healthy gingival tissue with its epithelial fold and papillæ.

conditions. One was apparently uninfluenced. Attention to the mouths of the above cases was given by Dr. Boland in charge of the dental department of the hospital.

I might multiply cases of success and failure which have come under my observation following treatment of focal infection of the mouth and other portions of the body, but I think it unnecessary.

I discussed briefly focal infections in relation to the etiology and treatment of tuberculosis in a paper read before the Southern California Dental Association, published in the *Pacific Dental Gazette*, September, 1916, copies of which have been sent to the members of this society.

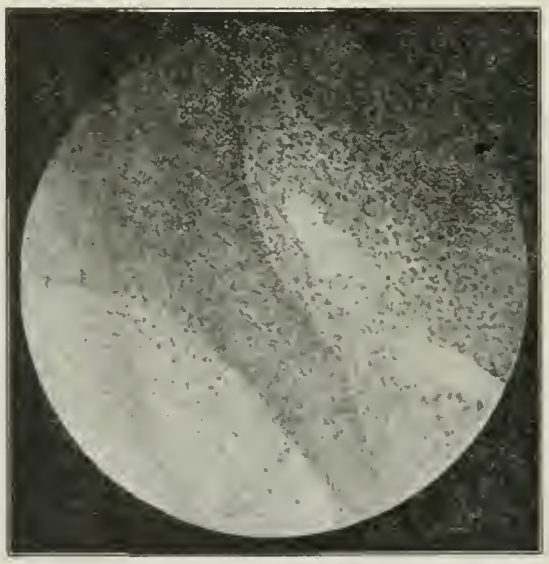

Fig. 7.—Photomicrograph showing papillæ and an early inflammatory process taking place in the tissues of the gingival fold.

During the past few years so much has been written confirming the beneficial results obtained on symptoms and pathological processes in other portions of the body as the result of the elimination of foci, that cases which I might report would be duplicating. Sufficient evidence is at hand; therefore, I think we must accept the influence of focal infections in the production of disease conditions of the thoracic viscera and the gastrointestinal

a b c

Fig. 8.—Inflammatory foci in the pericementum; the fracture of the pericementum is an artifact. *a*, Gingival fold; *b*, pericementum; *c*, cementum.

tract, also the influence of these infections on pathological processes of these viscera.

The finding of a disease focus and its removal does not always prove therapeutically successful, but it does remove one stress to which the individual is being subjected. Other foci may exist and the one removed may not have been the one chiefly concerned in the production of symptoms. All foci should receive treatment in so far as they may be discovered and it is compatible with the best interest of the patient. Disappointments will continue to occur with this as with all other measures of treatment until we are able to appreciate and successfully care for all factors entering into diseased conditions.

We have reached the period in this line of work

Fig. 9.—Chronic inflammation of the peridental membrane, with separation of the latter.

when I believe the improvement of prophylaxis should receive attention, and we should attempt to discover early those conditions, which if neglected will bring about chronically infected foci. For this

reason I am bringing to your attention, to-day, very briefly the condition of one group of tissues which frequently is the seat of focal infection, that of the teeth and adjacent tissues. I desire to consider these from the standpoint of histology and some of

Fig. 10.—One of the extreme later results of infection of the peridental membrane, with which all are familiar. It is an extraosseous infection.

the anatomical relations which favor pathological conditions.

I am indebted to Dr. Julio Endleman, professor of special pathology, etc., in the University of Southern California College of Dentistry, for the use of many of the illustrations herewith presented. They will appear in a forthcoming work by Dr. Endleman on "General and Dental Pathology for Dental Students."

Fig. 4 is a photomicrograph illustrating cross section through the periapical tissue, showing the

Fig. 11.—Resorption of bone resulting from an extraosseous infection.

peridental membrane and the cancellous tissue. It illustrates how readily infection which involves the peridental membrane may spread to the cancellous tissue of the maxillary bone.

Fig. 5 shows the gingiva attached to the alveolar process, falling in festoons over the necks of the teeth, forming a curtain-like extension of the gum tissue folding back on itself, detached from the portion of the teeth which it covers. It is composed of epithelium and a connec-

Fig. 12.—Illustrating early stages of gingivitis.

tive tissue sub-layer. The epithelium consists of a horny layer which externally is resistant, becoming less pronounced as the tissue folds back against the teeth. The connective tissue layer is directly continuous with the periosteum at the margin of the alveolar process and the pericementum. It is composed of closely fitted bundles of fibrous tissue beset with numerous papillæ. It is against the gingiva and the teeth that the salivary calculi are formed which produce irritation and between gingiva and the teeth that serumal calculi frequently produce the lesion for infection. Food may crowd up under this and undergo decomposition, tissues may be wounded, as they frequently are, by the use of the toothpick, etc., starting a focus of infection.

Fig. 8 is a photomicrograph showing to the right a section of a tooth with a fracture of the pericementum which occurred in making the section. The white or clear space shows where the fragment has been separated from the teeth. In the lower

Fig. 13.—Intraosseous infection shown by the *x*-ray, with which all are familiar. In this instance the pathological condition is probably due to a carious tooth having been crowned, the pulp having died and infection extended through the root canal.

part of this separated fragment is seen the attachment of the gingival fold to the pericementum. Its tissue shows inflammatory foci.

Fig. 9 illustrates chronic inflammation of the peridental membrane, showing the separation of

the peridental membrane from the tooth; also the limiting of the inflammatory process. This suggests how extensive lesions may take place without producing discomfort, the process being limited in extent, chronic, and the drainage free. It also illustrates why extreme care should be used in cleaning the teeth in order to reduce the mechanical injury to a minimum, thus preventing the further extension of the disease process. By rough use of instruments the mechanical barriers established for limiting the extension of the infection may not only be broken down, but infectious material may be carried into uninfected areas. Many cases manifest symptoms of sepsis following scaling of the teeth. The area treated should in many cases be limited to a few teeth at one sitting. Even by careful manipulation the lymph spaces are opened and conditions favorable to septic absorption produced. I had one case in whom aching of the joints always followed scaling of even one tooth, which would continue for two or three days accompanied by "hay fever" symptoms. The scaling of three or four teeth would confine her to her bed with slight rise of temperature and more manipulation would be followed by more

FIG. 14.—Showing the limitations of the *x*-ray in the diagnosis of peridental intraosseous inflammation.

intense symptoms. Her teeth were finally extracted. This was followed by gradual but marked relief of symptoms.

Fig. 11 shows the resorption of bone caused by an extraosseous infection. Observe that the root canals are well filled and that no intraosseous infection is revealed by the *x*-ray. Note the overhanging crowns with the marked resorption of the alveolar process. These ill-fitting crowns favor infection. It is almost allowable to paraphrase in expressing the condition of the tooth wearing the shell crown, by stating that infected rests the tooth that wears the crown.

Fig. 12 illustrates a pronounced, moderately early indication in the upper gingiva of the processes which result from the pathological conditions which have been illustrated by the foregoing, while in the lower gingival tissue a more advanced stage is seen. The persistently slightly swollen red line so frequently seen at the margin of the gingiva is the signal of infection at a time when the tissues are amenable to treatment. It is the beginning of a process which usually is painless and does not produce symptoms for many months, and frequently not for years. It is during this early manifestation that the tissue should be treated. I am convinced that few physicians or dentists appreciate this, or recognize the conditions as early as they should. We not infrequently see patients who have pronounced lesions of the gum tissue with recession, who when their attention is called to the condition say that they visit the dentist regularly every six months, or that they have just had a large amount of work completed, and the dentist has neither treated nor called their attention to this condition. Waiting until pus can be expressed from the gums bears the same relation to these conditions that waiting until the finding of tubercle bacilli in the sputum does to the early diagnosis of tuberculosis. Early recognition and early treatment are needed. The *x*-ray is not an aid in diagnosis of early extraosseous infections.

Finally, I wish to call attention to the limitations of the *x*-ray in the diagnosis of peridental intraosseous conditions. Fig. 14 is one of several *x*-rays taken of this patient. No pathological conditions could be recognized by the *x*-ray, yet continued tenderness caused the patient to urge the extraction of the tooth after a year or more of treatment. When the tooth was extracted resorption of the apex of the palatal root was found to have occurred. Marked amelioration of painful affection of the right knee joint which had existed for a year was experienced. Relief has continued since for a period of about six months.

Summary.—Our knowledge of focal infection is still in a chaotic state.

Focal infections are frequent without being accompanied by active clinical manifestations.

Focal infections are productive of systemic manifestations of disease, are the cause of diseased conditions in remote regions of the body and influence unfavorably the progress of other diseased conditions existing in the body. Foci of infection due to the same or different infective organisms may coexist in different tissues of the body.

Care should be exercised in disturbance of extensive foci of infection. Mechanical tissue barriers enter into the protection of the body against injurious influence of infective organisms and their toxins. These also probably act as a protection of the infective organisms against the efforts of the host to rid itself of them.

The virulence of different strains of infective organisms varies, as does also the resisting powers of the hosts. The effect of an infection depends on relative virulence and powers of resistance.

The removal of focus of infection, in such a manner as not to throw too great additional immediate stress on the body, may remove a stress which will have a favorable influence on a diseased condition not due to the focal infection.

The *x*-ray is a valuable adjunct in recognizing these conditions, but cannot be relied on implicitly, either when the findings are apparently positive or negative. It is a link in the chain of evidence. Many cases of chronic focal infection may be prevented if the infection is recognized early. In this paper I have endeavored to call attention especially to a very common one which is easily observed and responds readily to treatment, viz., gingivitis.

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PRIMITIVE DIETARY LAWS.

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THE ancient Israelites lived chiefly on vegetable food and fruit upon which the Bible places no restrictions. With the development of the sacrificial system certain restrictions were placed on the use of the portions belonging to the priests, the Levite, and the poor. Besides these, there were also some laws concerning vegetable and tree growths.

1. "Orlah": The fruit of a tree was forbidden during the first three years after its planting. In the fourth year the fruit was brought to Jerusalem and eaten there amid songs of thanksgiving. Those who lived at a distance from Jerusalem might redeem the fruit and bring the money to Jerusalem and spend it in a similar manner. The law of Orlah applied to all times and places.

2. "Hadash": The eating of new corn was forbidden until the second day of Passover, when the "omer" was offered in the temple. This prohibition was also extended to all times and places. The reason for these laws seems to be contained in the sentence, "The first of the first fruits of thy lands thou shalt bring to the house of the Lord thy God."

3. The use for any purpose whatever of the produce of two species of corn or other vegetables sown in a vineyard was forbidden. The sowing of mixed seed in gardens or in fields was also prohibited; but if so sown the produce was forbidden only in case of a vineyard. This prohibition applied originally only to Palestine, but was later extended by the rabbis to all lands and times.

Among the early Hebrews animal food was partaken of only by the common people, only on festive occasions, usually in connection with sacrifices. The permission given to Noah and his children to eat animal food was conditioned upon the abstinence from blood. Some of the learned men were of the opinion that during their journey through the wilderness the Israelites were permitted to eat the meat only of such animals as had previously been sacrificed, some portions of which had been burned on the altar, and some given to the priests; others thought differently. The Bible in its legislative portions makes explicit provisions for the distinction between clean and unclean animals. These are classified as animals ceremonially pure and fit for food, and such as are not.

Biblical Data: The distinction between clean and unclean animals appears first in Genesis vii. 2-3, 8, and where it is said that Noah took into the Ark seven and seven, male and female of all kinds of beast and fowls that are clean; and two and two, male and female of all kinds of beasts that are not clean. Again in Genesis viii. 20, is mentioned that after the flood Noah "took of every clean beast and of every clean fowl and offered burnt offerings upon the altar that he had built to the Lord." It seems that in the mind of this writer the distinction between clean and unclean animals was intended for sacrifices only; for in the following chapter he quotes the Lord, saying: "Everything that moveth shall be food for you." In Leviticus and Deuteronomy, however, the difference between clean and unclean is made the foundation of a food law. The permitted food is called "clean," "pure"; the forbidden food is not simply not clean, but is positively unclean, polluted, impure, and an "abomination." The terminology "clean and unclean" in the food law has to a certain extent a different implication from that born by the same terms as used in the sacrificial laws. The clean animals were:

1. All quadrupeds that chew the cud and also divide the hoof, for instance the ox, the sheep, the goat, the hart, the gazelle, the roebuck, the wild goat, the pygarg, the antelope, and the chamois. Among other animals, the camel, the badger, the hare, and swine were forbidden, and even excluded by name, probably because used as food by the neighboring tribes.

2. Fish proper; *i.e.* "whatsoever hath fins and scales . . . in the seas and in the rivers."

3. Birds. Here the law proceeds by way of elimination. From the rather lengthy list of forbidden birds it may be concluded that all the birds of prey and most of the water fowl were regarded as unclean.

4. The winged creeping things "that go upon all fours" which have legs above their feet to leap withal, of which four kinds of locusts are named. All the other creeping things are most emphatically and repeatedly forbidden and held up as the greatest abomination. A list of creeping things to be avoided includes the weazel, the mouse, four kinds of lizards, and the chameleon. Restrictions were also placed on the use of the flesh of clean animals; it was forbidden to eat it when the animal had been torn in the field by a carnivorous animal, or when it had died a natural death, or had beeen carried off by disease.

For the distinction between clean and unclean animals, many and various origins have been suggested, though few of them seem to have fully satisfied any one but their own originators. The most popular theory at the present time is perhaps that offered by the late W. Robertson Smith in his article "Animal Worship and Animal Tribes among the Ancient Arabs" (*Journal of Philology*); according to which the unclean animals were forbidden because they were the totems of the primitive clans of Israel.

Forbidden as being unclean is also that which comes out of the unclean. This principle applies not only to the young but to all animal products. It is therefore forbidden to use the milk of unclean animals or of animals which suffer from some visible malady which causes them to be legally unfit for food. When after the ritual slaughtering an animal, apparently sound during its life, is found to be diseased, its milk or cheese made of its milk is forbidden as food. An adult may not suckle from the breasts of a woman, although, if placed in a vessel, woman's milk is not forbidden. A child may suckle until the end of its fourth year, if healthy, or until the end of the fifth, if sickly. If, however, it was interrupted after the second year for three consecutive days, with the intention of weaning it, it is not permitted to suckle again.

Eggs of unclean birds, or of birds suffering from a visible sickness, which makes them impure are forbidden. The following signs were laid down by the rabbis, by which eggs of clean birds could be distinguished from those of unclean. If both ends

of the egg are sharp or round, or if the yolk is outside and the white inside, it is of an unclean bird. If one end is sharp, and the other is round, and the white is outside and the yolk inside, reliance may be placed in the testimony of the seller, who must say of what species of bird it comes. As a rule, however, since most eggs sold are those of chickens, ducks, or geese, no questions need be asked. A drop of blood found on the yolk of an egg is considered an indication that the process of hatching has already begun, and the egg is therefore prohibited as food. It is not necessary, however, to examine eggs before using them, to see whether they contain blood. The roe of unclean fishes is also interdicted. Pickled fish may be eaten, though preserved together with unclean fish. The honey of bees is permitted since it is the secretion of the flower gathered by the bee, and then discharged, and contains no portion of the insect. There is, however, a difference of opinion regarding honey produced by other insects.

The ancient Israelite looked with horror upon the custom prevalent among the surrounding nations of cutting off a limb or a piece of flesh from a living animal and then eating it. If the limb was still partly attached to the body, but could never grow again, and the animal was legally slaughtered, this limb had to be thrown away. An animal that has died a natural death, or has been killed in any way other than that prescribed by law, makes impure all persons or things that it touches. One torn by beasts or subject to some mortal disease is regarded as unclean and so unfit for food; "for thou art a holy people to the Lord thy God." Blood, which is supposed to contain the vital element, is repeatedly prohibited in the Bible. It must not be eaten by Jews at any time or place. Not only blood itself, but flesh containing blood is also forbidden. This prohibition applies only to the blood of mammals or of birds, not to the blood of fishes or locusts. Only the blood which is contained in the veins or congealed on the surface of the meat, or which has begun to flow from the meat, is forbidden; as long as it is a part of the meat it may be eaten. The fat of ox, sheep, or goat is forbidden. The punishment decreed for transgression of this law is "karet" (excision) from the community. The fat of birds or of permitted wild animals is not forbidden. The fat of the young found within the womb of the mother after the latter has been legally killed, and its sinew "that shrank" are allowed. The custom of refraining from eating the sinews of the hind legs of an animal arose, according to the biblical narrative, from the incident of Jacob's wrestling with the angel, through which the patriarch became lame. It is not put in the form of a prohibition in the legal portions of the Bible, although the rabbis considered it of Mosaic origin. Birds are excluded from this law.

The threefold repetition of the commandment prohibiting the seething of a kid in its mother's milk is explained by the rabbis as referring to three distinct interdictions: Cooking meat and milk together; eating such mixture; and deriving any benefit from such a mixture. In almost all cases of forbidden food, the transgressor was liable to punishment, only when the portion which he ate was as large as an olive. The ban, however, extends at times further than that; in some cases even to the taste and odor. Hence if a forbidden object falls into a boiling pot of warranted food, all the food contained in the pot is forbidden unless no taste of the forbidden object can be detected in the food of the pot.

It is forbidden to derive any benefit from objects used for idolatrous purposes; meat consecrated to an idol; wine of libation, spices, or anything else used in the idol service is prohibited; in fact any animal slaughtered or wine touched by an idolater was prohibited to the Israelite because it was supposed to be consecrated to his deity; and these prohibitions applied not only to eating or to drinking, but to any benefit derived from it. Even after the practice of idolatry lapsed, these prohibitions remained in force as rabbinical institutions; wherefore the wine of a non-Jew is forbidden. On account of the apprehension of intermarriage, the rabbis also forbade eating the bread of a non-Jew; it is permitted, however, to buy bread of a non-Jewish baker. If part of the cooking was done by an Israelite, the dish may be eaten. Non-Jewish servants may cook for the families which they serve, for since they are in the house of the Jew, it is assumed that one of the household gives occasional assistance. Not only meat, but also milk and cheese bought of a non-Jew are forbidden, because by some carelessness or by a desire to improve, it was feared that the milk may have been mixed with some forbidden ingredient. A Jew is therefore required to be present at the milking, and at the preparation of the cheese. Different customs prevail regarding butter bought of a non-Jew; and in regard to milk and cheese the later authorities are more lenient.

"Sakkanah" or danger to life, is given by the rabbis as a reason for a number of prohibitions included in the dietary laws. An animal that ate poison is forbidden on account of sakkanah. Meat and fish should not be cooked or eaten together; for such a mixture is supposed to cause leprosy. It is therefore the custom to wash the mouth between eating a dish containing fish and one containing meat. Water that was left uncovered over night was not permitted as drink in olden times, because of the apprehension that a serpent may have left its venom in it.

In the laws of "Manu" carnivorous birds—those that feed striking with their beaks, or that scratch with their toes, or live on fish or meat—fishes that eat any kind of flesh, five-toed animals, and strange beasts and birds are forbidden; domestic animals that have teeth in one jaw only, except the camel, are eatable; also the porcupine, the hedgehog, rhinoceros, tortoise, and hare are allowed; the village cock is forbidden, as is the milk of one-hoofed animals. In the laws of "Apastamba" one-hoofed animals, camels, village pigs, and cattle are forbidden; also carnivorous birds that scratch with their feet, or feed thrusting forward their beaks, and the cock. Five-toed animals (with the exception of the bear, porcupine, rhinoceros, and hare), and misshapen and snake-headed fish or such as live on flesh only, are prohibited. One certain sect may eat all animals that chew the cud, with the exception of the camel, and, with the exception of doves, all birds that are not birds of prey. The Egyptian

priests abstained from eating fish, one-hoofed quadrupeds, or such as had more than two divisions in their hoofs and no horns, and all carnivorous birds.

It is certain that the conception of clean and unclean animals did not originate with the Hebrew law-giver, but, in accordance with the Biblical tradition, goes back to prehistoric times, the distinction being assumed as existing in the days of Noah. These unclean (or tabooed?) animals were to be avoided by all persons who laid special claim to holiness, wherefore the priests and saints of all ancient nations were commanded to shun them. Samson's mother, when she was to give birth to a Nazarite was warned against eating anything unclean. The idea that the people of Israel were "a kingdom of priests and a holy nation" could not be more impressively set forth than by the laws which extended to the universal priestly prohibition of unclean food to the entire people. The priest idea is the only possible meaning of Lev. xx. 25, 26: "I have separated you from the peoples, that ye should be mine." The precept given by the angel to Samson's mother shows, however, that the people in general did not heed the dietary laws. The same may be inferred from Ezekiel's words concerning himself as priest: "Ah, Lord God: behold my soul hath not been polluted: for from my youth up even until now have I not eaten of that which dieth of itself, or is torn of beasts; neither came there the flesh of a sacrificially loathsome thing into my mouth." In fact, Ezekiel desires the prohibition of "Nebelah" and "Terefah" (explained below) to be applied to priests only: "The priests shall not eat of anything that dieth of itself, or is torn, whether it be fowl or beast." Thus it is simply an extension of the priestly law to the whole nation, as "holy to the Lord," which underlies the prohibition of nebelah and terefah.

On the other hand, the interdiction of fat and blood rests on different grounds. Maimonides gives a rationalistic explanation, "Blood and fat belong to God, and must be brought upon the altar"; they are divine property; neither Israelite nor non-Israelite is allowed to eat thereof; and the penalty for violation of this law is "karet." Therefore the blood of every animal, even when it is unfit for the altar, must be poured out as water, and the fat of the nebelah and terefah is forbidden. To the same category seems to belong also the ancient prohibition of the sciatic nerve, or rather the gluteal muscle (sinew of the hip) which is upon the hollow of the thigh. This part as representing the locomotive and, therefore, vital power of the animal, could easily be regarded as sacred to the Deity, just as the brain and the heart, and other vital parts of animals were avoided by the Grecks. The prohibition of eating together meat and milk is probably older than the rabbinical interpretation of the law, "Thou shalt not seethe the kid feeding upon its mother's milk, in its mother's milk. Hence in the early schools the question was discussed whether cheese and fowl might be brought together on one table. All these dietary laws, however, intended to give to the Jew the character of priestly sanctity, were declared to be "divine statutes" to which "the evil spirit" and the heathen nations object. The allegorical interpretations followed by the Alexandrians are proof of a prevailing tendency to treat the dietary laws lightly; but the Maccabean reaction against Hellenism lent new importance to them. At the same time, the view is expressed by the rabbis that the forbidden meat shall again be allowed in Israel, as indeed it was believed to have been eaten by the Israelites before entering the Holy Land. The very fact that the whole list of forbidden animals is allegorized in the ancient law books places the dietary laws in a peculiar light, and forcibly recalls their treatment in the patristic literature.

In the Middle Ages the dietary laws became the chief mark of distinction between the Jew and Christian, whose antinomic maxim was: "There is nothing from without the man, that going into him can defile him; but the things that proceed out of the man are those that defile him"; this aphorism in all probability was borrowed from the Gnostic teaching: "We are as little defiled by the meats as the seas by tainted influxes."

Dietary Laws in Islam.—The Mohammedan dietary laws are neither as rigorous nor as numerous as in Judaism. They were not introduced into the religious code until the Medinian period of Mohammed's career. He probably found it unwise to force dietary restrictions on converts, mostly recruited from the poorer classes, who did not despise the meanest foods, and he therefore deferred such legislation to a more propitious time. Certain restrictions, however, were already known, as ancient custom under certain circumstances forbade the eating of camels, but they were ignored by Mohammed. Swine were also probably held in abhorrence. For definite rules concerning diet, Mohammed followed Biblical models; "He has only forbidden you the carrion and swine's flesh and that which has been hallowed to any other deity. But he who is forced by necessity, not wilfully transgressing, commits no sin; behold Allah is forgiving and merciful."

No clean animal is lawful food unless the name of Allah was pronounced while it was slaughtered. Mohammedans are therefore allowed to eat the flesh of animals killed after the Jewish custom. Game is also lawful if killed under the same conditions. Fish and locusts, however, are exempt from this rule as in the Jewish law. The prohibition of wine was introduced gradually. Drinking and gaming, being equally productive of mischief, were discussed together. At first Mohammed was satisfied with simply discouraging drinking and gaming, but later in a revelation he says: "O believers, wine, dice, images, and divining arrows are an abomination of the works of Satan; therefore avoid them that you may prosper." "In those that believe and do good works it is no sin that they tasted wine and game before they were forbidden." All intoxicants were forbidden in this ban, and some theologians even prohibit coffee and tobacco in their teachings.

The term "Terefath," which has been mentioned above several times, signified originally the flesh of a clean animal that had been torn or mortally wounded by beasts of prey, and had been rendered thereby unfit for food. In rabbinical literature the word came to be applied to the flesh of an animal that had received a fatal injury, or suffered any one of certain diseases, or was marked by some physical abnormality, but which otherwise would be "kasher" (fit and proper as food). "Terefah" in

a broader sense includes also a regularly but unskilfully killed animal, in contradistinction to nebelah, which refers to the carcass of a clean animal that has died an unnatural death or been killed irregularly. Both flesh that is *nebelah* and flesh that is *terefah* are forbidden as food by the Mosaic law. The rule is that when an animal is so injured that it cannot live, its flesh is terefah; hence only such injury, disease or abnormality is involved as must cause an untimely death and affect the health of the animal at the time it is slaughtered. The Mosaic law recognizes eight principal terefah signs, as follows: (1) derusah, violent attack by beast or bird of prey; (2) nekubah, perforation of a vital organ; (3) hasurah, natural deficiency of an organ; (4) netulah, loss of an organ; (5) keru'ah, a rent in the body; (6) nefulah, a fall that might cause internal injuries; (7) pesukah, severance or dislocation of a limb; (8) sheburah, fracture of a rib or other bone. In each of these classes there are a number of cases.

Another division of the ancient law gives a list of eighteen principal ones, as follows: (1) When the gullet is punctured or perforated, the hole penetrating to the interior; (2) When the windpipe is split or torn across its width; (3) When the membrane nearest to the brain is perforated; (4) When the heart is pierced as far as one of its ventricles; (5) When the spine is broken and the spinal cord is severed; (6) When the liver is entirely wanting; (7) When there is a perforation through the two membranes covering the lungs; (8) When the lungs lack any of their lobes; (9) When there is a hole in the maw; (10) When there is a hole in the intestines; (11) When there is a hole in the gall-bladder; (12) When there is a hole in the interior, or lower stomach; (13) When the greater part of the flesh covering the stomach is torn; (14) When there is a perforation of the omasum; (15) When there is a perforation in the greater venter, or upper stomach beyond the place where the two stomachs are joined; (16) When the animal has fallen off a roof; (17) When the majority of the ribs are fractured; (18) When the animal has been seized by a wolf with its forepaws or claws. A small bird is terefah when a sparrow-hawk has struck its talons into it; and a larger bird, as a fowl or goose, when it has been struck by a falcon, eagle, or other large bird of prey. Maimonides enumerates seventy indications of terefah, and says: "Seventy terefah are the limit, and must not be decreased or diminished, even though it should be found by scientific investigation that some of the injuries are not dangerous to the life of the animal, or that some unenumerated conditions are dangerous to its life. Only those indications of terefah may be followed which have been accepted by the rabbis and handed down by tradition." Questions of Jewish law cannot be decided by the evidence of philosophers.

A certain book of tabulated data arranges the symptoms according to the various parts of the animal, describing minutely every injury, disease or abnormality, from the head to the hind legs, internally and externally, whether a perforation, fracture, amputation, or discoloration, which might make the flesh of an animal terefah; stating also when such defects are harmless. The lungs are more liable to injury than any other organ; the number and position of the lobes, the bronchial tubes, the tubercles, and any adhesion to the flesh, must be considered. The lungs are inflated to discover any perforation. When the lungs are shrunk it is a sign of fright, and if the fright has been caused by human agency as when an animal sees a man killing another animal, the flesh is terefah; but if the fright was caused by an act of God, as by thunder or lightning, or if the animal has seen one animal kill another, the flesh is "kasher." A test is made by soaking the lungs in lukewarm water for twenty-four hours. In the first case the shrinkage remains; in the second case the shrinkage disappears. Double organs, such as two livers, in an animal or fowl, render it terefah, as the rule is that "a superfluity is to be treated like a deficiency." When the gall is wanting the flesh is terefah, but when a part of it remains it is kasher. A test is made by cutting the liver across and touching the liver with the tongue. There is no bitter taste when the gall is absent. Two gall-bladders render the animal terefah, but when there is a connecting flow between though they appear double, it is kasher.

Some species of fowl, as doves and pigeons, have no gall-bladders, and are kasher. The signs of terefah are mentioned again as being: the lion's attack is fatal to any animal, the wolf's is not fatal to large cattle, like oxen or calves, but it is fatal to small animals, like the sheep; that of a cat or marten, and a fox is fatal only to kids, lambs and fowl; that of a weazel is fatal only to fowls. The lion and the wolf are the most ferocious animals of their size; the attacks of other beasts of prey are not fatal to animals. The attacks of birds of prey are not fatal to cattle, except in the case of the hawk, which is fatal to kids and lambs when it pierces their bodies with its beak. The attacks of ordinary birds of prey are fatal only to birds of their own size, or smaller; that of the eagle is fatal to all other birds. A fall of ten handbreadths renders the flesh of an animal terefah. A shorter fall, if sudden, without a chance of adjustment on the part of the animal, might be fatal, as internal injuries are possible.

In the books of the Ancients, the serpent was made the subject of quite some importance, aside from the question of being terefah. While the serpent is one of the three creatures which grow stronger with age (the other two being the fish and the swine), the intensity and the deadliness of its poison decreases with advancing age. If the poison of the serpent is left in the wound it causes a burning pain, so that one sentenced to die by fire, may be bitten by a snake instead. The poison spreads through the whole body, and it is therefore dangerous to eat the flesh of an animal which was bitten by a snake; and even to wear sandals made from its hide. If the bite of a snake enters the foot, death may result. The snake alone of all animals harms without gain to itself, and is therefore compared to the slanderer. It is also revengeful, but seldom attacks without giving warning by hissing. The snakes of Palestine were considered particularly dangerous; but it is mentioned as one of the perpetual miracles of Jerusalem that no one there was ever bitten by a snake. The flesh of a snake mixed with other things, was considered the most effective antidote against the poison of a snake as well as other animals. Other cures for snake bites are:

placing the bitten part into the body of a hen which had been opened alive; applying to the wound the embryo taken from the womb of a sound, white she-ass; and putting crushed gnats on the wound. A snake cooked in olive oil was considered a curative for itch. A bad wife is called a snake in the proverb, "No man can live in the same basket with a snake," but the appearance of a snake in a dream is a good omen.

A few words concerning "Shehitah." This means the ritual slaughtering of animals. While the practice that prevailed among the nations of antiquity other than the Hebrews, of cutting off a limb from a living animal and eating it is condemned in several passages of the Bible, no definite mode of slaughter is prescribed. There can be but little doubt, however, that in slaughtering animals the priests followed some uniform mode akin to that which was later adopted by all Israel and which is known as "shehitah." The current opinion was that all the laws of shehitah were given orally to Moses by God. One opinion is to the effect that Moses was commanded concerning the shehitah of mammals only, and not concerning that of birds, the latter, therefore, being merely a rabbinic institution. The young found in an animal which has been duly killed may be eaten without the carrying out of the usual form of shehitah, provided it did not step on the ground, *i.e.* if it is used for food soon after being found in its mother's womb. The butchering of animals is entrusted only to persons versed in the law and skilled in their work. Shehitah may not be performed by the following: a deaf mute, idiot, or minor; one who is intoxicated; an old man whose hands tremble, it being apprehended that he may press the knife against the throat of the animal instead of gently moving forward and backward; a non-Jew, even though not an idolater; a Jew who spitefully transgresses the law of Judaism. Some authorities considered women incompetent to perform shehitah, an opinion that came to be generally accepted. The many details of shehitah were summarized by the rabbis under the following five laws, which were supposed to have been delivered by God to Moses:

1. "Shehitah" (delay). There should be no delay or interruption while the slaughtering is being performed. The knife should be kept in continuous motion, forward and backward, until the organs are cut through. A delay of even one moment makes the animal unfit for food.

2. "Derasah" (pressing). The knife must be gently drawn across the throat, without any undue exertion on the part of the operator. It is therefore forbidden to lay one's finger on the blade while slaughtering, as the least pressure renders the animal unfit for food.

3. "Haladah" (digging). The knife must be drawn over the throat. If it is placed between the windpipe and the gullet, or under the skin, or under a cloth hung over the neck of the animal, so that any part of the knife is not visible while shehitah is being performed, although the slaughtering is otherwise properly executed the animal is unfit for food.

4. "Hagramah" (slipping). The limits within which the knife may be inserted are from the large ring in the windpipe to the top of the upper lobe of the lungs when inflated, and the corresponding length of the pharynx. Butchering by the insertion of the knife in any part above or below these limits is called "hagramah" and renders the animal unfit for food.

5. "Ikkur" (tearing). If either the windpipe or the gullet is torn or removed from its regular position during the slaughtering, the animal becomes unfit for food.

Soon after the shehitah the operator must examine the throat of the animal and ascertain whether the windpipe and the gullet are cut through according to the requirements of the Law. In the case of bords and permitted wild beasts, some of the blood shed in the course of shehitah must be covered with earth or ashes, the following benediction being first pronounced: "Blessed art Thou....who sanctified us with His commandments, and enjoined us to cover blood with earth."

BIBLIOGRAPHY.

The Holy Bible.
Zapletal; Der Totemismus und die Religion Israels.
Weichman; Das Schachten.
Friedlander; The Jewish Religion.
B. Lipschutz, Philadelphia.

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BLADDER TUMORS.*

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Vesical growths are almost wholly primary and occur most frequently between the ages of forty and sixty. They are more often seen in men than in women, forming about 3 per cent. of all the diseases of the urinary organs. They are rare in children and when they do exist are usually of the connective-tissue variety, and have their origin either in the mucous or submucous coats of the bladder, generally from the trigone, and are found to be multiple in most cases.

Secondary vesical tumors are uncommon, and when present result from the spread of malignant growths situated primarily in the prostate, urethra, or rectum, in the male, and the uterus in the female. Bladder tumors have been estimated to form from 4 to 8 per cent. of all tumors of the body.

Tumors of the bladder are usually situated around the ureteric orifices, being above and lateral to them. This location has led to the view that some irritant substance in the urine may be the cause of such growths. However, we have little exact knowledge of the origin of vesical neoplasms. Growths of the malignant type are found more often around the vesical neck and on the floor of the bladder or trigone. According to Watson, two-thirds of all bladder neoplasms are situated in the lower one-third of the bladder; for this reason the cystoscopist can make a better examination with a cystourethroscope, being thus able to examine the vesical neck and posterior urethra more thoroughly, for no examination of the bladder is complete which does not include the careful examination of the posterior urethra.

Thomson Walker classifies growths of the bladder into the following groups and subgroups:

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1. Epithelial Growths:
   (1) Benign—
      (*a*) Papilloma, villous tumor.
      (*b*) Adenoma.
      (*c*) Cholesteatoma.
   (2) Malignant—
      (*a*) Papillomatous.
         Malignant villous growths.
         Nodular growths.
      (*b*) Infiltrating.
         Epithelioma.
         Adenocarcinoma.
         Alveolar carcinoma.
2. Connective-Tissue New Growths:
   (1) Simple—
      (*a*) Fibroma.
      (*b*) Myoma.
      (*c*) Angioma.
   (2) Malignant—

Sarcoma	Spindle-celled.
	Round-celled.
	Melanotic.
	Rhabdomyoma.
	Chondrosarcoma.

3. Dermoid Cysts.

In almost all cases the first noticeable token of bladder growths is hematuria, coming on suddenly in the majority of instances as a sharp hemorrhage in the urine, or it may be terminal hematuria with just a small amount of bright red blood appearing at the end of micturition, which may pass off, only to reappear until the whole urine is blood stained. This "symptomless" hematuria in a young or middle aged adult may be either intermittent or constant and is usually the first noticeable symptom of a tumor of the bladder. This hemorrhage may continue for days, weeks, or months in spite of any and all palliative treatment, and may cease at any time as abruptly as it began, but this cessation of the hemorrhage does not signify that the cause of the hematuria has corrected itself, and an early examination by a competent cystoscopist is as imperative for the patient's welfare as the early recognition of cancer of the uterus, because tumors that are clinically benign have a tendency to become malignant as they progress; for when the epithelium breaks through the basement membrane of the papilla and begins to invade its axis or main stalk, it should no longer be considered a papilloma, but a papillary carcinoma.

Bladder tumors may remain localized for a long period of time, and when they spread it is either intravesical, intramural, perivesical, glandular, or metastatic; so the earlier a diagnosis is made and treatment begun the more flowery the outlook for a result that will be pleasing to both patient and doctor alike, and the less likelihood of recurrence if treatment is begun early.

Cystoscopic examination should be made as early after onset of hematuria as possible, as the bleeding point is more easily located while hemorrhage is taking place than when it is dormant, and the cases are rare in which the hemorrhage is of such a degree as to prevent a successful cystoscopic examination. This early examination will help to differentiate between the several pathological conditions which would cause hematuria, for we must realize that blood in the urine may come from above—the kidneys and ureters, or from below—prostate, seminal vesicles, and posterior urethra, and drain into the bladder, there mixing with the vesical contents; or the hemorrhage may come from the vesical wall itself.

In the hands of the expert cystoscopist the most trifling, if any, damage is done, and it must be said that the information gained greatly offsets any slight disadvantage which might follow. In my personal experience of several hundred cystoscopic examinations of pathological bladders, it has been rare that any inconvenience befell the patient, and when it did it was most trivial. With such means at hand it would certainly be foolish to rely upon palpation to say whether this or that portion of the bladder wall is indurated, or to classify the "symptomless" hematuria as coming from an irritated bladder neck.

There has been no greater advance in the understanding of the treatment of vesical neoplasms than that which followed the announcement of Beer in 1910 of his technique of high-frequency cauterization of vesical growths. Previous to this announcement the treatment of such growths was in almost all cases surgical, and few could master the technique of Nitze's endovesical treatment, for the skill necessary in the employment of this method was not easily perfected, so most of the surgery of bladder neoplasms was done by the way of cystostomy.

To-day the treatment is divided into operative and non-operative, the non-operative treatment consisting of fulguration of the tumor, and where employed gives a far better result than the older methods. Beer has reported that his first cases treated have been free from recurrences ever since.

Operative methods on bladder tumors are almost always followed by recurrences. They are never practical unless a large amount of apparently healthy bladder tissue can be removed with the base of the tumor. Extirpation of the bladder with transplantation of the ureters may have to be done in some cases. This is a radical operation and is generally followed by ascending infection of the ureters producing infection of the kidney and death.

Operation is indicated only when the tumor is a papillary carcinoma. Fulguration will prove futile in this condition, and its employment will only serve to delay until the patient is in such a physical condition that operative measures cannot be undertaken, owing to the extensive infiltration of the carcinomatous growth and glandular metastasis.

In the operation upon vesical growths the cautery knife is recommended by some to be far superior to the ordinary knife or snaring of the tumors, care being taken to cauterize the edges of the cystostomy wound to prevent implantation of cells from the growth in the incision, this implantation causing recurrences in the line of incision.

For my fulguration work I use the D'Arsonval bipolar current in preference to the Oudin monopolar current. Surgeons differ on this point, but Ashcraft in his report claimed that the D'Arsonval current did more for bladder tumors than surgery, and that it was the Oudin current which stimulated malignant growths into greater activity. I also use either the Brown-Buerger operating cystoscope or the Jos. F. McCarthy cystourethroscope, and for

my direct contact to tumor I use the bayonet-pointed insulated electrode of Jos. F. McCarthy.

The following is a brief report of five cases treated with high-frequency cauterization as outlined above:

CASE I.—Male, age 42, steamboat engineer. First seen in Febraury, 1913. Patient complained of intermittent attacks of hematuria for past eighteen months. His nocturnal frequency was 28 times each night. I asked him how he was so accurate in his count and he replied that each time he had to urinate he struck a match to see what time it was, and that he counted the matches next morning. Cystoscopy showed a large pedunculated villous mass. On manipulation of the cystoscope showers of villi fell from the growth and clouded my bladder media. This patient showed marked improvement in urinary symptoms after first treatment. He was fulgurated seven different times at ten day intervals. Then he changed positions and went to sea. Six months later cystoscopy showed a small nodulation at base of former tumor which was fulgurated. Patient at this time was free from all bladder symptoms and slept all night. Two years later cystoscopy showed a normal bladder.

CASE II.—Female, age 40. First seen in August, 1916. Patient complained of intermittent terminal hematuria which had lasted for a period of two years. Cystoscopy showed a small villous papillary tumor at left of left ureteric orifice. Two cauterizations at two-week intervals sufficied to destroy the tumor. Cystoscopy in July, 1917, revealed a normal bladder.

CASE III.—Male, age 53. First consulted me in January, 1917. Patient complained of frequent urination with terminal hematuria for past two months. Cystoscopy showed a sessile tumor at base of trigone which was about three-quarters of an inch in diameter. Section of tumor with rongeur forceps was reported benign papilloma. Five fulgurations at ten-day intervals succeeded in destroying the tumor. Cystoscopy in September, 1917, revealed a normal bladder.

CASE IV.—Male, age 34. Patient complained of being "strictured" and had been treated for this supposed "stricture" for eighteen months. Cystoscopy showed multiple pedunculated papillomata, eighteen in number, the largest two being situated at apex of trigone just within vesical neck, the others being diffused along both lateral walls of the lower quadrant. At first fulguration the largest two were attacked with the electrode within the pedicle which severed them, and I removed them from the bladder with rongeur forceps, the others being fulgurated ten days later. As this patient was transferred to another section of the country I have not been able to make further examinations, but he reports by letter that he is feeling as though nothing is the matter with him.

CASE V.—Male, aged 62. Patient first examined in July, 1917. Gave history of diurnal and nocturnal frequency for a number of years. Painless hematuria came on suddenly three months previous, which lasted ten days, when it abated. Since the hematuria his cystitis has been more acute and at times he has noticed severe bladder tenesmus. Cystoscopy showed two small pedunculated villous papillomata to the right of the right urteric orifice. Two fulgurations sufficed to destroy these tumors.

BIBLIOGRAPHY.

Beer: *Jour. A. M. A.*, May 28, 1910; *American Jour. of Surgery*, July, 1915; *Surgery Gynecology and Obstetrics*, June, 1917.

Squier: *American Jour. of Surgery*, July, 1915; *American Jour. of Surgery*, September, 1917.

Geraghty: *New York Medical Journal*, Oct. 28, 1916; *Journal A. M. A.*, Oct. 20, 1917.

Hyman: *The Urologic and Cutaneous Review*, February, 1915.

Harpster: *The Urologic and Cutaneous Review*, May, 1915.

Martin: *The Urologic and Cutaneous Review*, June, 1915.

H. A. Kelly and Mr. Neill: *Jour. A. M. A.*, March 4, 1916.

Kolischer: *The Urologic and Cutaneous Review*, February, 1916.

O'Neil: *Boston Medical and Surg. Journal*, Dec. 9, 1915.

Pilcher: *New Albany Med. Herald*, January, 1916.

Morton: *The Urologic and Cutaneous Review*, November, 1916.

J. W. Thomson Walker: Surgical Diseases and Injuries of the Genito-Urinary Organs.

514-15 VAN ANTWERP BUILDING.

SUBLINGUAL MEDICATION.

BY BEVERLEY ROBINSON, M.D.,

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IT is strange that a very important matter relating to our practice, and especially to meet emergencies, has hitherto been very little used. True, authors have alluded to it, but have been doubtful as to its value and not emphasized its frequent service to the practitioner.

We are, as I believe, very greatly indebted to Poulson for his brief article in the *Practitioner* (Vol. XCVII, p. 389, 1916) directing attention to its worth. A little later, in the same journal, Cooper added corroborative truth to the striking facts reported by Poulson. In an editorial of the MEDICAL RECORD, Dec. 9, 1916, page 1037, reference is made to the foregoing writers, and it is intimated that their statements should command the consideration they deserve from practitioners. In a letter to the *Boston Medical and Surgical Journal*, Sept. 27, 1917, supplementary to a previous editorial in this journal, I spoke of my own experience during the past summer. This experience has encouraged me to persist when opportunity occurs. Already I have had more than one case in which its great and immediate utility has been proven. I am now very anxious to have other practitioners give a wide and thorough trial to it not only in civil but also in military practice and especially at the front after a battle. Here it would be of untold value when there is no time to make use of a hypodermic syringe, as there are many wounded men who require immediate stimulation or ease from great pain and as speedily as possible.

If the hypodermic syringe be used without every precaution being employed, syphilis may be disseminated far and wide to those previously free from it and possibly tetanus, tuberculosis, or some other fateful disease. To be entirely safe the hypodermic syringe must be sterilized, water boiled, or when used, already distilled, and the skin of the patient thoroughly cleansed with alcohol or ether.

All this takes time and implies conditions which are not available on the fighting line. It must also be remembered that on one or more occasions in practice, hypodermic injections should be repeated. How much simpler and more practical it is to order the nurse or patient to make use of a hypodermic tablet under the tongue, rather than to be forced in time of great emergency to call upon the physician to give the relief imperatively required. Here we find the great value of sublingual medication.

A small hypodermic tablet is simply powdered on paper with a penknife and poured behind the front teeth and under the tongue. In a few moments it is completely dissolved and absorbed, and very rapidly the constitutional effects of the drug employed are observed. If there be great pain, it is almost magically relieved.

If there is heart failure, the circulation may be completely restored when hope is nearly lost. The tablet may be employed as I have counseled, and as it has been done by myself, and others, when consciousness was gone and without risk of any kind to the patient. If the patient is conscious, he is told not to swallow for a few moments, or until the unpleasant taste of the drug is almost if not entirely dissipated.

Since it has now been shown (*Therapeutic Gazette*, August, 1917, p. 539) that the gastric juices render relatively inert the most valuable, in my judgment, of all cardiac stimulants; viz., strophanthus, it is especially valuable to have the sublingual method to recur to when the use of this drug is imperatively required to combat imminent death. In cases of poisoning, or any instances where it is essential to empty the stomach immediately, or in the case of an impacted body in the œsophagus, a hypodermic tablet of apomorphine hydrochloride, gr. 1/15, may be placed in powdered form under the tongue with one of strychnine, gr. 1/30, as has been done by Poulson with the happiest immediate results in a case of impending death from poisoning by chloral.

Personally, I should prefer the use of strophanthus to strychnine to prevent possible death by reason of failure of the respiration, or indeed stoppage of the heart. As to the use of hypodermic tablets of apomorphine, they are indeed the only safe and effective vomitive when the patient is unconscious, or unable to swallow, as in a case, sometimes, of poisoning.

They appeal, as we know, directly to the vomiting centre, and not locally, in the stomach; hence they will act "even when deep coma has supervened." In instances where the mouth is very dry and the patient able to do so, it is desirable to have him rinse it before making use of the tablet in powder, or without preliminary crushing. Apomorphine is liable to change rapidly and it is indicated to have fresh tablets and to protect them by absorbent cotton and colored glass from injurious action of the air, light and moisture. I trust I shall soon hear from my colleagues as to the great practical value of the rapid absorption of powerful alkaloids administered according to the sublingual method. Here is a mucous membrane, very thin, full of vessels, never coated with fur as the tongue and stomach so frequently are, and never as the latter often does, containing food more or less digested and not seldom acids and gases of fermentation, which must surely interfere with or completely neutralize for a time medicinal results which must be rapid in order to be effective and beneficial.

Hitherto, medicines when applied to the mouth have almost invariably been used for merely local purposes. In sublingual medication we obtain very rapid absorption and free from all risks or inconveniences attendant upon the use of the hypodermic syringe. Among these we should cite the puncturing of a vein, the injection of air, the irritative effects often produced and resulting in local pain, swelling, or abscess. The introduction of the needle and injection into a vein may even be followed as we know by a suddenly overwhelming effect, or even death, sometimes due to entrance of air into a vein.

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Medicolegal Notes.

Employees' Authority to Hire Physicians.—The Iowa Supreme Court holds that an assistant engineer, in charge of certain grades and bridges, with power to hire and discharge men, and hire physicians, in the absence of company physicians, to care for injuries, has no implied authority to hire a physician for a servant injured while not at work. A physician called on by an assistant engineer to care for injuries to a servant of a railroad is required at his peril to ascertain whether or not the servant was injured in the course of his employment. It has been held that authority to employ a physician is not to be inferred from the mere fact that an employee is roadmaster, conductor, foreman, yardmaster, or general surgeon.—Carson v. Chicago, etc., R. Co., Iowa Supreme Court, 164 N. W. 747.

"Personal Injury" and "Disease"—Workmen's Compensation Acts.—The Massachusetts Supreme Judicial Court holds that neurosis of the nerves supplying certain muscles resulting from a posture which causes a cigar maker "to bend with shoulders forward," so as to induce "pressure on the brachial plexus," is not a personal injury arising out of and in the course of his employment within the meaning of the Massachusetts Workmen's Compensation Act. A disease of mind or body which arises in the course of employment, with nothing more, is not within the act. It must come from or be an injury, although that injury need not be a single definite act, but may extend over a continuous period of time. Poisoning, blindness, pneumonia, or the giving way of heart muscle, all induced by the necessary exposure or exertion of the employment, fall within well recognized classes of personal injuries. On the other hand, the gradual breaking down or degeneration of tissues caused by long and laborious labor is not the result of a personal injury within the meaning of the act. A person may exhaust his physical or mental energies by exacting toil and become unfit for further service, but he is not because of this entitled to compensation, for the reason that his condition cannot fairly be described as a personal injury. The disease must be, or be traceable directly to, a personal injury peculiar to the employment. A nervous condition dependent upon poor posture of the body does not constitute a commonly known and well recognized personal injury consequent upon employment. It is difficult to establish and define a plain line of division between what is personal injury within the act on the one hand and simple disease on the other hand. But personal injury and disease are not synonymous. They are different in meaning. One does not include the other. They are classifications differing from each other in kind, although they may overlap in some instances. —In re Maggelet, (Mass.) 116 N. E. 972. Under the Michigan Workmen's Compensation Act, providing for compensation for accident and injury to or death of employees, no compensation can be recovered except for accidental injuries, therefore a workman who ruptured himself while lifting an iron bar in his usual manner is held not entitled to compensation.—Kutschmar v. Briggs Mfg. Co., Michigan Supreme Court, 163 N. W. 933.

Receiving Patients into Home—"Dwelling."—A covenant in a deed to use the property as a dwelling will not be violated where a physician so occupying the premises receives a few patients into his home for treatment.—Booth v. Knipe, New York Appellate Division, 165 N. Y. Supp. 577. In Gallon v. Hussar, 172 App. Div. 395, 158 N. Y. Supp. 895, the Second Department of the Appellate Division held that a similar covenant should not be so construed as to prevent a physician from taking a few patients into his own home for treatment or from taking boarders; and in Smith v. Graham, 161 App. Div. 803, 147 N. Y. Supp. 773, in an opinion adopted by the Court of Appeals, 217 N. Y. 655, 112 N. E. 1076, it was held by the Fourth Department that a covenant which it was expressly agreed should run with the land, to erect only a dwelling, but reserving to the grantee the right to receive and care for medical and surgical patients, was no broader with respect to the reserved right to care for medical and surgical patients therein than would have existed without it.

Military Medicine.

GAS GANGRENE.

THE frequency with which war wounds are complicated with gas gangrene, caused by the *Bacillus welchii*, has stimulated much research in an effort to locate the causative conditions in order to facilitate prevention and treatment. The frequency of gas gangrene in the battlefield is due rather to the peculiar nature of war wounds than to a specially polluted soil, although it is true that the soil may be polluted by the spores coming from the intestinal tracts of sheep or other domestic animals. In civil life, wounds are usually wide and gaping, making for aerobic conditions inimical to the development of the anaerobic gas bacillus. But war wounds are usually intricate and narrow channeled, the channels sealed or choked with bits of clothing, blood clots, and tissue; excellent anaerobic conditions are thus produced. The microorganism enters as a spore, and never as a bacillus. It remains for the favorable conditions established in the wound to allow the spore to vegetate. It seems that wounds that are superficial, that do not penetrate beyond the connective tissue are little likely to develop gas gangrene because the superficiality allows the ingress of air, producing aerobic conditions. It is the deep muscular wound that is commonly the seat of infection, partly because the depth of such a wound effectively excludes air, but as much for another condition connected with the medium necessary for the development and growth of this bacillus.

In wounds involving the superficial connective tissues the exudation—lymph, serum, and blood cells, is rich in protein but poor in carbohydrates. *Bacillus welchii* will not grow in a pure protein medium. Muscular tissue, however, is rich in glycogen, and is the medium par excellence for the growth of this bacillus. A medium rich in fermentable carbohydrates is the ideal, since ordinarily fermentable carbohydrates encourage the growth of most bacteria while the sugars in solution and in concentrated form prevent or inhibit their growth. This latter fact has been responsible for the large use of concentrated solutions of sugar in the treatment of war wounds, but from the viewpoint of these researches it would seem that the application of sugar solution to wounds infected with the gas bacillus would be disastrous. *Bacillus welchii* probably does not produce a soluble toxin. In the presence of fermentable sugars it produces butyric or other organic acids that are highly irritating or otherwise injurious to the tissues. Moreover, there is a mechanical action of pressure, caused by the stormy and often explosive reaction in the process of fermentation, which injures the tissues. In some examinations of soldiers' uniforms 100 per cent. were found infected with *Bacillus welchii*, and nearly 75 per cent. of all wounds examined harbored the bacillus. When the wide treatment of war wounds with sugar is allied with the other conditions necessary for the growth and development of this bacillus the large number of cases of gas gangrene is explained. On the other hand, it has been shown that while weak saccharose solutions encouraged the development of these cases a concentrated solution prevented them. The bacilli can develop in the presence of saccharose up to 40 per cent., but not beyond 60 per cent. The introduction of oxygen experimentally merely reduced the amount of gas evolved, but had no effect on the bacilli, as would be expected from the fact that this bacillus is anaerobic.

The fact that a soluble toxin is probably not produced by the gas bacillus was believed to be the obstacle in the way of the production of antitoxin. Yet Bull and Pritchett of the Rockefeller Institute have developed an antitoxin which although not tried out in the trenches has proven successful in animal experimentation. It is to be hoped that by this discovery they have overcome the difficulty in the way of the antitoxin treatment and removed one of the prolific causes of war mortality.

Sepsis in Gunshot Wounds of the Kidney.—Col. Andrew Fullerton, writing in the *British Journal of Surgery* for October, 1917, says that sepsis is present in most war wounds, and is especially likely to occur in kidney wounds for the following reasons: (1) A large amount of blood is thrown out into the loose perirenal connective tissue. Both blood-clot and loose connective tissue are notoriously favorable to the development of infection, once microorganisms are introduced. (2) Owing to the absence of collateral circulation in the kidney, a certain amount of gland tissue in the immediate vicinity of the wound dies. The dead tissue forms a suitable medium for the growth of microorganisms. (3) If the adjoining colon is bruised or damaged, the entrance of intestinal microorganisms on feces transforms the wound at once into a septic one.

Anesthetics in War Hospitals.—At a meeting of the section on anesthetics held by the British Royal Society of Medicine on November 2, 1917, the question of anesthetics in the British Home Military Hospitals was discussed. Lieut.-Colonel J. P. W. Silk, S. A. M. C., opened the discussion. In the course of his remarks he said that the use of pure undiluted chloroform was contraindicated. He thought, however, it was of value in many cases, especially when given diluted with ether and by the open method. For short cases three methods of anesthesia were useful: (1) Local anesthetics, perhaps not used as often as might have been expected before the war; (2) Nitrous oxide; (3) Ether, which should be given preferably by the open method. Silk was of the opinion that a preliminary injection of morphine and atropine should be almost a routine. If ether was to be administered atropine should always be given as it dries up the mucous membrane. He would inject it half or a quarter of an hour before the operation, and it should be given in the operating room rather than not at all. When time was no object he thought ether should be used from the beginning, otherwise it was best to begin with a mixture of chloroform and ether.

Less chloroform and more ether had been given in British home hospitals in the past year with increased safety to the patients. Silk thought that in shock too much morphine could not be given, but it should be avoided in septic cases and in patients with malaria or heart trouble. In such cases chloroform should be avoided also. As little anesthetic as possible should be given,

and it should be diluted with oxygen, which could be bubbled through the ether. Nitrous oxide and oxygen were valuable, but the apparatus militated against its use and he was not satisfied as to the anesthesia which was produced. Warm ether was of advantage in these cases. In intracranial cases morphine was unnecessary, and here also very little anesthetic should be given. He preferred chloroform as it lowered venous congestion. In empyema he preferred intratracheal methods and as anesthetics he used chloroform and oxygen. In spinal cases in which, owing to the position of the patient, venous congestion was always present, he thought chloroform and oxygen the most desirable anesthetics. In orthopedic surgery spinal anesthesia was not used to the extent which might have been imagined.

In plastic surgery of the face and allied conditions the chief difficulties were caused by the blood and mucus which collected in the mouth and pharynx; there was also difficulty of manipulating the anesthetic with a fixed or very mobile jaw. In the majority of cases exceptional methods were necessary, and of these he mentioned four: (1) Intratracheal. This was not necessary in all or even in the majority. (2) Intubation was little known in England, but had many advantages; it was easy to introduce Kuhn's tube, which could be packed with gauze round the pharynx, thus preventing blood from entering. (3) Rectal ether-oil method. In this there were two important points: (a) the patient should have morphine and atropine before, and (b) the anesthetist should himself see that all remnants of ether-oil were washed out of the rectum. (4) The sitting position. In this the patient sat bolt upright and anesthesia was produced by passing oxygen and chloroform or ether vapor through a nasal tube. This method had been in use, Silk said, for over a year at one of the principal facial hospitals and so far no fatality had occurred.

Treatment of Wounds By a Solution of Soap in the Casualty Clearing Station.—R. Garside Dixon and H. T. Bates, writing from a casualty clearing station in France, tell how their attention was drawn to the treatment of wounds by soap solution used by French surgeons. Seeing such excellent results, they tried the same method of dressing wounds on 368 cases within a few months. In order to have proper comparison of results, they treated similar wounds at the same time with other antiseptics, including eusol, hydrogen peroxide, and B. I. P. P., with the result of an increased use of the soap solution in preference to the other antiseptics.

Common yellow soap upon analysis was found to contain per cent.: Water, 24.6; fatty acids, 63.0; combined alkali, 4.6; free alkali, nil; impurities, 7.8. This was considered suitable when made into a 2½ per cent. solution.

The first cases to undergo this treatment were those of small open muscle wounds in which no gas gangrene was present. After being opened up and metal and cloth removed, the wounds were dressed with sterile gauze soaked in this solution. The dressings were left undisturbed for two, three, or four days, provided there was no rise in temperature. At the first dressing the most striking features were less pain, the unusually clean appearance of the wound, absence of pus, and the redness of the whole tissues, the muscle in particular. Encouraged, they tried the same treatment in larger and deeper wounds, using Carrel's tubes in the ordinary way. Here a difficulty was encountered with the soap solution, as it was found to be too gelatinous to flow at all well down the tubes. However, a 2½ per cent. solution of the B. P. soft green soap was then tried, and gave excellent results.

Next, compound fractures of the bones of the hands and feet, also the long bones, including the femur, responded satisfactorily to this treatment. Cases of penetrating wounds of the knee joint received this method of treatment, the joints being irrigated and the capsule and external wounds closed. These gave excellent response, as did also cases of gas gangrene. In one of the latter cases a gelatinous film or glaze formed over the affected muscles, so the treatment was changed to one in which hydrogen peroxide was employed.

In one case where a man had similar wounds of both calves the soap solution with Carrel's tubes was used on one leg, and another antiseptic, also with Carrel's tubes, was employed in the other calf wound. While both wounds did well, the one treated with the soap solution gave the better result, in spite of the fact that it was not dressed as frequently as the other leg, and the wound looked more like a granulating one and nearer the closing period than the other wound.

The soap solution offers these advantages over the other antiseptics, according to these investigators: It cleans up a wound quickly, the dressings are much less painful than ordinary dressings, and at the same time they do not require changing as often as the other types of dressings, thus saving labor. A wound dressed with this solution needs to be changed but once in every three or four days. Then, too, the solution is easily procured, easily made, and very cheap.

Seventy-three superficial wounds, 160 uncomplicated severe wounds involving muscle, 105 compound fractures, 30 joints, 14 amputations, 17 vessel wounds, and 6 nerve wounds in all were included in this series of treatment, giving both encouraging and satisfactory results.—*The Lancet*, Nov. 24, 1917.

Vincent's Angina Among the Troops in France.—Vincent's angina has always been a dreaded condition and one difficult to handle. Now R. J. C. Bouty, reporting through the *British Medical Journal* for Nov. 24, 1917, tells that this condition has been on the increase for the past two years among the army in France, both French and British. In peace times this disease forms about 2 to 3 per cent. of all cases of throat trouble among the French army, while recent statistics from a British military hospital in France show the proportion to be as high as 23 per cent.

From a study of cases under his own observation, Bouty found that this disease is characterized by the formation of ulcers on the buccal and pharyngeal mucous membrane, either superficial or deep, covered by a pseudomembrane, and the most common site is the tonsil. The disease is caused by an organism normally present in the mouth of healthy

individuals, but seems to favor irritated conditions of the mucous membrane. Vincent himself considers smoking to excess as one of the chief predisposing factors, as also the presence of decaying organic matter, and any irritant fumes, such as those given off from exploding shells. This disease is prevalent among students working in the dissecting rooms, and in hospitals generally, and among nurses.

It presents a sudden onset and may be preceded by a few days' malaise. The temperature is raised for the first day or two, and may be high, the membrane often not beginning to form for twenty-four to forty-eight hours after the commencement of the fever. Then it is rapidly formed, is thick and abundant, and usually appears on one tonsil at first. After the first two days the temperature may fall to normal and remain so, or there may be an irregular slight pyrexia throughout, which occurs more often in the severe type with complications, such as marked adenitis or albuminuria, etc. The membrane is yellowish-white and abundant and adherent, and leaves a raw, bleeding surface on removal. Although the tonsil is the usual part affected, the ulcer may spread from this location to any part of the throat, causing destruction of tissue. The breath has an unpleasant odor, worse than in the diphtheritic throat.

As a rule, if treated thoroughly, the membrane disappears in a few days, but in some severe cases, even after two weeks of apparent recovery, another ulcer may appear on the opposite tonsil, with recurrent temperature. Sometimes a chronic form of this condition is to be found, with serious complications. Some cases of death have occurred in French hospitals in which the primary cause was Vincent's angina.

Microscopically, two varieties of organism are found, the *Bacillus fusiformis* and Vincent's spirochæte. Two forms of Vincent's angina are met with—(1) the pseudo-membranous, resembling diphtheria in appearance, and (2) the ulcerative form. In the first we find abundant bacilli mixed with cocci, and in the second, associated with the bacillus, a Gram-negative mobile flagellated spirillum. A coexisting streptococcal infection is not uncommon, and may give rise to serious complications.

The Ziehl-Nielson method is all that is required, though the silver method demonstrates the spirochaete more clearly. Injected into animals the organisms are non-pathogenic. Injection of impure cultures causes abscesses in which the spirochaete is abundant.

Letulle states that in every case of ulceration in the mouth, whether syphilitic, tuberculous, or cancerous, large numbers of *B. fusiformis* and spirilla are to be found.

The complications of this condition are those to be expected in the tissues of the mouth and throat as well as in those to which the infection has been carried. Adenitis of the cervical glands occurs in nearly every case and is very painful; pyorrhea alveolaris is often present, as also is stomatitis and gingivitis, while quinsy is a frequent complication. Gastroenteritis cases have occurred, in which postmortem, abundant bacilli and spirochetes have been found in the intestines. Nephritis and albuminuria, already mentioned, are to be looked for, and there is very frequently a trace of albumin in the urine of these cases. The tissues of the ear and breathing apparatus come in for their share of complication in many of these cases, and perforation of the carotid artery has been caused by the presence of one of these ulcers on the pharynx. An association of Vincent's microbes complicating a syphilitic chancre of a phagedenic tendency has been noted by Laimos, and the same association has been observed in soft chancre. A case of thrombosis of the left saphenous vein with gangrenous ulceration of the leg, complicating Vincent's angina, has been recorded by Guinsberg. Bouty also reports one of his own cases in which the uvula was the only part attacked, leading to complete destruction of the posterior portion and tip, a very small part only remaining. Some men have reported osteomyelitis as a resulting condition from this same cause.

In an uncomplicated case the symptoms are sore throat, headache, and pain behind the eyes; after the first day or two there may be no symptoms aside from the slight malaise, while in the more severe cases there may be loss of appetite, wasting and great prostration.

In the treatment of this condition the drugs which have proved of benefit are calomel in repeated small doses, but Vincent states that mercurial treatment aggravates the condition when the patient is not a syphilitic. Arsenic and a mixture of sodium salicylate and potassium chlorate have been used, and tonics locally. Mercury perchloride and glycerin (1 in 500), silver nitrate, methylene blue, neo-salvarsan, solution or powder applied daily for three days, and frequent gargles of hot hydrogen peroxide have been recommended.

The treatment which Vincent himself finds most effective is a thorough painting with tincture of iodine 6 per cent., after the membrane has been thoroughly removed.

In some cases a dose of antidiphtherial serum has given much relief. The importance of treating the unaffected side of the throat must be borne in mind to prevent occurrence on that side. Salvarsan intravenously (one dose) has been said to modify this condition and to prevent occurrence.

Vincent's angina is to be diagnosed from diphtheria, all types of tonsillitis, syphilitic ulceration, primary and tertiary, and scarlet fever. In every case a culture should be made to establish the absence of Loeffler's bacillus. The Wassermann reaction in this condition is negative. Certain skin conditions, such as erythemata and bullous eruptions, have been reported, but are probably due to coincident streptococcal infection.

Bouty considers that Vincent's angina is a more serious complaint than is supposed; its general effect on the system is so often severe, probably from the abundant absorption of toxins. Recurrence may take place even three weeks after the first attack, in which case complications are more liable to occur.

Munition Works Ordered to Provide Hospitals.—A conference of the sub-committee on industrial diseases, poisons, and explosives, which is working under the direction of the National Council on Defense, was held at the Hotel McAlpin, in New

York, on December 1. Recommendations were formulated for presentation to the Council on National Defense requiring all munition plants in the United States to establish hospitals under the care of a competent physician and to provide restaurants where the employees may eat without danger of being poisoned by substances used in the manufacture of munitions. It was recommended that the work in the plants should be so regulated that the workers should not come in direct contact with nitro and amino compounds.

Employment of Cripples.—At a meeting of the New York State Industrial Conference, at which industrial leaders from all sections of the State were gathered, on December 3, emphasis was laid on the fact that provision must be made by our industries for the employment of wounded and crippled soldiers returning from the war. In speaking on this subject Carleton A. Chase, president of the Associated Manufacturers and Merchants of New York State, said "This taking care of our war-battered boys is not a welfare work, nor is it sentiment. It is common justice."

Health Conditions at Army Camps.—A statement issued on December 17 by Surgeon General Gorgas, after a tour of inspection of four of the army camps, confirms the reports that have been in circulation that there has been an insufficiency of winter clothing which has been the cause of much suffering among the soldiers during the intensely cold weather. With the exception of the hospital at Camp Funston, none of the base hospitals have been completed. Surgeon General Gorgas has recommended the rushing of this work. He points out that practically all the disease in the camps has been brought there by the incoming men, and recommends the establishment of observation camps for all newcomers, so that they may be kept under observation for such a length of time as the division surgeon shall deem necessary. To aid sanitary conditions he recommends that fifty square feet of floor space shall be furnished at all camps for each man; in some camps only twenty feet is now provided. At Camp Bowie, forty-one deaths from pneumonia are reported out of 400 cases admitted to the hospital. About 2000 cases of measles have developed during the same period. At Camp Funston, during the last month, there have been forty-three deaths from pneumonia, with 189 cases, and twenty-two deaths from meningitis, with seventy cases. The report states that for the week ending December 14 the pneumonia conditions in all divisions of the national army have improved decidedly over the previous week, except at Camp Travis, where there are seventy-seven new cases, as compared with forty-one the previous week. At Camp Jackson, S. C., there has been an increase in the number of cases of meningitis, thirty cases having been reported for the week ending December 15, as compared with sixteen for the previous week. The number of cases of meningitis at Camp Funston continues to decline, only six having been reported for the week. The total number of deaths in all the National Guard divisions was 165, of which 143 were caused by pneumonia. The total number of deaths in all the National Army camps was ninety-seven, of which eighty-nine were caused by pneumonia. In the National Army camps a marked increase in the number of cases of measles has been reported. General Gorgas has sent a letter to the Chief of Staff of the army in which he declares that overcrowding and insufficient heavy clothing are responsible for the high percentage of sickness in some of the camps. It is stated that his recommendations for the improvement of sanitary conditions will be complied with as rapidly as possible.

"Medical Incompetents" to Be Weeded Out.—A special announcement from the Surgeon General's Office, under date of December 21, states that, as a result of the unsuitable conditions found in some of the army camps, steps will be taken to eliminate from the service all incompetent medical officers. In this category will be placed officers not fully qualified to perform their duties because of mental and physical incapacity, bad habits, or laziness. By the provisions of this order, becoming effective December 14, officers assigned to duties that they cannot competently perform, because of unsuitable previous training, will be transferred and tried in other positions. If then unable to do satisfactory work, they will be reported to the Surgeon General as unfit and sent before a board with a view to their discharge from service. Medical officers who have been transferred will be given proper instruction in their new work, and will not be discharged from the service until their superiors are convinced that they cannot become competent within a reasonable time. No action for discharge will be taken until they have failed in two lines of work, viz., the professional care of the sick and disabled and medical field work, the latter including camp sanitation, handling of men, first aid, and transportation of wounded.

Vassar College Prepares to Train Nurses.—Plans have been announced whereby, through the co-operation of a committee of the trustees of the college and the committee on nursing from the Council of National Defense, a school will be established at the college for the intensive training of registered nurses. It is also planned to hold a summer conference of Red Cross home service workers and to establish a Normal Institute under the officers of the American Red Cross.

A Convalescent Hospital at Lakewood.—The Lakewood Hotel at Lakewood, N. J., one of the largest in New Jersey, has been leased by the Government for the duration of the war. It will be used as a hospital for convalescent soldiers. The hotel is in the center of a twelve-acre park, and has 400 rooms, but the building will be remodelled to accommodate 3000 patients. The Government will take possession about the middle of January. A number of hotels in various parts of the country have been taken for the same purpose.

Measles at Camp Devens.—An outbreak of measles among the Depot Brigade at Camp Devens was reported on December 24. Several companies have been placed in quarantine.

Promotions in the Navy.—Secretary Daniels announces that Medical Directors George H. Barber and Edward R. Stitt are to be promoted to the rank of Rear Admiral, in accordance with an act of Congress authorizing two additional rear admirals in the Medical Corps of the Navy. These officers have been selected in recognition of their distinguished services.

MEDICAL RECORD.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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THE PATHOGENESIS OF CYSTS AND FISTULAS OF BOCHDALEK'S DUCT.

THERE is at present no valid objection which can be offered to deny the process of evolution of the median thyroid primal elements, the development of which gives rise to Lalouette's pyramid, the accessory thyroids, and certain peculiar formations encountered in the midst of the tongue in quite a number of subjects. The majority of these formations are quite capable of giving rise to cysts, fistulæ, or pathological growths and the embryogenic theory of His is certainly the one which best explains the cases met with. The persistence of the upper portion of the thyreoglossal duct in the embryo is not at all exceptional and may give rise to a tumor or fistula, a fact to which attention was first called by the surgeons. But it may be met with in apparently normal subjects.

The anatomical relations of the duct are usually quite constant. It does not appear to start from the foramen cecum and the subforaminal portion is the part most constantly obliterated. However, a communication seems sometimes to exist through a lacunal tissue, quite analogous to thyroid tissue. From this point the duct reaches the median septum of the tongue, making a slight curve with an anterior concavity, and attains the hyoglossal membrane, in the midst of which it appears to be included. It usually stops at the upper border of the hyoid bone, but when it is continuous with the pyramid of Lalouette, the extension passes behind the hyoid, lying closely against the posterior aspect of the bone. On the other hand, when there is complete occlusion of the duct, the glands of Zuckerkandl-Kadyi (upper portion of the tract) are situated on a plane anterior to that of the hyoid bone, and Lalouette's pyramid (lower portion of the tract) becomes fixed to the posterior aspect of the bone. Therefore, the arrangement in the embryo persists in the adult in the majority of cases.

Independently of the cases with a marked persistence of the duct, the median septum of the tongue may acquire a size and consistency much greater than the normal. When such is the case, a series of cysts, usually superposed vertically upon each other, may be found, spreading the Z-fibers of the raphe apart. These fibers occasionally coexist with some subhyoid glands. It is possible that they are related to the median thyroid primal elements, but further researches are necessary to determine this point.

The foramen cecum is ordinarily represented by a depression of 2 to 3 millimeters in depth, and in about 19 per cent. of the cases it attains the depth of 1 centimeter. Its relations with the large caliciform papilla are variable, but it is clearly the ductus excretorius linguæ of the older writers. These formations, which are regarded as the remains of the median thyroid primal elements, do not develop in the principal duct of Bochdalek which extends to the glossoepiglottic ligament, but in its anterior diverticula.

A pyramid with a bifurcation of its lower end will be found in 5 per cent. of the subjects examined; two incomplete pyramids may also be met with, being probably the remains of the division of the thyrolingual tract which has disappeared. It is rare to find two pyramids reaching upward to the hyoid bone, only two instances being known, one recorded by His and the other by Chemin, and until the contrary can be demonstrated, the same signification can be attributed to them as to the others, by admitting a very early division of the tract.

PAUPERISM AND MENTAL DEFICIENCY.

IN proportion as the social ills are discovered to have pathological foundations more and more of them are being relegated to the care of medical science. Perhaps no greater and older social ill exists than poverty, but the general belief that poverty is caused by disease or disease environment must give way to some modification. At best the conditions are in relation to each other of a vicious circle, with the large probability that disease is caused by poverty rather than the reverse in a people who are unable or unwilling to live up to the necessary conditions of good health. Much of the public, but especially of the private funds is expended needlessly in speculative research into the social causes of poverty and little for somatic causes that must dominate the whole condition. This conception of poverty or pauperism should not be confounded with the occasional instances of individual financial distress calling for assistance, but must concern itself with those individuals who continually live in the subsoil of life, sometime just above extreme adversity, but never far above it. They are usually unable to meet the demands of their own particular society for any period without assistance. They are much below even the lowest social order in which they may live. What savors so much of mental deficiency in them is the unmindfulness of their plight. They are the people who live with the least amount of worry, although it would seem that they ought to have the most of it. They accept the care and assistance continually bestowed

upon them quite as willingly as do the inmates of an institution for mental defectives.

Delinquency in nearly all its phases has for some time been accorded its appropriate place among the mental defectives, by reason of much study and research among those confined in penal institutions or coming before the courts. For delinquents punishment is no longer considered the remedy, but there is a desire to treat them much as one would treat the actual feebleminded confined in institutions. Neither is mere financial relief an adequate remedy for the chronic pauper. He likewise must receive treatment in a clinic or institution. Mental deficiency, delinquency, and pauperism are different manifestations of the same pathological condition. One does not have to be very long in contact with the social work among chronic paupers to see very clearly that one is dealing with a pathological condition and not with what is so vaguely understood as a social condition. Medical missionary work among them is a most important factor in clearing away misunderstanding. Irrespective of the fact of mental or physical inferiority or disorder on which pauperism depends, periodic physical and mental examinations of the chronic paupers under pension would bring to light many remedial diseases or defects; but most of all they would reveal the mental defects among them and would lay the foundation for the proper treatment of this social cancer, pauperism. Members of a family who are plainly deficient are best treated in public institutions for that purpose. Normal members are saved the deleterious effects of contact with the deficient members. Mentally deficient parents allowed to maintain a home under pension do much to keep alive pauperism in future generations, whereas the separation of such parents and the education of the children along appropriate vocational lines may reclaim even defective children.

THE SYMPTOMATOLOGY OF POISONING BY MALE FERN.

The more common disturbances from the administration of overdoses of male fern are those of the digestive tract. The patient's discomfort increases minute by minute. Thirst is intense and is followed by nausea of a violent type, accompanied by a sensation of constriction at the base of the thorax and intolerable pain in the epigastrium. Occasionally the reflex of deglutition is abolished. Following the nausea frequent and uncontrollable vomiting takes place, the odor of the vomitus being that of male fern. The abdomen is distended and rigid. Diarrhea appears upon the scene, the stools being frequent and in large amount, and they may be even involuntary. In the milder cases the patient's general condition is not alarming. However, a quite intense headache may be complained of with labored respiration, slight rise in temperature coinciding with an increased pulse rate, some short attacks of lipothymia, transitory cramps, and somnolence.

In the more serious cases, besides the digestive disturbances, which are very accentuated, there is a long procession of central nervous troubles. These commence with an intense cephalalgia followed by vertigo, the patient staggers, is seized with profuse sweating, and at length falls into a somnolent state bordering on coma, accompanied by persistent cramps and convulsive paroxysms, involving all the limbs, all of which simulates an attack of epilepsy. In some cases, after a short period of excitement, the symptoms assume the aspect of tetanus. The temperature rapidly rises to a high point, while rigidity of all the muscles, particularly those of the jaw, appears and quickly increases in intensity. Trismus is intense, deglutition impossible, the convulsive contractions are very painful and frequently result in opisthotonos. In these circumstances death takes place rapidly, even regardless of the administration of chloral and morphine.

At autopsy the peritoneal surface is rosy, likewise that of the omentum. The stomach usually contains a small quantity of yellow fluid, having the odor of extract of male fern. There is a venous stasis in most of the viscera of the digestive apparatus. The gastric mucosa is red and ecchymotic, while small blood clots are scattered over its surface. The same lesions are found in the mucosa of both the small and large intestine, lesions of gastrointestinal irritation of an intense type being, therefore, the pathological characteristics.

Intoxication by male fern has a marked action on the organs annexed to the digestive tract. There may be jaundice and the urine will be found to contain albumin and casts so that a nephritis may be inferred to exist. Glycosuria has been met with, but according to the experiments of Prévost and Binet the urine reduces Fehling's solution because of the elimination of extract of filix mas and not of the presence of sugar. A generalized edema may arise, particularly marked in the lower limbs, and ascites may be so great as to require paracentesis.

The eye is an organ of predilection for the toxic action of male fern and in many cases there are temporary visual disturbances, such as anesthesia of the cornea, dilatation or contraction of the pupil, and more or less marked amblyopia. In some cases the amaurosis persists and blindness may become absolute. The ophthalmoscopic findings may be negative, but in some cases a marked anemia of the papilla and retina is found, the central arteries being contracted, while the veins are normal. Complete atrophy of the optic nerves follows.

HEART DISEASE IN CHILDREN.

Cardiac conditions may appear in very early childhood, especially among the poor who live under adverse surroundings, and although such conditions are less complex in children than in adults they are by no means less frequent or less severe; they are, indeed, far more frequent than is usually realized. On the other hand, while in adult heart affec-

tions such conditions as chronic degenerations, overwork, many poisons, alcohol, and syphilis operate to produce the high morbidity, these conditions are, for the most part, non-existent in childhood. With these causes removed from comparison it would seem that heart conditions are much more frequent in children than in adults. But many cardiac conditions which would be significant in the adult have no pathological import in the child, nay, they may even be physiological. The whole vasomotor tone, whether central or peripheral, is normally very unstable in the child, and consequent symptoms must be viewed with this fact in mind. Growth in young children is so rapid that not only can tissue defects be bridged but even real heart lesions may be completely overcome by muscle growth. In children one must consider what the heart can do rather than what sounds it emits. Such cardiac symptoms as dyspnea, cough, etc., are not ordinarily produced in the cardiac conditions of childhood because the heart changes are inflammatory rather than fibrotic and degenerative as in the adult. When these symptoms are produced in children the progress of the disease is far advanced, the compensation is very poor, and the outlook accordingly is grave. The best guide in differentiating functional from organic heart murmurs lies in the accompanying constitutional signs and less in certain local differences.

The recuperative powers of the child are always high, but there is a great tendency in child cardiacs to recurrence of the disease originally causing the cardiac condition as well as cardiac complications in almost any other disease from which they may suffer. Valvular lesions are more apt to be multiple in the child than in the adult; likewise hypertrophy and pericardial adhesions are very common. There are likely to be circulatory disturbances of a severe type early in life which greatly retard growth and development. With the recurrence of rheumatic attacks pericarditis is much to be feared and, of course, is very fatal in the young. But in the absence of these grave complications even murmurs may disappear as a result of a complete physical compensation of the defect not merely a dynamic one. There seems to be little doubt that children may recover from an apparently chronic mitral insufficiency or such may become quickly latent. However, if the condition persists beyond puberty in spite of the best conditions, the outlook becomes grave. As soon as the individual is put to the hard work of adult life the heart muscle is unable to rise to the occasion, becomes weakened, and compensation is soon hopelessly broken. Yet death does not usually occur in a short time after the inception of the disease, and when it does occur one may be certain that there was more than a mere valvular involvement, probably a pericarditis or myocarditis. While children may remain compensated for a longer time than adults, when the break in their compensation does come they are much worse off than the adults. They do not so easily recover compensation, and with a failure of compensation death is usually not far off. In cases of adherent pericardium or myocarditis there is likewise only the gravest outlook.

Although no child with cardiac disease should be condemned to chronic invalidism and its education, academic or vocational, should not be neglected, it must be borne in mind that the developmental progress of severe cardiacs is always much retarded both in mind and in body. The life work of the child must be chosen for physical capacity and not for mental ability. Expensive education in the hope that physical incapacity will thus be compensated for is ill-advised. In any but the mildest cases the whole life of the child must be adjusted to a simpler and smoother road.

THE COMPLEX COMPLEX.

A SENTENCE which seems full of meaning occurred in a popular magazine lately. Mr. H. L. Mencken, in his literary review in the November *Smart Set*, discusses the present-day poets. Speaking of one who showed a leaning toward psychopathology, he says: "Politics in poetry is bad enough; when it comes to the subconscious and the Oedipus complex I retire to the woods. . . . The latter (Conrad Aiken) piles up complexes until there arises a sort of complex complex."

This naturally turns one's mind to the psychoanalysts, whose activities have created such a furore in psychiatric circles during the past decade. For the complex is back of all their psychology. Like a malignant spirit it hovers in the background of the neurotic's mind, casting its evil shadow over his life and oppressing his simplest deeds. The treatment of the neuroses and psychoneuroses, in fact, has resolved itself for the psychoanalysts into dragging these complexes into the foreground of consciousness and there disposing of them. For the complex cannot be dealt with in the dim, inaccessible regions it haunts of choice; the sword of the psychoanalyst flashes in vain among the shadows of the unconscious mind and finds no target.

What then must this constant occupation with such subjects do to the psychoanalyst himself? If we suppose that his daily life is spent in the pursuit of complexes. that he plunges and gropes about, with his patient, striving to penetrate the defenses erected against him, wittingly or unwittingly, that he comes to look upon the discovery of the complex as the ultimate object of his work; what the crisis of fever is to the bedside practitioner, what the successful operation is to the surgeon, that the capture of the complex is to the psychoanalyst. Is it any wonder that he becomes preoccupied—obsessed with this endless chase and capture? When all his hours of work are spent in such a pursuit must it not interpenetrate his hours

of leisure and even haunt his sleep? Will not this dominant idea in time come to color all his ideas and actions, amounting almost to an obsession? Will he not in short develop a complex complex? And as it is laid down as an axiom in all literature dealing with the technique of psychoanalysis that the analyst himself must be free from complexes, it follows inevitabily that no man can practise psychoanalysis to any extent without thereby disqualifying himself for its practice. Therefore psychoanalysis is an impossible therapeutic method.

Proposed Ministry of Health in Great Britain.

Major Waldorf Astor read a paper on October 31, 1917, at the British Royal Institute of Public Health on "Health Problems and a State Ministry of Health" (*Medical Press*, November 14, 1917). Major Astor said in part that the first thing required was a central department, and the second was the disentangling and straightening out of the spheres and functions of the 1,800 sanitary authorities, of the 630 boards of guardians, of the 238 local insurance committees, of the 318 local education authorities, and of the 320 new pension committees. He recommended the centralization of power, so far as the public health problem was concerned. They must have one health minister and not three ministers, or even two ministers. One head meant economy of time and effort, economy of man power and energy, economy of the taxpayers' and ratepayers' money. He was in favor of the establishment of the following principles: (1) Of an immediate fusion of the main departments into one ministry. (2) That to this one recognized ministry of health and welfare there should gradually be transferred existing powers from other departments. (3) That all new health developments should, without question, go to this ministry, then they would have got out of the entanglements of rivalries and fruitless negotiations, and would be on the high road to the development of the single policy which the problem demanded. The centralization of authority would undoubtedly do away with a considerable amount of overlapping and confusion of functions, and theoretically should serve the purpose of public health control better, by far, than the various agencies which now exist in Great Britain. The present system has been condemned on the grounds that it is expensive, that it is productive of friction, and that the public health suffers in consequence. In this country, the administration of the public health system is in a large number of hands; there is little co-ordination and there would seem to be little doubt that a Federal Public Health Department, expanded from the present Public Health Service, is quite as much indicated here as a Ministry of Public Health in Great Britain.

Cryptogenic Tetanus.

Since the outbreak of the war we read little or nothing about spontaneous tetanus, although the great number of cases of traumatic tetanus should in theory be attended with an occasional development of the cryptogenic form. In *El Siglo Médico* for October 20 is an abstract of a case reported in a periodical called *Información Médica*. The patient was a man forty-one years of age, excessively nervous, but absolutely free from any wound or abrasion of the surface. He had been engaged in threshing by hand and while bathed in perspiration was forced to sleep exposed to inclement weather. On a particularly cold night he waked unable to open his mouth. There were general malaise and severe pains in the chest, shoulders, and limbs. He was thought to have nothing worse than a severe cold and was given no active treatment. On the following day he was so rigid as to suggest rigor mortis, with a full picture of general tetanic contraction, including the risus sardonicus, opisthotonus, and forcibly flexed limbs. He had fever up to 104° F. and was sweating profusely. The first diagnosis was strychnine poisoning, but this was excluded by the lack of history and course of the symptoms, and was changed to tetanus. There was no dearth of opportunity for infection by the latter, as garden soil, animal excrement, and vegetable débris were all represented in the environment. One could infer that, the tetanus germ having entered into the system by the digestive or respiratory tract, the alternate sweating and chilling served in some way to activate it. But in this case, which was of the most acute type—the patient died on the fourth day of the disease—such an explanaion can hardly hold good. In the "tetanus rheumaticus" of old writers, such as followed exposure, the course of the malady was slow and the prognosis relatively benign. The author makes no mention of an examination of the buccal cavity, and it is quite probable that a port of entry could have existed somewhere about the gums, floor of the mouth, or fauces.

News of the Week.

Federal Control of Vital Statistics Advocated.—In his annual report Samuel L. Rogers, Director of the Census Bureau of the Federal Government, recommends Federal control and supervision of birth and death registration to supplant the present State and municipal systems. The report declares that the United States cannot have a system of vital statistics comparable to those of foreign countries until all the States enact proper laws or until the Federal Government assumes control. He believes the latter course would be most effective. The report says that active preparations are under way for beginning the next census in 1920.

Tuberculosis Hospital Admission Bureau Moves.—The Hospital Admission Bureau, maintained jointly by the Department of Health and the Department of Charities of New York City, through which all admissions to the various public tuberculosis sanatoria and hospitals are handled, has moved into new headquarters at 145 Worth Street, near Center.

Physicians Protest Against Charge of Peddling Narcotics.—Dr. John P. Davin of the special committee on the narcotic drug situation of the Medical Society of the County of New York has sent letters to the Kings and Bronx County medical societies asking them to protest against a recent statement of Judge Cornelius Collins before the Whitman Legislative Committee in which the judge said that the places of street peddlers in narcotics had been

taken by physicians who were amassing large sums from the trade. Resolutions have been framed providing for the appointment of a committee to place the physicians' point of view before the authorities.

Inmates of Asylum Suffer from Cold.—The complete collapse of the heating and lighting plant of the Essex County Hospital for the Insane, at Cedar Grove, N. J., has resulted in a great deal of suffering to the 1,800 inmates of that institution. There have been 24 deaths in 20 days, as against eight for the corresponding month of last year. A letter has been written to the relatives of each patient asking them to remove the patient if possible.

Doctors Protest Against Drug Law.—The public hearings before the Whitney Legislative Committee on the Anti-narcotic Drug Act have continued during the past week. December 21 was given over to hearing the testimony of doctors who seemed to be unanimous in their condemnation of the present law. It seemed to be the general opinion that it was impossible for a physician or a druggist to handle drugs without violating this law and incurring liability to arrest. The inconsistencies of this law were set forth, one that was especially emphasized being that the law insisted upon a physician keeping a record of a prescription or tablets containing one-fortieth of a grain of morphine, while any one could purchase paregoric, which contained a much greater quantity of morphine, without a prescription. Dr. Frank VanFleet, chairman of the special committee on anti-narcotic drug legislation of the Medical Society of the County of New York, appeared before the committee to protest against any law of this nature being formulated without seeking the counsel and advice of the recognized State and county medical societies.

Examination for Assistant Medical Officer.—The Civil Service Commission of the State of New York announces an examination for the position of Assistant Medical Officer, Department of Health Officer of the Port of New York. The position carries a salary of $1,500, together with maintenance. Applicants are required to have a knowledge of quarantinable and venereal diseases. The examination is open only to physicians who are licensed medical practitioners of the State of New York. Requests for application forms must be made to the Civil Service Commission, Albany, N. Y., before January 14, 1918.

The Muskingum Academy of Medicine, at its meeting in Zanesville, Ohio, on December 12, elected the following officers: *President,* Dr. W. F. Sealover; *Vice-President,* Dr. O. I. Dusthimer; *Secretary-Treasurer,* Dr. George Warburton.

The Polk County Medical Society, at a meeting held in Mena, on December 11, elected the following officers: *President,* Dr. W. D. Condally of Hatfield; *Vice-President,* Dr. P. R. Watkins of Mena; *Secretary-Treasurer,* Dr. J. G. Hilton of Mena.

The Southwestern Medical and Surgical Association, which held its fourth annual session at Albuquerque, N. M., on December 9, elected the following officers: *President,* Dr. P. G. Cornish of Albuquerque; *First Vice-President,* Dr. W. Warner Watkins of Phoenix; *Second Vice-President,* Dr. C. G. Duncan of Socorro; *Secretary-Treasurer,* Dr. J. R. Van Atta of Albuquerque; *Trustee for Three Years,* Dr. J. I. Butler of Tucson.

The Medical Society of the State of South Carolina, at its 128th annual meeting held in Charleston, on December 10, elected the following officers: *President,* Dr. Robert S. Cathcart of Charleston; *Vice-President,* Dr. J. M. Green of Charleston; *Secretary,* Dr. G. F. Heide; *Treasurer,* Dr. Daniel L. Maguire; *Librarian,* Dr. F. G. Cain.

The Clarke County Medical Society, at its meeting of December 8, held in Athens, Ga., elected the following officers: *President,* Dr. C. L. Crowe; *Secretary-Treasurer,* Dr. S. S. Smith.

The Duval County Medical Association, at its annual meeting in Jacksonville, Fla., on December 4, elected the following officers: *President,* Dr. Frederick J. Waas, Jacksonville; *Vice-President,* Dr. W. E. Ross, Jacksonville; *Secretary-Treasurer,* Dr. Elmore D. French, Jacksonville.

The Dade County (Florida) Medical Society elected the following officers at its annual meeting on December 6: *President,* Dr. E. M. Jones; *Secretary-Treasurer,* Dr. Hiram Byrd.

Charitable Bequests.—By the will of the late Mrs. Anna Watson Syms of Warren, Pa., the sum of $25,000 is bequeathed to the John Herr Musser Medical Research Laboratory of the University of Pennsylvania.

By the will of the late Dr. William H. Keim an estate of $60,000 is bequeathed in trust for Dr. Frederica Lippert, psychologist to the Municipal Court of Philadelphia, and on her death in equal parts to Hahnemann and St. Luke's Homeopathic Hospitals.

The Late Dr. Guiteras.—At a meeting of the Medical Board of Columbus Hospital, held on December 14, the following resolution was adopted:

Whereas, Dr. Ramon Guiteras has been removed from among us by death, and

Whereas, Dr. Guiteras was for many years attending surgeon to Columbus Hospital and a member of this board;

RESOLVED, That the Medical Board of Columbus Hospital have lost by the death of Dr. Ramon Guiteras a dear friend and a wise councilor and the hospital has lost an efficient and energetic worker. For a period of over twenty years he planned and labored to make the hospital more useful and efficient; and throughout a busy professonal career he gave his services freely to the sick poor. His death will be deplored by members of the medical profession throughout the world, for he had friends among our colleagues in every land. He was especially interested in urology, in which branch of medicine he had attained eminence.

RESOLVED, That the Medical Board of Columbus Hospital extent its condolence and sympathy to the relatives; that these resolutions be spread on the minutes of the board and published in the MEDICAL RECORD, and a copy presented to the relatives.

FREDERICK C. KELLER, M. D.,
Secretary.

Obituary Notes.—Dr. ELIZABETH GARRETT ANDERSON died at her home in Aldeburgh, Suffolk, England, on December 17. She was the first woman to be elected mayor of a town in England, having been elected mayor of Aldeburgh in 1908. The College of Physicians and Surgeons of England at first refused to give her a license, but she received her degree of doctor of medicine from the University of Paris. Shoftly after the beginning

of the war she established a military hospital of 500 beds in London, and in recognition of her services the rank of major was conferred upon her.

Dr. JOHN H. HOXSEY, a graduate of the American Medical College, St. Louis, Mo., in 1895, died of Bright's disease at his home in Spokane, Wash., on December 1, aged 58 years. He served for a time on the State Board of Medical Examiners.

Dr. ADELAIDE LAMBERT, a graduate of the Boston University College of Medicine, in 1884, died after a brief illness at her home in New Haven, Conn., on December 5.

Dr. CHARLES E. NORTH, a graduate of the Buffalo Medical College, in 1898, and Superintendent of the Hospital for Insane Criminals at Dannemora, N. Y., was stabbed and almost instantly killed by an insane inmate of the institution on December 12. He was 50 years of age.

Dr. ORREN CILLEY of Boston, a graduate of Dartmouth Medical College, in 1867, died, following a brief illness, on December 10, aged 77 years.

Dr. WILLIAM JOSEPH HEARN of Philadelphia died of pneumonia at the home of his daughter at Media, Pa., on December 21, within a few days of his seventy-fifth birthday. He was graduated from Jefferson Medical College in the class of 1867. He was for many years in his early career anesthetizer for the late Professor Samuel D. Gross, from 1877 for a number of years chief clinical assistant in the outpatient surgical department of Jefferson Hospital, later surgeon to the hospital, eventually clinical professor of surgery and finally emeritus professor. He was also for many years one of the surgeons to the Philadelphia General Hospital. He was a member of the Philadelphia Academy of Surgery and of the American Surgical Association.

Dr. JOHN R. STEVENSON died at Haddonfield, N. J., on December 21 at the age of 83 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1863. He was a member of the Camden County Medical Society and the New Jersey State Medical Society and a fellow of the American Medical Association. He served as a surgeon in the United States Army during the Civil War.

Dr. FRANK WENTWORTH PLUMMER died of erysipelas and bronchopneumonia at his home in Malden, Mass., on December 15. He was graduated from the Harvard Medical School in 1895.

Dr. JAMES E. SHANNON of Sharon, Tenn., died of blood poisoning at St. Thomas Hospital, Martin, Tenn., on December 1, aged 52 years. He was a graduate of the University of Louisville Medical Department in 1887.

Correspondence.

THE LAST ILLNESS OF GEORGE WASHINGTON.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—I am inclosing copy of a letter which fell into my hands a short time ago, giving very definitely the disease from which General George Washington died. In all the histories that I have read of George Washington it is stated that he died from pneumonia, or quinsy. From the enclosed letter you will see that he undoubtedly died from diphtheria. This letter may be of interest to medical men, and should you so desire you can publish it in the RECORD.

J. A. NYDEGGER, M. D.,
U. S. Public Health Service.

ALEXANDRIA, VA., January 10, 1800.

Dear Sir:

I thank you for your letter of the 21st ultimo, which I should have acknowledged earlier, but from a remote expectation of seeing you in Philadelphia this winter, but which I have ultimately entirely relinquished.

The general anxiety and consequent conjectures which you speak of relative to the case of General Washington was expected, and produced the statement of the disease and treatment which I presume you have seen in the public prints.

The statement which I drew up at the request of Dr. Craik is as ample perhaps as it was necessary or proper to present to the public eye, though it may subject us all to a censure from which I might claim an exemption.

As soon as it was found that the last bleeding which was copious was ineffective, and believing on all hands that no considerable accumulation if any had taken place in the bronchi, I proposed to perforate the trachea as a means of prolonging life, and of affording time for the removal of obstruction to respiration in the larynx, which manifestly threatened speedy dissolution. It was received at first, at least by one of the physicians, with a seeming acquiescence, but apathy at first appeased the effort of further consideration, and finally a firm opposition to the measure. I urged with all the arguments in my power the propriety and expediency of the proposed operation and agreed to be answerable for all the consequences in case of its failure, which constituted the whole force of Dr. Brown's objections, but to no effect.

You recollect the reluctance with which Dr. Craik acknowledged the existence of croup among the children of this place, and the commonplace term sore throat which he chose for that disease, this will account for the indifferent name "Inflammatory quinsy" which he gave to the General's complaint before my arrival at Mount Vernon. You will readily suppose, I was inclined to be more explicit, and not being very fond of technical terms was satisfied with calling it croup. The other gentlemen studiously avoided giving it any name, but agreeing with me that the larynx was evidently the seat of the disease.

I waived all discussion upon the subject and upon this point while the General was living. After this unhappy event, and before we separated, I called their attention to the subject, by stating the necessity of agreeing upon some appropriate name for the disease, observing, at the same time, I had seen three cases, fully avoiding to repeat the name I had given it, and yet declining to give it another. Dr. C. spoke of "Inflammatory quinsy." I objected to it as indefinite. I offered the choice of Cynanche Trachcitis, stridula suffocatis, or laryngea, and they chose the former. I mention these little incidents because I know they will be interesting to you.

Since you left Alexandria, I have had nearly forty cases of the croup, three adults and the remainder in children, from 1 to 10 to 12 years. Bleeding ad deliquium has been my uniform remedy, and has been employed with uniform success. In two cases only it appeared necessary to repeat the bleeding as at first, and I did so.

You know my pathological ideas of the complaint. I consider it as an inflammatory tumefaction of the larynx, and would therefore call it Cynanche Laryngea. There are however some varieties of the disease. I have seen three cases where it was seated in the trachea, occurring from about half an inch below the cartilaginous prominence downwards. Has this complaint been unusually prevalent this winter in Philadelphia? What remarks are made among the Faculty concerning us, in the General's case, since the publication of the statement?

I am as heretofore,
Your real friend,
(Signed) Dr. CULLEN DICK.

To Thomas Semmes,
A Medical Student at the University of Pennsylvania,
Philadelphia.

OUR LETTER FROM PARIS.

(From Our Regular Correspondent.)

THE PASTEUR INSTITUTE AND THE WAR.

PARIS, November 22, 1917.

IN a recent interview Dr. Roux detailed how the Pasteur Institute had been reorganized to meet successfully the extraordinary demands made upon it by the unusual conditions of the present war; he explained that before the war its personnel numbered about 200 individuals, and of this number 126 were mobilized in August, 1914. This group comprised 41 doctors, 3 chemists, 6 veterinary surgeons, 76 officers and soldiers. The laboratories for study and teaching were closed, and only a few laboratories for research were allowed to remain open. Some of the services, which could not be allowed to be interrupted, were kept going by a very limited number of people. Such were the departments of rabies, diagnosis (examination of blood preparations), vaccines (typhoid and cholera), vaccines for animals, and the serotherapeutic service. The war has, however, not stopped activity at the institute; it has simply transformed it into a veritable factory for the Health Department of the army and under its control.

The experience of all armies has demonstrated the fact that epidemics have always been serious, and these can be avoided only by the protective measures prescribed by science, such as disinfection, bacteriological investigation, the purification of the water supply, timely and precise diagnosis of infectious diseases, search for germ-carriers, and preventive vaccination. In France each army, each military region, has been supplied with laboratories for bacteriological and chemical research in connection with prophylaxis. More than this, each hospital for contagious diseases has a bacteriologist and a laboratory for his work. The number of military laboratories is now about 200, which are supplied with what is necessary by the Pasteur Institute. Even many of the laboratories of the Allies are supplied by the institute.

There was never a war in which the epidemics were so rare as the present one so far as France is concerned. Typhoid fever, which was rare at the beginning of the war, began to be serious when the front was fixed and the combatants remained in the trenches or near at hand. It was checked, however, by vaccination, and this was the case with cholera also. The institute delivered to the French troops about nine million doses of vaccines, and helped the Serbian army also in fighting typhoid and cholera. Vermin have tormented the soldiers considerably in billets and in the trenches, but the institute prepared sachets containing certain essences which were placed in the clothing, and this method was effectual in either killing the insects or driving them away; many hundreds of thousands of these sachets have been sent to the front. Malarial fevers were common in the East and caused many of the men to be sent home for treatment; this necessitated the establishment of a number of services for examining the blood of the patients. The same may be said as to dysentery.

From the time of the first battles of the war the number of wounded was considerable, mostly caused by explosion of shells, and tetanus followed frequently. At that time there were only about 150,000 doses of antitetanic serum in the reserve stock, and so the workers in the institute had to get to work and increase the output. In ordinary times fifty horses sufficed for producing this serum. This figure jumped up to 600 horses, and the army was supplied with more than four million doses of this serum.

The negro troops on coming to France suffered considerably from pneumonia, but a special vaccine was eminently successful in combating this disease. Bites of serpents were serious in the Orient, but the institute had a serum for that trouble, which produced the best results.

The horses bought in foreign countries were rather commonly affected with glanders, but the workers at the institute coped with this successfully. Lymphatic diseases among horses rendered a large number useless for work for months at a time. A special vaccine, however, was furnished, which is now being very widely successful. The poisonous gases employed by the enemy in their nefarious conduct of the war brought the institute chemists plenty of work, and their researches developed measures which have given wonderful results.

146 AVENUE DES CHAMPS ÉLYSÉES.

Progress of Medical Science.

Boston Medical and Surgical Journal.

December 13, 1917.

1. Hodgkin's Disease: A Report on the Cases Observed at the Collis P. Huntington Memorial Hospital from April, 1913, to July, 1916, with Special Reference to Treatment with Radium and the X-Ray. Channing C. Simmons and George Benet.
2. The Petersham Plan. William R. Woodbury.
3. Tri-Nitro-Toluene Poisoning in Massachusetts. Thomas F. Harrington.
4. Some Observations on the Barany Tests as Applied to Aviators. H. L. Babcock.
5. A Study of Some Percentage Solutions. Theodore J. Bradley.

1. Hodgkin's Disease: A Report on the Cases Observed at the Collis P. Huntington Memorial Hospital from April, 1913, to July, 1916, with Special Reference to Treatment with Radium and the X-Ray.—Channing C. Simmons and George Benet cover a period of a little over three years in this report. During this three-year period, 31 cases, clinically diagnosed as Hodgkin's disease, applied for treatment. Three of these proved, on microscopic examination of the glands, to be lymphosarcoma. Of the remaining 28, specimens were available for study in 20, one of which proved to be metastatic carcinoma, while reports of the glands removed in other hospitals were obtained in 3. They believe there is a distinct disease of the lymphatic tissues called Hodgkin's disease, which can be separated from Banti's disease, lymphatic leukemia, etc. The diphtheroid bacillus was found in two out of the three cases in which it was sought, and it probably can be demonstrated in many of these cases. Inoculation experiments done on guineapigs and three monkeys were negative, and a piece of gland transplanted subcutaneously in the same patient from whom it was removed, atrophied and disappeared, which they consider an important observation, as a fragment of sarcoma or carcinoma treated in a like manner would probably have grown. This last fact is rather against the tumor theory. Microscopically, the glands were typical of the Dorothy Reed type of Hodgkin's disease, and were similar to the cases reported by Reed, Longcope and Simmons. The cases of lymphosarcoma presented microscopically an entirely different appearance, and in one case that came to autopsy no gland examined had the slightest resemblance to Hodgkin's disease. They further report that clinically, Hodgkin's is a fatal disease, that runs an acute or chronic course, little affected by treatment as regards the ultimate fatal result. It

may usually be suspected, but there is no way to make a definite diagnosis without a microscopic examination of one of the glands. It cannot be differentiated clinically from certain cases of lymphosarcoma, tuberculosis, or even inflammatory glands. In their series the blood picture was not constant, and although they do not feel able to make a diagnosis on it alone, it is often quite suggestive. As regards treatment, radium and the *x*-rays have a distinct beneficial effect, radium being of more value than the *x*-ray. With treatment, the glands diminish in size, and the general condition improves. The relation between the treatment and the improvement is definite, and is seen in from one to three weeks after the first application of radium. They have no cases that can be called cured, but the patients are comfortable and able to attend to their duties until nearly the end of the disease. They do not know if the fatal termination has been much postponed, as the cases most benefited may have the chronic form of the disease. The treatments should not be limited to the palpable glands, as is usually the case, but should be directed against the lympthatic areas of the body, the mediastinum, abdomen, etc., from the first.

New York Medical Journal.

December 15, 1917.

1. Food Conservation. Anthony Bassler.
2. Tonsillscopy and Curettage of the Tonsuls in Adults. Thomas R. French.
3. Pathology, Diagnosis, and Treatment of Internal Hemorrhoids. Herman A. Brav.
4. The Cure at Vichy in the Seventeenth Century. Guy Hinsdale.
5. Physical Training and Hygiene for Busy People. Leonard Felix Fuld.
6. Laryngeal Stenosis as a Complication of Measles. M. Ford Morris.
7. Condyloma Acuminatum in the Anal Region in the Male. Charles E. Hyde.

6. Laryngeal Stenosis as a Complication of Measles.—M. Ford Morris calls most decided attention to laryngeal stenosis as a complication of measles which requires vigorous and quick attention. The symptoms are those of croupy cough, increasing dyspnea and pallor, and retraction of the epigastrium and lower intercostal spaces. A membrane may or may not be visible. It will be seen that these symptoms closely resemble those of laryngeal diphtheria. His experience with these cases has been gathered from the wards of the Willard Parker Hospital and some of these patients enter the hospital with nose and throat cultures negative for *Bacillus diphtheriæ*, while others have positive cultures; some react to the Schick introdermic test, while others do not. Morris quotes Parke, of the Department of Health Research Laboratory, as stating that "positive cultures of a diphtheroid organism and a diphtheritic looking membrane do not necessarily mean that the case is diphtheria," and also that he "does not believe that diphtheria ever occurs in a person who has a negative Schick." If the diphtheria bacillus does not cause this laryngeal condition, either the streptococcus or staphylococcus is the "root of the evil." Morris considers this condition of laryngeal stenosis is a too frequent and a very serious complication of measles and that the onset of a croupy cough should be the signal for vigorous treatment. Intubation should be tried, even though it failed to relieve in the cases cited above. Large doses of diphtheria antitoxin—15,000 to 30,000 units—should be given, in the writer's opinion, even in cases with a negative Schick, and in the latter cases, for the purpose of satisfaction of conscience, if nothing else. If a positive blood culture of the streptococcus or staphylococcus can be obtained, vaccine therapy, preferably autogenous, will be logical.

Journal of the American Medical Association.

December 15, 1917.

1. The Causation and Curability of Certain Long-standing Albuminurias. David Riesman.
2. The Use of Bismuth Iodoform Paste in Outpatient Work. Vincent O'Conor and Henry Kreutzmann.
3. Operative Risk in Cardiac Disease. John M. Blackford, Fred Willius, and S. B. Haines.
4. The Bruck Precipitation Test for Syphilis. Arthur William Stillians.
5. The Pharmacology of the Oil of Chenopodium, with Suggestions for the Prevention and Treatment of Poisoning. William Salant.
6. The Syndrome of Mild Reverse Peristalsis. Walter C Alvarez.
7. The Treatment of Leukorrhea with Latic Acid Bacilli. Frank Benton Block and Thomas H. Llewellyn.
8. The Alkali Reserve in the Blood of Pellagrins. James W. Jobling and Elmer S. Maxwell.
9. The Mechanism and Significance of the Gum Mastic Test. S. L. Immerman.
10. Butter as a Vehicle of Infection in Typhoid. Mark F. Boyd.
11. Treatment of Sciatica, with an Analysis of Ninety-One Cases. Israel Strauss.

6. The Syndrome of Mild Peristalsis.—Walter C. Alverez brings out the fact that gastrointestinal symptoms are motor and not secretory and that they arise when the normal progress of the food is disturbed. He includes four types of motor disturbance: Speeding up of the current; slowing; complete stoppage, and reversal. It is to the last type of motor disturbance, namely, reversal or peristalis, that he gives special attention. Vomiting, regurgitation, heartburn, belching, nausea, coated tongue and foul breath, globus, a feeling of fulness after taking a few mouthfuls of food, and biliousness all can be the result of mild reverse peristalsis in the stomach or intestines, and he gives this as aften a cause of these conditions. Most of these disturbances are due to ripples coming up the tract. His records show that ripples can come down the intestine long distances without forwarding the contents and can then break into strong waves which rush material along before them; he therefore considers that similar ripples can travel upward in the wall of the bowel until they show themselves as waves in the stomach and esophagus. When the gradient of forces in the tract is poor, waves can probably travel in either direction. When the stomach is full and active, it will be easier for waves to proceed aborally; when the stomach and small intestine are empty and the colon is full, the waves will more easily ascend. Also, the gradient may not be upset to the same extent in all parts of the tract, as, for instance, reverse waves might be present in the stomach and normal ones in the bowel. We cannot expect to see much reverse peristalsis with the roentgen ray, because, normally, the food cannot be followed in the small intestine after it leaves the duodenum, and before it reaches the terminal ileum. But actual reverse transport of material has been observed in those parts of the tract which are accessible to roentgenographic study. Twice Alvarez has observed definite reverse peristalsis in stomachs free from organic disease, and subsequent operation revealed the cause to be, in one, appendicitis, and in the other, duodenal ulcer. More important than visible reverse waves are the reversed impulses that hold back the barium here and there in the tract, in spite of the fact that the muscle is active, and the tube ahead is unobstructed. Alvarez has thus tried to direct the attention of physicians to what he terms disturbed physiology, of which these examples cited are instances. Thinking in such terms will make for better therapeutics, produce less tinkering with medical means in these types of cases, expressed by gastritis, hyperacidity, or biliousness, and the surgeon will receive the case promptly as should be. If such radical treatment is inadvisible or impossible, the physician will use a smooth, cellulose-poor diet, which will flow more easily along the impaired gradient. Later resting and overfeeding can be tried to improve the condition.

The Lancet.

November 24, 1917.

1. Experiences in Colony Treatment and After-care. G. Sims Woodhead and P. C. Varrier-Jones.
2. The Value and Limitations of Sanatorium Treatment as regards the Working Classes. W. O. Meek.
3. The Conditions of Growth of *Bacillus Welchii* in the Presence of Oxygen. C. G. L. Wolf, C. M. McGill, and J. E. G. Harris.
4. Treatment of Wounds by a Solution of Soap in the Casualty Clearing Station. R. Garside Dixon, Ch. B. Leeds, and H. T. Bates.
5. Procidentia Recti and its Treatment. Douglas Drew.
6. Report on Examination of Feces of Chinese Laborers. F. B. Bowman and P. D. Saylor.

1. Experiences in Colony Treatment and After-care.—G. Sims Woodhead and P. C. Varrier-Jones give some

of the experiences gathered and some of the results obtained after the two years' existence of the Cambridgeshire Scheme of After-care—a sanatorium method of treatment. They sum up the advantages offered by this method of treatment as follows: Prolongation of the period of treatment with more intensive, because more interesting and better graduated, treatment; the utilization of suitable occupations in such treatment even during the earlier stages of residence in the colony; the continuation of training and the consolidation of the improvement already gained during the preliminary stages of treatment, and more personal supervision and immediate encouragement. The utilization to the best advantage of the funds drawn from (*a*) the National Insurance Commissioners; (*b*) the rates; (*c*) the Pensions Ministry; (*d*) Approved Societies; (*e*) voluntary subscribers, and the pooling of the advice and countenance of these various authorities, bodies and individuals. The preparation and encouragement of the patient to re-enter, under more favorable conditions, on the struggle for a livelihood without having to contend against the drawbacks attending overwork, overstrain and anxiety. The moral encouragement afforded to the patient by the knowledge that these favorable conditions, already tried and successful in the case of others, are available in his own special case. The gain to the community of a productive member in place of a useless consumer. It may be objected that this member is producing but 50 per cent. or 60 per cent. of his full or original amount, but to this it may be answered that this 50 per cent. or 60 per cent. may represent considerably more than the full capacity of many a healthy worker. The segregation and isolation of "centers" of massive infection and the bringing down to a comparatively safe dilution, of less—but still under certain conditions—dangerous quantity. The education of patients in the "ritual" necessary for their own "nutrition," maintenance in, or restoration to, health and strength, and especially the knowledge of how to render themselves harmless to themselves, their families and their friends. The inculcation of a feeling of moral and physical self-respect involved in the knowledge that they are being cared for, not out of charity, but because their fellows—the State or community—recognize that they, members of this community, have fallen by the way, not as a result of their own misdoings, but because surroundings were unfavorable and conditions adverse, and that these righted they still have a chance of making a success of their life and work.

British Medical Journal.

November 24, 1917.

1. An Address on Modern Antiseptics. Alfred Pearce Gould.
2. Further Observations on the Results of Blood Transfusion in War Surgery. L. Bruce Robertson. With a Note by C. Gordon Watson.
3. Direct Transfusion of Blood. Alfred G. Hull.
4. A Simple and Rapid Method for the Selection of Suitable Donors for Transfusion by the Determination of Blood Groups. Roger I. Lee.
5. Vincent's Angina among the Troops in France. R. J. C. Bouty.
6. Report on Six Cases of Tonsillectomy in Diphtheria Carriers. C. C. Ballantyne and B. S. Cornell.
7. Pneumothorax with Hernia into Left Pleural Cavity. T. H. Sanderson-Wells.
8. A Case of Ectopia Viscerum. P. R. Cooper.
9. The FitzPatrick Lectures on Medicine in England during the Reign of George III. Arnold Chaplin.

3. Direct Transfusion of Blood.—Alfred G. Hull finds that while the advantages of direct transfusion are so apparent, this treatment does not appear to be in such frequent use as it merits. Apart from its obvious indications in cases of severe hemorrhage, it would appear to be a valuable treatment for severe sepsis and shock. How far the alteration of the blood in cases of shock determines the result is at present uncertain, but the effect of healthy blood upon the tissues of such patients appears to be worthy of consideration. Transfusion seems to be a more scientific remedy than the empirical injections of antiseptics into the blood stream. The difficulty of obtaining some one willing to submit to an operation entailing ligature of an artery he considers the only bar to a much greater use of this treatment. The operation is simple and can be performed without the use of special apparatus. To produce the best results the transfusion of blood must be direct from artery to vein, as in this way only can clotting be prevented with certainty. The only disadvantage of this method is that the amount of blood transfused cannot be measured, but this is outweighed by the safety and simplicity of the method, and moreover the amount of blood which flows before the donor becomes faint is fairly constant. In preparing for the operation the left hand of donor grasps the arm of the patient just above the elbow, bringing the donor's radial artery in close proximity to the patient's median basilic vein. Then an incision about 2 inches in length is made in the patient's arm over the median basilic vein. A similar incision is made over the radial artery of the donor. The artery is cleaned for about an inch, and the lower end of the artery in the wound is clipped, digital pressure is made over the brachial artery, and the radial is cut above the clip. The end of the radial artery is pulled out of the wound, and a traction suture is tied through the wall of the artery. Two probes about an inch apart are passed under the vein for hemostatic purposes. A small cut is made into the vein (2 mm. in length); through this the needle bearing the traction ligature from the radial artery is passed. The needle emerges from the vein an inch above the incision. A second suture is now passed through the wound in the vein; this suture is used to close the vein when the artery has been inserted. By drawing upon the traction suture the artery is drawn into the vein, the vein suture is tied, and the probes and digital pressure removed. The blood is allowed to flow until the donor feels faint. The artery is then clipped, pulled out and ligatured. The whole procedure is carried out under local analgesia. There is no serious mutilation of the donor by this method, and the elasticity of the artery makes it an efficient cannula, while a considerable length of vessel becomes available through a comparatively small wound.

La Presse Médicale.

October 25, 1917.

The Wassermann Reaction in Malaria.—De Jong and Martin mention the idea that in certain sectors the occurrence of positive Wassermanns has caused the suspicion that malaria might be in part responsible. This obtained first on the Eastern front and later in the XV region on the west. During the past 6 months the authors obtained 300 positive Wassermanns in the Nice medical sector, and of the subjects at least two-thirds suffered from old or recent malaria. In any problem of this sort technic is all important and the authors first employed the Alfred Bauer-Hallion method (unwarmed serum). The natural hemolytic power and complement-fixation reaction of the serum to be tested are determined with the utmost regard for every detail and a comparison made with the results of the classical test. In regard to malaria the seroreactions were controlled by blood examinations for the presence of the plasmodium. Save when there is an actual invasion of the blood by the latter, in association with a clinical manifestation (chill, fever) there is every reason to believe that the serodiagnosis of syphilis is not prejudical. During the acute malarial outbreak the reaction may be disturbed as in any febrile state and should not be attempted at that time. The question of vital importance, "May a non-syphilitic malarial subject give a positive Wassermann?" cannot be answered offhand. It was certainly absent in a number of cases.

Contribution to the Study of the Cardiopulmonary Circulation.—Colleville alludes first to the great number of convalescents with poor circulation at the rear of the fighting front. These men will later return to fight. According to the dominant symptom they are classed as cardiacs, enterocolitics, neurasthenics, etc. They suffer from past defective alimentation in the trenches, past alcoholism, syphilis, ordinary infections, and are menaced by tuberculosis. Among them are pneumopaths, subjects with compensated mitral lesions, etc., who require measures for increasing the lesser circulation. The myocardial energy, the resistance in the circulation and the nervous system form a triad of factors to be borne in mind. Certain drugs,

notably diuretics and vasodilators, diminish the resistance in the vascular circuit and aid the cardiac tonics. Terpine or benzoate of soda, "bronchial diuretics" and codeine form a cupneic combination. Quebracho and lobelia act chiefly on the lesser circulation. Caffeine and adrenaline are good stimulants for the same. Strophanthine and lobelia make an excellent cupneic combination. Sparteine and valerian combine a mild circulatory regulator and nerve sedative. Strychnine and sparteine form an excellent stimulant of the lesser circulation. Theobromine is a wonderful diuretic and sodium iodide lessens pulmonary stasis by reducing the viscosity of the blood. Fibrolysis aids by breaking up pleural adhesions.

Finska Lákaresällskapets Handlingar.

August, 1917.

Congenital Giant Growth of the Extremities.—Kalima describes two cases of congenital giant growth of the upper extremities. One case was complicated by a large lipoma which extended from the palm of the hand half way up the upper arm. In extirpation of the mass it was noted that while it was sharply limited in places it also presented a diffuse quality. The other case was uncomplicated, of bilateral type, but with marked muscular hypertrophy on the right side. The author concludes with others that the Fischer types of gigantism of the extremities should be excluded as not genuine. There are, he believes, two types, one uncomplicated, the other complicated by tumor formation (lipoma). The latter is rejected by Fischer as spurious.

On Diseases of Nutrition in Nurslings and Their Treatment with Albumin Milk.—Nystén first discusses the pathogenesis of these affections and the general principles of treatment, especially with Finkelstein's albumin milk. He next gives the results of treatment in the pediatric clinic at Helsingfors with this product. Albumin milk has been used in this clinic since 1910, and in all 180 children have been treated. There were comprised 72 cases of dyspepsia, 32 cases of decomposition, 42 cases of alimentary intoxication, 18 cases of disturbed nutrition following infection, 10 cases of congenital debility and 6 cases of acute enterocolitis. No case is considered which was not under treatment for more than 5 days. The general results of albumin milk treatment were good. The quality of the stools soon improved, temperature and pulse became normal and the general state improved. In several cases success was obtained after other diet plans had failed. In congenital debility alone were the results not very satisfactory, probably because the protein and fat content of albumin milk is too high. For this class buttermilk should be better.

Meningitis Serosa.—Toivonen reports 7 cases of this affection which occurred in the Deaconesses House, Helsingfors. With the exception of one hyperacute case in which death occurred before treatment could be instituted the results were favorable. The immediate cause appeared to be exposure, excitement, bodily or mental over-exertion and parturition. Other factors were acute infectious diseases, tuberculosis and trauma. Symptoms were those of brain pressure (headache, vertigo, optic neuritis, choked disks, paralysis of ocular muscles), increased reflexes, disturbances of sensibility and consciousness. Differentiation from brain tumor and from other forms of meningitis is often extremely difficult and lumbar puncture is often of value. Variation in intensity of symptoms points to serous meningitis. Precocious appearance of choked disks and ocular paralysis is also very suggestive. Treatment consists chiefly of lumbar puncture and mercurials.

Berliner klinische Wochenschrift.

October 1, 1917.

Orthopedic Prophylaxis in Wounds of Warfare.—Meyer insists on the necessity of early consideration of the ulterior condition of limbs presenting recent injury. Just so soon as the "vital" indications have been attended to, it is incumbent upon the surgeon to prevent the occurrence of deformity. Meyer is of the opinion that immobilization should be done away with as soon as possible, but if it is absolutely necessary, it should then be carried out by changing the position of the limb from time to time, always bearing in mind that the extensor muscles atrophy with greater rapidity than the flexors. For example, the crural quadriceps is particularly prone to atrophy and for this reason it is indicated to make a window in the plaster cast for the purpose of electrical treatment of the msucle in question. If contracture appears to be inevitable, one should take into consideration the profession of the patient, as well as his wishes, as a guide to subsequent treatment. In the case of the upper limb, the position in abduction of the shoulder is by far the most suitable. The forearm should be placed in a position intermediary between pronation and supination. In the case of the hand, it is better practice to place it in hyperextension, which will assure the best function of the fingers in case secondary contraction should ensue. The saddest results have been noted, so far as function is concerned, in the hand, which is only too often seriously damaged by immobilization of the forearm and fingers. The writer is of the opinion that puncture of the fluid collections in the knee joint should be made much more frequently than is done, because it avoids coagulation and organization of the clots, which is the starting point of very obstinate adhesions. All splints should be made as simply as possible, and the writer has employed with advantage spiral springs which produce a continued traction on the particular joint undergoing treatment.

Chemotherapy of Lupus, Its Results and Its Future.—Strauss reviews the various chemical medicaments which have been essayed in the treatment of tuberculosis. Salvarsan and cyanide of gold have offered some encouraging results. The writer has obtained the best results by the external use of copper, combined with "lecutyl," in order to obtain penetration of the drug into the lipoid substance of Koch's bacillus. This local treatment is applicable not only to lupus, but also to tuberculous processes of the various mucosæ, likewise the surgical tuberculoses. The writer fancies that copper also acts by stimulating immunization.

Wiener medizinische Wochenschrift.

October 6, 1917.

Clinical Aspects and Pathogenesis of Paratyphoid A and B.—R. Loewy, summing up a recent article on paratyphoid A, the writer says: "Three principal types can be admitted, according to the gravity and duration of the process. A severe type, with a high temperature for two or three weeks; secondly, a type most benign in character, undergoing its evolution in one or two weeks, and, lastly, a third type, which can be placed between the other two, and is characterized by a markedly remittent form of temperature. More than 50 per cent. of the cases begin with a chill, and the same may be said of relapses. An initial symptom often met with is violent neuralgic pains in the lower limbs. The spleen is indurated and hypertrophied in almost all cases. Roseola is not present in hardly 33 per cent. of cases. Therefore, although paratyphoid A possesses some characters belonging properly to it, it must nevertheless be admitted that in the majority of cases its symptomatology is that of typhoid fever." Next passing to the report of some cases of paratyphoid B, the writer points out the great similarity of this process with those of paratyphoid A and typhoid fever. Agglutination generally commences in the first or second week while the percentage is commonly greater, reaching in some cases 1/16,000. The hard tumefaction of the spleen is usually very marked, while the roseola is frequently abundant, covering a large area and extremely scintillant. Finally, Loewy, insisting on the frequency of mixed infections, offers considerations of a theoretical nature, in order to explain the fact that since the beginning of the war typhoid fever has gradually lost its customary virulence, while paratyphoid A and B appear to have increased in severity. He fancies that this fact may be attributed to the local immunity acquired against Eberth's bacillus, this histogenous local immunity increasing the susceptibility of the organism to infection from paratyphoid A and B. The writer, however,

maintains all necessary reserve in regard to this (to him) satisfactory interpretation.

Münchener medizinische Wochenschrift.

October 2, 1917.

The Roseola of Typhoid Fever.—E. Fraenkel recalls the fact that he has already shown that the roseola of typhoid fever is accompanied by similar vascular phenomena in the various viscera excepting the pulmonary tract (*Münch. med. Woch.*, 1914, page 2354). He performed biopsies, both on lesions, in full efflorescence on exanthemata produced by Esmarch's band during the stage of convalescence. The histological lesions occur in the subcutaneous tissue and in the arteriolæ, the veins not being involved. The lesions consist in periarterial nodules, while the endothelium is likewise pathologically changed. The walls of the arteriolæ offer a hyaline transformation. The nodules are composed of fusiform cells, a few hyaline thrombi may be encountered in vesicles. The evolution of the periarterial nodules appears to terminate in a connective tissue metamorphosis. There are no permanent vascular disturbances because the arteriolæ remain patent, while they also offer a mutual substitution in case of occlusion.

The Action of Mercury on Syphilis.—Lomholt and Kissmeyer have wished to ascertain the quantity of mercury circulating in the blood of subjects undergoing an antisyphilitic treatment. The maximum amount obtained by the writers was found by them to be 33 milligrams mercury per liter of serum. They made a broth composed of ascitic fluid and meat to which they added mercuric chloride at a corresponding dose and found that at this concentration the antisyphilitic treatments realized in man were quite powerless to prevent the development of the *Spirochæta pallida*. The writers conclude, with all the necessary reserve required in *in vitro* experimentation, that mercury does not act directly or chemically from the mere presence of its ions in the blood.

Deutsche medizinische Wochenschrift.

October 4, 1917.

Treatment of Tabes Dorsalis by Neosalvarsan According to Leredde's Method.—Karczag offers the results obtained by the above mentioned method of treatment as described in 1913 by Leredde ("Études sur le serodiagnostic et traitement de la syphilis"). The writer followed this technique closely and no serious complications were observed in 18 cases so treated. The writer noted some disturbances in the pulse and he therefore advises keeping the patient in bed until the end of the treatment. The results arrived at are tabulated as follows:

	Cases.	Improvement Marked.	Satisfactory Improvement.	Without Effect.	Aggravated.
Lightning pains	14	8	..	4	..
Paroxysms	3	..	3	..	..
Headache	13	7	5	..	..
Insomnia	3	2	1	..	..
Vesical disturbances	12	4	8	..	..
Ataxia	6	3	3	..	..

Homo- and Autografts in the Regeneration of a Divided Nerve.—Forsmann has noted the uncertainty which at present reigns as to the process of nerve repair by suture, whereas, animal experiments have shown that the best method is certainly that proposed by the writer himself, namely, the interposition between the divided ends of a nerve or a fragment of a nerve (saphenous or intercostal for example) taken from the patient or from another subject (homo- and auto-transplantation). The mechanism of the process should be sought for in a neurotropism to which central end is subjected, this resulting in a proliferation of the neoformed fibers in a determined direction. Cahen has resorted to the same method and obtained one brilliant result out of three cases in which he attempted this technique.

Artificial Pneumothorax as a Diagnostic Measure in Pulmonary Neoplasms.—Schroeder has resorted to this procedure, which is not dangerous, and may even be favorable for the patient since it places the progress made by pulmonary growths under the control of the observer. It is to be noted that a tumor can sometimes be percussed by this means, so that an early diagnosis can be made.

Syphilis and Maleness of Offspring.—Giraulde and Tissier dispute the teaching that pregnant syphilitic women rarely give birth to boys. Their own statistics show the very opposite.—*La Presse Médicale.*

Simulation of Tuberculous Tissue by Syphilis, Leprosy, and Sporotrichosis.—According to Hoffmann not only these three affections, but Boeck's sarcoid as well may present in skin lesions the histological characteristics of tuberculous tissue.—*Deutsche medizinische Wochenschrift.*

War Amenorrhea.—According to Pok the poor diet, overexertion, and worry of the war are responsible for suppression of the menses in certain women. At first he curetted, but soon became convinced that no actual pathological state was present.—*Zentralblatt für Gynäkologie.*

Ethylic Intoxication and the Temperature.—The toxicity of alcohol to fishes increases progressively with the temperature. Thus it excites at a low level—near 0° C.—and depresses at a high temperature. Linossier sees here a possible objection to alcohol in fevers.—*La Presse Médicale.*

Uterus Perforation.—In the course of a curettage *post abortum* the practitioner perforated the uterus, and a loop of intestine which entered the cavum uteri was mistaken for the cord. Resection, suture, and reposition of the gut were followed by recovery.—*Correspondenz-Blatt für Schweizer Aerzte.*

Chronic Parotitis from Plumbism.—Laignel-Levastine and Nogues report the case of a plumber aged 40, who had never secreted parotid saliva (he had begun his apprenticeship at 16) and whose parotids were hypertrophied in characteristic pear shape. He suffered from general plumbism.—*La Presse Médicale.*

War Amenorrhea.—During the present year three articles on this subject have appeared in the *Zentralblatt für Gynäkologie.* Hunger, care, and overexertion are known to be able to cause amenorrhea, so that the experiences in the present war offer nothing new.—*Correspondenz-Blatt für Schweizer Aerzte.*

Precipitate Labor and the War.—Nassauer believes that the average duration of labor is less than before the war. He associates this phenomenon with war amenorrhea, in the view that as a result of nervous tension the hypophysis secretes its hormone in excess.—*Nederlandsch Tijdschrift voor Genceskunde.*

Fat Thrombosis in the Digestive Tract.—Nauwerek found in three autopsies fatty concrements in the large intestine which evidently represented molds of certain ulcerous cavities or diverticula at a higher level. The death agony with its fall of temperature had evidently set these bodies free.—*Zentralblatt für immere Medizin.*

Treatment of Congelations with X-Rays.—Wachtel obtained good results when the rays were used early in superficial freezes. In deep freezes sloughing seemed to be accelerated and limited moist gangrene was strikingly improved. The rationale in the author's opinion is an induced therapeutic hyperemia.—*Correspondenz-Blatt für Schweizer Aerzte.*

Fruits and Legumes in the Propagation of Infectious Diseases.—Russ sprinkled cultures of the bacilli of typhoid fever, dysentery, and cholera on plums, peaches, and salad vegetables, etc., and learned that these organisms remained alive for long periods. Sunlight appeared to exert no bactericidal action.—*Office International d'Hygiene Publique.*

Action of Adrenalin on the Digestive Tract.—Loeper and Verpy experimented with 8 standardized subjects and found that adrenalin increased both total and free HCl in the stomach; increased the gastric motility in hypotonic subjects, and acted as a sedative in over-frequent and intense motility. The digestive passage is accelerated.—*La Presse Médicale.*

Book Reviews.

THE ORGANS OF INTERNAL SECRETION. Their Diseases and Therapeutic Application. A book for general practitioners. By IVO GEIKIE COBB, M.D., M.R.C.S. Late Assistant to Out-Patient Physician, The Middlesex Hospital. Price, $2.00. New York: William Wood & Company, 1917.

THIS book is founded upon articles which appeared in the *Medical Press and Circular* in 1916. The author has omitted the exhaustive accounts of laboratory research, which cumber most of the books on internal secretion, and he has preferred to point out, for the general practitioner, the rôle which the ductless glands play in promoting bodily health and the various morbid states of health in which organic extracts may be utilized with success. The chapters on the thyroid and parathyroid glands take up the first four chapters; then follow chapters on the pituitary body, the adrenals, the pancreas, the sexual organs and their internal secretions, and the internal secretions of digestion. The therapeutic application of hormones is summarized in Chapter X, and those readers who are mainly concerned with the therapeutic aspect will find in this chapter a useful summary of the subject. The final chapter is devoted to a survey of the whole subject and deals with the present position of hormone therapy. The book is readable and up to date, and its handy size will attract many readers who would be repelled by a much more bulky volume.

CLINICAL SURGICAL DIAGNOSIS FOR STUDENTS AND PRACTITIONERS. By F. DE QUERVAIN, Professor of Surgery and Director of the Surgical Clinic at the University of Basle. Second English Edition. Translated from the Fifth (French) Edition by J. SNOWMAN, M.D. Octavo of 842 pages, with 604 illustrations and 5 plates. Price, $10.00 net. New York: William Wood & Company, 1917.

IN its field de Quervain's book on clinical surgical diagnosis occupies a field comparable to that of Lejar's "Urgent Surgery" and Osler's "Practice of Medicine" in their respective fields. That being the case, how can a reviewer do justice to the book in the short space that is of necessity allotted to him?

De Quervain's long experience as a teacher and consultant has eminently fitted him to cover this extensive subject—a subject where the author must himself separate the wheat from the chaff and not confuse the student by including a mass of inconsequential detail. For conciseness and clarity of description this book, in our opinion, is unexcelled. According to the author, it is designed to serve as a guide to the student in the vast field of surgical diagnosis which they are required to explore, and to recall to the practitioner knowledge which has perhaps faded, while drawing their attention to new developments in diagnosis. De Quervain adheres throughout to the plan of starting with the symptoms which caused the patient to seek medical advice and not to the method of deducing symptoms from an already made diagnosis; and, as he says, "if the appropriate questions have been correctly put, the problem will in every case be narrowed down more and more until, ultimately the student arrives at a definite diagnosis, either as the result of positive symptoms or by a process of gradual exclusion."

The book is divided into seven parts, covering respectively the surgical diseases of the head, neck, thorax, abdominal and pelvic viscera, pelvis and spinal column, upper extremity, and lower extremity. Under each of these headings the various surgical conditions of importance occurring in that region are taken up, not as in the ordinary textbook on surgery, but by a process of discussing and ruling out one by one the various conditions that affect the region, while an abundance of most excellent illustrations form an important adjunct to the text.

This is a book that is not only almost invaluable to the student, but to the progressive general practitioner and to the surgical specialist as well, a most complete index allowing the latter to refer to any desired subject with the least possible expenditure of time. It is a book that we feel we cannot recommend too highly, for the wealth of de Quervain's experience is instantly at the service of the reader who may be struggling with an obscure case or is trying to fit himself to do more accurate diagnostic work.

LA MALARIA. Parassitologia—Patologia e Clinica—Epidemiologia—Profilassi e Importanza Sociale. Per Dott. VITTORIO ASCOLI, Professore di Patologia Medica all' Università di Pavia. Torino: Unione Tipografico-Editrice Torinese, 1915.

THE first half of this work is devoted to laboratory subjects—the parasites, the parasitism and the reaction to it of the organism, the anatomical and functional disorders, the action of quinine on the human organism and on the parasite.

The clinical chapters deal with the acute, pernicious, and chronic types, and the phenomena exhibited by the organs of the infected subjects *in vivo*. Next in order comes the epidemiology of the malarias, and since this is a function of mosquito transmission, the author retraces his steps from the clinic to the original domain of biology. In some respects it would seem more natural to have discussed the hematozöon and the mosquito in the same section of the book, but the latter is a work of reference and not a textbook, so that the arrangement is of minor importance. The eudimicity and prophylaxis follow, and the section on the social aspects of the disease completes the work.

The name Ascoli is well known in Italian medicine and science, and at least three of the name, including the author, are well-known pathologists. The book represents the most ambitious effort yet made to write an exhaustive monograph on malaria and the success is such as to disarm criticism. The book is honestly written, without padding, and the numerous references are genuine, *i.e.* each author quoted has been consulted. Years must have been required for the preparation of so complete a volume. The illustrations are not overdone.

SURGICAL NURSING IN WAR. By ELIZABETH R. BUNDY, M.D. Member of the Medical Staff, Woman's Hospital, Philadelphia. Formerly Adjunct Professor of and Demonstrator of Anatomy, Women's Medical College, Philadelphia, etc. Author of a Text Book of Anatomy and Physiology for Training Schools. With 37 illustrations. Price, 75 cents. Philadelphia, P. Blakiston's Son & Company, 1917.

NURSES are required in abundance at the front; in fact, they are almost if not quite as essential as surgeons. But an untrained nurse is of little or no use; indeed, she is often more of a bother. Sir Frederic Treves, speaking of the large number of society ladies who came out from England to South Africa during the Boer War to offer their services as nurses, said: "There are two nuisances in South Africa, flies and women, and of the two the women are the worse." It is time that a woman imbued with the best intentions who has had no experience of nursing should not be allowed to go to the front in this capacity. Dr. Bundy emphasizes this in the little book under review and describes the different kinds of injuries inflicted in modern warfare, infection, shell shock, hemorrhage, and so on, and the various methods of treatment, especially, of course, from the surgical nurse's point of view. The book is well put together and adequately illustrated, and may confidently be commended to the attention of nurses and would-be nurses.

ELECTRODIAGNOSTIC DE GUERRE. Par A. ZIMMERN et P. PÉROL. Collection Horizon. Prix, 4 francs. Paris: Masson et Cie., 1917.

THE name of Zimmern should be a guarantee of the excellence of this work. The apparatus required is of the simplest—a portable galvanic battery, an ordinary faradic coil, storage cells, and electrodes. The authors also describe the use of condenser discharges. The technique of exploration is practically the same as in civil practice. In the latter portion of the work the various war conditions are described which require electrodiagnosis—traumatic paralyses, spinal cord lesions, traumatic psychoneuroses, reflex paralyses and contractures, ischemic paralyses, toxi-infectious neuritides, etc. Since all of these conditions have their counterparts in civil practice, it is not so much the contents of the book as it is the need of a small manual for the use of medical men at the front which makes this small volume a necessity.

Society Reports.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, Held Wednesday, November 28, 1917.

THE PRESIDENT, MAJOR HENRY D. JUMP, IN THE CHAIR.

Symposium: "The Function of Orthopedic Surgery in the War."

Activities of Orthopedic Surgery in the War.—Major DAVID SILVER in his presentation of this subject said that in the organization of orthopedic surgery the Surgeon General had been guided very largely by the experience of the English Army and had in addition paid special reference to the following points: (1) The securing of a sufficient personnel; (2) Provision for an ample number of beds; (3) The reception of the wounded soldier as early as possible in the division to which he belonged, and with the least possible change of dressing. The securing of the personnel, he observed, had progressed very satisfactorily, as there were now about 85 men in training in Europe, 60 men assigned to camps in this country, and 80 or more placed in courses of instruction, with a considerable number still unassigned. Especial attention had been paid to the training of men lacking an adequate fundamental knowledge of orthopedic surgery. For these men the plan of instruction consisted of intensive courses of six weeks' duration, work in the cantonment hospitals under qualified orthopedic surgeons, and later work abroad as assistants to qualified men. Efforts were also being made to instruct medical men generally, the line officers, and the enlisted men themselves in the care of the feet, the handling of minor joint injuries, and the simpler injuries of the back. In the plan for the organization of the work in France Major Silver stated that the Surgeon General had arranged for the establishment of an orthopedic section in each hospital. This would be placed beside the fracture section in order that the same brace shop and curative workshops might be used for both. From 5 to 7½ per cent. of the wounded were expected to be returned to this country; these would be placed in the general reconstruction hospitals now being planned in the various sections of the country. Here the reeducation work would be carried out. The Surgeon General had established a laboratory for the study of the various problems connected with artificial limbs. While it was thought there would be little difficulty in supplying artificial legs to the soldiers, which production had reached a high degree of perfection in the hands of the American manufacturer, the question of the substitute arm presented more difficulties because of the complicated demands made upon it in the attempt to supply the functions performed by the normal hand. So far it has been found more satisfactory to use some form of mechanical hook for labor, reserving the hand for social use. Orthopedic surgery was concerned also with the industrial problem which was equally important to that of the military. The comparison of statistics in his opinion clearly demonstrated the great importance of applying to industrial work the same plan which had proved so valuable in military work. The economic loss of industrial accidents, he believed, ultimately assumed an importance equal to that of the casualties of war. In view of the industrial struggle likely to follow the termination of the war Major Silver believed it of vital importance that the reeducation plan should embrace both the military and the industrial need.

The Civic Aspects of Orthopedic Surgery in the War.—Major HENRY R. HAYES recalled that during the European struggle prior to America's entry into the war that which impressed the country above all else was the frightful loss in the unearned increment of the young men of the nations involved. To alleviate such a condition the United States Government had said to those returned, disabled in service: "We will restore or reconstruct you physically and mentally so far as possible. We will still further reeducate you if you cannot be returned to service, that you may earn a living which will be in addition to the compensation which you will regularly receive from the Government for the injuries incurred in service. All this will be done for you while in the Army." While casually the problem might not seem to be one of large proportions, analysis would not bear out this opinion; the man returned disabled would probably need in addition to the surgical treatment received overseas, further surgical and curative treatment at home. His medical and mental limitations with relation to the character of his previous occupation in civil life must be carefully studied by the medical and vocational board to determine the specific training he should have. England and France had made great advance in surgical and civic reconstruction. It was the function of surgeons and physicians to state what men with given disabilities could not do. Experts in vocational training must advise what trades should be taught the disabled. Employers and employees must advise upon the local trade and labor markets. There must be fundamental organizations that employers and employees might not be asked to take unreasonable risks; neither should there be discrimination against the cripple. A man reconstructed and reeducated must be presented to society, equipped to earn the pay of a given job. Reference was made to the fact that in the State Compensation Act one of the difficult problems yet to be settled was that of the extra liability involved in the employment of a disabled soldier. It would seem unreasonable to ask the employer to assume this liability. Another question to be studied was that of the requirements of organized labor with relation to the closed shop and its bearing upon the reeducation and employment of the disabled soldiers. Exemptions under the National Army Draft Law had been astonishingly large and not a small number of such disabilities were orthopedic in character. This situation was being studied by one department of the Government that such disabilities in younger and future generations might be minimized. Reconstruction work would require the close cooperation of Army Federal Bureaus, State and local officials, and civilian organizations. Industrial surgery, he believed, was destined to make rapid progress. Yearly there had been more industrial injuries in this country than there probably would be in the war. The hope was expressed that the experience acquired by orthopedic surgeons in the war might be adapted to industrial and civic reconstruction that there might be a more sound body politic, and the "passing of the cripple."

Dr. G. G. DAVIS, member of the Orthopedic Advisory Council, remarked upon the apparent necessity of the occurrence of a great war to arouse the people to a sense of their responsibility. Recognizing the importance of the military and industrial reconstruction, Dr. Davis felt that the purely civil cripple was not yet receiving the attention to which he was entitled. Too few institutions were maintained for reconstructive work alone. For general surgical work there was ample provision, but a standing rule in such hospitals was that the patient treated for injury should not remain more than three months. While some cripples could be cured within this time, many could not, and as a result throughout the community there was a class of cripples evidencing this lack of provision for their proper care. His own work gave ample illustration of this fact; for example, a man treated in a general hospital for an injured elbow might be discharged with the wound healed but with a crippled arm. Such a man would appear in the community as a cripple until he came under treatment for the restoration of his arm to a working condition. Another example might be seen in the instance of a child with a tuberculous condition of the hip; although the condition cleared up, a deformed hip was the result, necessitating admission to a hospital where the crippled condition might be remedied. Dr. Davis expressed the belief that nearly all cripples of a community could by proper treatment and education be made largely self-supporting, and many entirely so. While this problem had always occupied the attention of the orthopedic surgeon the war had emphasized its importance to the people generally. He cited the fact that in the Widener Home for Crippled Children with which he was connected nearly all children going out from the home were occupying good positions. He decried the prevailing tendency of ignoring or absolutely refusing the cripple the chance to work even though he was qualified. While employers ought not to be asked to assume the added liability involved in the employment of the maimed in some of the industries, he be-

lieved there should be some adjustment of this factor not yet provided for in the Workman's Compensation Act. Dr. Davis expressed his hopeful opinion, however, that the interest and efforts of the community would be directed with more earnestness than in the past to the reconstruction work for the purely civil, as well as for the military and the industrial cripple.

Dr. A. BRUCE GILL, referring to the statement that experts must advise upon the matter of trades to be taught the disabled, observed that such experts would of necessity be hard to secure, since the work discussed was in its very beginning. No evil, he said, was unmixed, and the opportunity for the cripple from this time would be such as it never had been before. There were at present but two comparatively small institutions in the State devoted to the training of cripples for the industrial world, and but four States in the Union giving any State attention to the work. He emphasized the need for cooperation and study to equip, and to find industrial positions for, the cripples returned to us after the war. Already the war had shown employers that the cripple was capable of doing work heretofore refused him.

Dr. CHARLES K. MILLS, in referring to the special courses of training for military men given in the city, regretted that more thorough coordination had not been observed in organizing the groups, there being, for example, a neuropsychiatric, a neurosurgical, and an orthopedic group. The relations of orthopedic surgery to neurology he emphasized as of the highest importance. The first consideration in the treatment of cripples should be the diagnostic study. The surgeon should have a knowledge of the various conditions of the nervous and muscular systems, the bones, and joints involved in disabilities. In the training of men for orthopedic work a very considerable degree of study should be devoted to neural medicine. Many cases cited in the present war reminded him of the statements of Sir Benjamin Brodie and Sir James Paget that functional hysteria was not due to organic injury of nerve, muscle, bone, or tendon, but to certain special conditions of the nervous system. Dr. Mills very strongly emphasized the importance of diagnosis founded upon a study of the nervous system as well as of the visible injury. Every orthopedic base hospital or reconstruction hospital should have a neurological member on its staff. He cited the Orthopedic Hospital and Infirmary for Nervous Diseases as an instance of the advantage of combining surgical with neurological work. This great hospital with these coordinated branches brought about by the great neurologist, S. Weir Mitchell, with Dr. Thomas G. Morton as surgeon and honored officer, had accomplished a class of work not otherwise possible than upon these lines.

Major SILVER, in closing, called attention to the fact that orthopedic and reconstruction were not synonymous terms, and agreed with Dr. Davis upon the urgent need of provision for orthopedic work in general hospitals. The lack of such provision presented one of the most important industrial problems. The missing link, for instance, of a man's discharge from a hospital and his acquisition of atrophy from a disused injured member, must be supplied. While the question of experts mentioned by Dr. Gill involved difficulty, yet any who had seen what could be done by amputated men would not ask for more finished experts; one such example was that of a man who had one arm amputated and who was now practising dentistry. In the reeducation of the crippled soldiers he felt that those essaying to give the instruction would be rather the ones who would be reeducated.

War Activities in the Surgeon General's Office.—Major JOHN D. MCLEAN delivered an address with this title. Emphasis was placed upon the advance in preparedness in the medical department of the army, due to the fact that the doctors had volunteered. Of 18,170 commissions recommended to be issued to physicians, 14,862 had been accepted. Many men had asked for immediate service. While a request for a particular service would carry weight it did not insure its receipt. Men were being classified according to the work they were qualified to do. It was urged that every doctor physically, mentally, and morally qualified join the M. O. R. C., that they might be so qualified, even though they were not called for active duty. While all were wishing that the war might be over, Major McLean quoted Major Crile in saying that the French thought that the war may be "half over." A surprisingly large number of doctors, Major McLean said, were in the Naval Medical Review Corps. The dental profession was also largely represented here. Reference was made to the organization of a unit of medical men who but for age or disability would be in the M. O. R. C., whose function would be to work in association with the Red Cross, one feature of which work would probably be "civilian relief" in the matter of medical attention to the families of sailors and soldiers. The selection of soldiers for the next army formed another problem of the surgeon general's office, it having been realized that the medical examination of the first army was not 100 per cent. efficient. In the solution of this problem the creation of an advisory medical board had been planned. It had been suggested that a member of the M. O. R. C. should be appointed in each State by the President, whose duty it should be to aid the Governor of the State in the formation of medical advisory boards in connection with the medical selective service law. For the guidance of the young doctor between 21 and 31 called into camp without having applied for a commission, Major McLean advised that he at once make application for a commission. Another problem instanced was that of the young physician who possibly had been rejected by the M. O. R. C. examination but accepted by the local board. Such a man, if accepted by the camp surgeon, should apply for a commission. In such instances the surgeon general's office had been extremely lenient and a commission in such case would probably be issued.

Major CHARLES A. E. CODMAN spoke upon the work of the Pennsylvania State Committee of the Council of National Defense, medical section, one phase of which work was not only the taking of a census of the physicians of the State, but also the gathering of statistics upon their special line of work. The work done in Pennsylvania was being duplicated in every State of the Union. Major Codman claimed a justifiable pride on the part of the medical profession of the State that Pennsylvania stood at the head of the list in medical preparedness which position was due to the volunteer work of its individual members.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading, but it must be with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

MEDICAL DIAGNOSIS FOR THE STUDENT AND PRACTITIONER. By CHAS. LYMAN GREENE, M.D. 1302 pages. Illustrated. Price, $10.00. Published by P. Blakiston's Son & Co., Philadelphia.

STATE OF NEW YORK, STATE BOARD OF CHARITIES. Department of State and Alien Poor, The Bureau of Analysis and Investigation. Performance Norms for Thirteen Tests, Eugenics and Social Welfare Bulletin, No. VIII, 142 pages; Nineteen Epileptic Families, A Study, Eugenics and Social Welfare Bulletin, No. IX, 94 pages; Field Work Manual, Eugenics and Social Welfare Bulletin, No. X, 187 pages; Mental Examinations, Eugenics and Social Welfare Bulletin, No. XI, 73 pages; illustrated; Family Histories, Eugenics and Social Welfare Bulletin, No. XII, 53 pages. Published at The Capitol, Albany, N. Y.

MANUAL OF LABORATORY DIAGNOSIS. By STELLA M. GARDNER, M.D., and MARY C. LINCOLN, Ph.B., M.D. 133 pages. Price, $1.25. Published by the Chicago Medical Book Co.

PLAIES DE LA PLÈVRE ET DU POUMON. Par R. GRÉGOIRE et A. COURCOUX. 212 pages. Illustrated. Prix, 4 francs. Published by Masson & Cie., Paris.

ELEMENTS OF PEDIATRICS FOR MEDICAL STUDENTS. By ROWLAND GODFREY FREEMAN, A.B., M.D. 289 pages. Illustrated. Price, $2.00. Published by The Macmillan Company, New York.

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Yeast, baker's, use of, in diseases of skin and gastrointestinal tract, 737; medicinal and nutritive properties of, 70.
Yeomans, F. C., adenomyoma of the rectum, 535.

Z

Zimmerer, E. G., report of five cases of acute streptococcic infection, 592.
Zueblin, E., treatment of hay fever and asthma by pituitrin and epinephrin, 10.

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